from the incision of the skin or preparation of a dental cavity, rarely produce arousal.

The tendency of proprioceptive impulses to produce arousal being so great, it would be of interest to know if adequate doses of muscle relaxant had been given to those patients who were aware during caesarean section performed under general anaesthesia in the series reported by Dr. James Wilson and Dr. D. J. Turner (1 February, p. 280). Recollection of an event means that information about it is stored in the subconscious mind, but does not imply that the process of storage is contingent upon its having been previously registered in the conscious mind. Therefore subsequent knowledge of a recalled event having occurred during the operation may result from deduction, and not from its having been consciously experienced at the time.

If an operation is performed under hypnosis a fascinating situation may arise in which the patient has amnesia for the actual events of the operation but can "remember" imaginary events which have been suggested to him.—I am, etc.,

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SIR,—Drs. J. Wilson and D. J. Turner (1 February, p. 280) have raised some interesting points in their paper on awareness during caesarean section. However, it can be seen from their case reports that of the five avoidable factors listed by Tunstall[1] as being apt to result in awareness during a nitrous oxide, oxygen, and relaxant technique, four were at some time operative.

It has been clearly shown that, owing to rapid uptake of nitrous oxide, a high initial gas flow is essential to achieve an early near-equilibrium state between inspired nitrous oxide and blood nitrous oxide tensions in circle absorber systems.[2] Without a high gas flow, such as 8 l./min. of nitrous oxide and 4 l./min of oxygen for the first 10 minutes, there is apt to be delay before the nitrous oxide can achieve a sufficient level in the brain to take over from the diminishing anaesthesia of the induction dose of thiopentone.

Therefore, to obtain a proper control series before embarking on a trial of premedication with benzdiazepine drugs, it would be advisable to standardize the volume of fresh gas flowing into the breathing circuit.—I am, etc.,

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REFERENCES

1 Tunstall, M. E., *Brit. J. Anaesth.*, 1963, **35**, 535.
2 Eger, E. I., *Anesthesiology*, 1960, **21**, 348.

SIR,—The report from Drs. Jones Wilson and D. J. Turner (1 February, p. 280) prompts us to present our own preliminary findings. Each patient anaesthetized by us is seen on the day following operation, during the anaesthetic firm's hospital round, and we pay particular attention to the question of awareness. We accept that the patient was awake during the course of the procedure if she makes appropriate comment regarding pain (a relatively rare occurrence), non-specific tactile sensation, warmth (usually referable to the sudden gush of liquor over the abdominal wall at elective section), sound, or vision.

Since this hospital opened in September, 1968, 278 patients have received a general anaesthetic consisting of the sequence thiopentone (250–300 mg.) induction, relaxant, nitrous oxide (1:1 or 2:1 with oxygen), ventilation being either manually controlled or with the aid of a Howell ventilator and, on occasion, pethidine injected intermittently. Patients for elective section or postpartum sterilization (P.P.S.) and some others were given 50 mg. promazine intramuscularly one hour preoperatively. In 229 cases atropine (0·6 mg.–1·0 mg., depending on the relaxant to be used) was given intravenously immediately before induction of anaesthesia.

Table Showing the Incidence of Awareness in This Group

	Atropine		Hyoscine
	No.	Aware	No.
Elective section ..	46	7 (15·2%)	10
Emergency section ..	80	2 (2·5%)	22
P.P.S.	37	4 (10·8%)	6
Operative vaginal delivery	18	1 (5·6%)	6
Others (evacuations, manual removal placenta, etc.)	48	4 (8·5%)	5
Total	229	18 (7·9%)	49

In addition, 12 patients undergoing P.P.S. received neither atropine nor hyoscine; 2 (16·7%) of these were "aware".

In addition, 12 patients undergoing P.P.S. received neither atropine nor hyoscine; 2 (16·7%) of these were "aware."

We have so far discerned no evidence that the phenomenon is related to a choice between manually controlled and ventilator-controlled respiration, to a choice between 1:1 and 2:1 nitrous oxide/oxygen, to the choice of relaxant, to the use or avoidance of pethidine, or to the use of promazine as a premedicant. Not surprisingly, there was a relatively low incidence of awareness among those patients who had been in labour for several hours prior to operation. The incidence of awareness during elective and emergency section corresponds closely with that noted by Drs. Wilson and Turner (16·4% and 4·0% respectively). Recently we have substituted hyoscine (0·8 mg.) for atropine in our technique, giving the drug intravenously before the thiopentone. Forty-nine patients who were given the standard anaesthetic were treated in this way, and none of these has provided a history of awareness. As the Table indicates, the numbers in each group of operations is as yet too small to allow us to claim that we have conquered the defect, but we feel confident that we will be able so to claim in a short while.

This and other aspects of the effects of substituting hyoscine for atropine are the subjects of a report which we have in preparation for publication, but we consider it worthwhile to mention a further point here. As Drs. Wilson and Turner remark, dreams are another facet of the response to the form of anaesthesia under discussion. When atropine is used, the dreams are almost always described as having been horrifying, and patients frequently will complain of dizziness —the current expression is that of feeling as though they were in a spin-drier. When hyoscine is used, dreaming is a much less prominent occurrence, and when it is mentioned the patient invariably and spontaneously says that the dream was pleasant.

We would urge that before Drs. Wilson and Turner—and others interested in this problem—set out to investigate the value of the newer and relatively untried tranquillizing agents in counteracting awareness, they try the effect of hyoscine given immediately before induction. The drug is, after all, one of the most venerable—and least expensive—of those used for premedication.—We are, etc.,

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Puerperal Thromboembolism

SIR,—While we would agree with Professor T. N. A. Jeffcoate and others (8 February, p. 378) that many factors are of importance in the development of superficial thrombophlebitis, the possible influence of oestrogens and progestogens should not be discounted, specially in women with predisposing conditions such as varicose veins.

A survey was carried out over a period of eight months at the varicose vein clinic at Sir Patrick Dun's Hospital, Dublin, to see if there was an increased incidence of superficial or deep thrombophlebitis in women attending the clinic who were on treatment with oral contraceptives. At the first-visit clinic 326 consecutive patients aged between 20 and 45 years were interviewed. Twenty-eight of these patients were taking an oral contraceptive. They were questioned regarding the presence of thrombophlebitis or if it had been present previously. Four patients who were taking an oral contraceptive presented with superficial thrombophlebitis; that is, 14·3% of the total number on an oral contraceptive. It occurred in the left leg in three cases and in the right leg in one. There were no cases of deep vein thrombosis. There were 8 cases of superficial thrombophlebitis among the 298 patients who were not on an oral contraceptive, representing 2·6% of the total. One of these patients was subsequently found to be pregnant; thus the corrected incidence of superficial thrombophlebitis in patients who were not pregnant and who were not on an oral contraceptive was 2·4%. The phlebitis occurred in the left leg in five cases and in the right leg in three cases. There were no cases of deep vein thrombosis.

The result in the present series indicated that the incidence of thrombophlebitis as a presenting symptom was more than five times greater in women taking an oral contraceptive than in those who were not. However, it could be argued that the patients who attended the clinic and were taking an oral contraceptive and had superficial thrombophlebitis would not have been referred to the clinic by their general practitioner but for the phlebitis. The same argument holds good for those who were not on an oral contraceptive. There was no significant difference in the indices of age, height, and weight, nor