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 Tunstall¹ 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 benzodiazepine 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 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

was there any clinical difference in the basic varicose condition of both groups.—We are, etc.,

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Measles Vaccination and Dental Dysplasia

SIR,—Whereas it appears to be general knowledge among dentists that acute infections, including measles, can cause dental dysplasia, this does not seem to be known by many doctors. It was with some concern that I became aware of this, in view of the present schedule of measles vaccination with live vaccine which we are advised to give in the second year when the permanent dentition is being laid down. As many of us have seen, this particular method of vaccination can produce a sharp reaction, and it would follow from this that there may be risk of deformities occurring in the teeth, and specially in the enamel of children so affected.

Could those with experience on this subject give us their considered opinion, as it would be a minor tragedy if in five or six years' time cases of dental dysplasia were found as a result of vaccination? If there is any appreciable risk it would seem sensible to postpone measles vaccination until about 4½ years of age—that is, before school but when the enamel of the incisors is nearly completed—as this would have little effect on the ultimate eradication of this disease.—I am, etc.,

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Thrombolytic Therapy

SIR,—We have read with some satisfaction the timely letter of Dr. G. P. McNicol and Professor A. S. Douglas (18 January, p. 180), and wish to support their serious concern with regard to the views expressed in your leading article on thrombolytic therapy (21 December, p. 721). There is little doubt in our minds that this article completely blurred the impression of cautious optimism expressed by J. Hirsh and his colleagues in their excellent paper (21 December, p. 729). We are of the opinion that the primary fact to emerge from this study was not that all physicians and surgeons should include this form of therapy in their therapeutic armamentarium, but that the time has now come for several large-scale controlled trials to be instituted. The object of this exercise must be to ascertain whether thrombolytic therapy is not only efficacious and safe but in what circumstances, if any, it has clear advantages over adequate systemic heparinization—a much less expensive therapeutic agent.

The difficulties of setting up such a trial are formidable, not least is the decision to use streptokinase or urokinase. Although urokinase is non-antigenic and relatively non-toxic it is considerably more expensive than streptokinase, and the vast quantity of urine required for one course of treatment is such that its future availability for the care of

patients outside the confines of controlled trials must be questioned. It is of interest to note that Professor Sol Sherry, chairman of the United States Multicentre Urokinase-Pulmonary Embolus Trial, has recently concluded: "Despite the limitations imposed by the antigenicity of streptokinase, the fact that this agent can effectively mediate thrombolysis in vivo, and that its production, availability, and cost pose no serious problems to the pharmaceutical industry, leads this reviewer to conclude that full-scale trials in well-defined disorders (similar to those contemplated for urokinase) should be instituted in the United States."—We are, etc.,

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REFERENCE

¹ Sherry, S., *Ann. Rev. Med.*, 1968, 19, 247.

How Much Documentation?

SIR,—The reviewer of *Record Linkage in Medicine* (7 December, p. 632) is clearly against any unnecessary increase in medical documentation. Thus, one might expect him to be sympathetic with the view that better use should be made of existing documents to obtain required information on influences contributing to ill-health, the effectiveness of various methods of treatment, the prevalence of particular diseases, and so forth, and to avoid asking for the same information more than once (as is now commonly done because of the relative inaccessibility of back records).

Since more efficient use of existing documents was in fact the main theme of the International Symposium on Medical Record Linkage, it is unfortunate that your review of the *Proceedings* gives quite the opposite impression.—I am, etc.,

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Nursing and Nurses

SIR,—The Salmon Report¹ has given nursing an authoritative structure and indicated the lines on which a career in nursing administration could be made available. What is equally important and carefully emphasized throughout is the clear exposition that this career is for nursing and nursing alone. The Report makes the point that delegation, secondment, and the demonstration of sapiential authority are concerned only with the judicious and selective distribution of nursing duties. In accepting the dual purpose of Salmon it would not be out of place to explore still further the present nursing duties required of qualified and unqualified staff. If we accept that the practical non-administrative duties in the care of a patient in hospital can or should be summed up as "nursing the patient," then why are nurses in the operating-theatre? Some, both nursing and medical, will immediately say we couldn't manage without them.

My reply is: of course we couldn't manage without them, but are we managing with the right people?

My contention is that nurses in theatre are not by any stretch of the imagination nursing patients. In fact, it might be true to say that the medical profession depends in the theatre on nursing personnel who no longer care for nursing. To take my argument an essential step further, the present nursing complement of any theatre dealing with any branch of surgery could be replaced entirely by operating-theatre technicians. Such technicians would become (as nurses are now) thoroughly familiar with instrument knowledge, techniques, sterilization, cleaning, and setting up. There is no reason why, without any knowledge of medicine or surgery, they should not become efficient both as assistants and in "taking the case." It would, of course, be of personal benefit to them to have explanatory lectures and demonstrations in surgical pathology and techniques, but this knowledge should not be a criterion of initial competence. Operating theatre technicians could release nurses to nurse patients. This is not to say that the State-registered nurse has no value in the theatre situation, merely that it is unnecessary as a criterion for either entry or competence.

The syllabus of the Register or the Roll is ostensibly aimed at practical and administrative nursing care in the home, the factory, or the hospital bed. Need it form the only available entry to the side of the anaesthetized patient, who has probably never met this expert nurse and who will probably never meet her again, at least not while conscious? Indeed, how can she claim that she has exhibited nursing care to this patient to whom she has probably not spoken, whose face she may not see, whose voice she may not hear, and with whose condition she is not in a position to sympathize. How can she call herself a nurse in this situation? She has become a technician—but a long way round.

Turning to another essential department in hospital—the outpatient clinics—are we really manning these departments with the right people when we delegate trainee nurses, S.E.N.s, and S.R.N.s to this work? Over 95% of patients attending clinics are not acutely ill. True, there are mechanically disabled patients, but most of these require trolleys, wheelchairs, and strong arms to help them. Ambulant patients to other specialties require no more than a kindly, understanding hostess. For the "hostess" to be S.R.N. qualified with nursing knowledge gained over three or more years is of no real benefit to such an outpatient clinic attender without the essential sympathy and understanding. After all, what do most consultants want in a clinic? The right patient at the right time in the right chair—someone to bring them in, to take them to an examination couch, and finally to escort them to the exit door. Even if our hostess was S.R.N. she could not and would not dream of explaining any proposed investigation or the meaning of any medical phrase picked up, just in case she was wrong or gave the wrong impression. The important point in dealing with any patient at the end of the interview is often missed and is the cause of so much frustration. This is asking the patient whether they would like to have another word with the doctor before they go. I know doctors will say, "Heavens, more delay!" but of all