With larger doses of curare there is considerable limitation of respiratory excursion, and it is not sufficient to stand some yards away from the patient and observe that he is breathing. There comes a time when this breathing is insufficient for the patient's metabolic needs, and so it is imperative, long before respiratory arrest is likely to set in, that the anaesthetist intermittently compresses the rebreathing bag, thereby favouring respiratory exchange and avoiding pulmonary stasis. A high concentration of oxygen in the inspired gases seems to be beneficial, and should there still be shallow breathing at the end of the operation one should not hesitate to give prostigmin. When breathing has returned to normal, hyperventilation with carbon dioxide and air will introduce the inert diluent nitrogen into the alveoli and thus help to guard against atelectasis. If these precautions are taken in every case then there should be no need to worry about respiratory depression during the immediate post-operative period and little fear of pulmonary complications at a later date.

Since curare is non-toxic, then in an anaesthetic sequence in which it is used one need only consider the slightly toxic effects of the small amount of anaesthetic agent required to keep the patient asleep. Dr. Gray quite rightly states that Crile's theory has been invalidated. R. T. Knight (1944) goes further by saying "... that deep general anaesthesia is more damaging and more shock-producing than even the trauma of surgery." Surely, then, the maintenance of light anaesthesia is a prophylactic against shock. Light anaesthesia is easily maintained with non-toxic nitrous oxide, but I do not think that this is entirely satisfactory with curare, since the shallow breathing associated with the latter tends to increase the anoxaemia usually present with the former.

The majority of the cases in which I have used curare have been upper abdominal operations and/or ill patients, and in these cases an intravenous drip is often required before, during, and after the operation. "Pentothal" is always used, the initial dose being supplemented when rise in pulse rate—a sign of lightening anaesthesia—occurs. Usually an endotracheal tube is passed under direct vision and pure oxygen is administered throughout the operation. Under these conditions perfectly satisfactory anaesthesia and convalescence are ensured.—I am, etc.,

Truro, Cornwall.

G. V. S. WRIGHT.

SIR,—Dr. Massey Dawkins (Jan. 18, p. 111) has drawn attention to three post-anaesthetic complications following the use of curare—viz., shock, respiratory depression, and paralytic ileus. While these conditions unfortunately do occur, may they not be attributed to an overdose of curare—that is, a quantity in excess of that necessary to produce the desired effect?

At présent there appears to be a tendency to use curare in dosage sufficient to produce immediate absolute relaxation, with little regard to individual susceptibility. The latter may be of more importance than the weight or physical fitness of the patient, and the adoption of a small initial "test dose" (5–10 mg. tubocurarine chloride), followed by minimal additions, may lessen these complications. I have observed marked hypotension following the administration of curare in light and deeper anaesthesia—even before the incision has been made. This is presumably due to the action on the autonomic nervous system in the curare-sensitive subject.—I am, etc.,

Llanelli, Carmarthenshire.

D. S. JONES.

Curare or Magnesium Sulphate?

SIR,—We have used magnesium sulphate as a relaxing agent in anaesthesia in a few cases with unconvincing results. One woman aged 32 was given "pentothal" 0.5 g. followed by 20 ml. of 25% magnesium sulphate solution intravenously and nitrous oxide and oxygen for appendicectomy. Relaxation appeared to be good, but it is difficult to say what part the magnesium sulphate might have played in this. A man aged 38 was given "pentothal" 0.5 g. followed by 25 ml. of 25% magnesium sulphate with cyclopropane and oxygen for repair of an incisional hernia of the upper abdomen. In spite of deep cyclopropane anaesthesia relaxation was not as good as with curare. In another case laryngoscopy and orotracheal intubation were performed without difficulty in a healthy woman

aged 24 after "pentothal" 0.5 g. and 20 ml. of 25% magnesium sulphate. Laryngeal irritability appeared to be less than after "pentothal" alone.

There were no adverse side-effects and respiration was not obviously affected in any of the cases. Magnesium sulphate has been used to mitigate convulsions in shock therapy,¹ and it is said to have bronchodilator and antihistamine effects.^{2,3,4} Anaesthesia has been produced with magnesium sulphate,⁵ but muscular relaxation appears first. It seems that if magnesium sulphate is to be used instead of curare much larger doses must be used than the 0.5–1 ml. of 25% solution suggested by Dr. W. F. Cooper (Feb. 1, p. 197).—We are, etc.,

GEOFFREY ORGANE.

IAN C. W. ENGLISH.

London, S.W.1.

REFERENCES

- ¹ Yaskin, H. Edward, *Arch. Neurol. Psychiat.*, 1941, **46**, 81.
- ² Haurey, V. G., *Pharm. Exper. Therap.*, 1938, **64**, 58.
- ³ Monchal, Lumière, *C. r. Soc. Biol.*, 1937, **124**, 178.
- ⁴ Haurey, J., *Lab. clin. Med.*, 1940, **26**, 340.
- ⁵ Meltzer and Auer, *J. Amer. med. Ass.*, 1916, **67**, 1131.

Prognosis of Hypertension

SIR,—Your contributor writes in the annotation on "Prognosis of Hypertension" (Jan. 25, p. 144), discussing Bechgaard's monograph: "By hypertension was meant a blood pressure of not less than 169/90; the average was 190/110 taken after 15 minutes' rest."

But although Bechgaard's material consists of patients who had a blood pressure of 160/100 or a systolic blood pressure of 180 mm. at the first examination, he defines normal blood pressure as being 140/90 mm. He regards people with a B.P. of more than 140/90 mm. as hypertonics, even if they be over 40 years of age. He admits that "with this limit a very large number of older people (in case of the oldest more than 50%) are regarded as hypertonics." This would hardly be accepted by English and American observers, who regard as raised blood pressure in people over 50 a reading of 170/105 taken under proper precautions.—I am, etc.,

London, S.W.3.

V. C. MEDVEI.

Gynaecomastia

SIR,—It may be of interest to your readers to know that this condition is relatively common among lepers, and cases may be seen in any large leper colony at almost any time. It has been described by Dr. James L. Maxwell in his textbook *Leprosy: A Practical Textbook for Use in China*. It is associated with leprosy leading to atrophy of the testis, followed by partial or complete sterility. It is commonly a bilateral condition and appears to be entirely painless.—I am, etc.,

London, S.W.16.

STEPHEN D. STURTON.

"Anaesthesia" or "Analgesia"?

SIR,—I am not concerned with the polemics of Dr. F. W. Roberts (Dec. 28, 1946, p. 1007) and Dr. J. N. Fell (Jan. 18, p. 115), but I must take the latter to task for being misleading, apparently because he thinks anaesthesia is more euphonious than analgesia and would make a more charming name for a girl than would the latter. The statements he makes might cause some members of the profession to think that those who chose these Greek words for descriptive purposes in their anglicized forms had been guilty of careless or bad selection, whereas this is not the case.

Dr. Fell states that there is no distinction between the words in Greek; that distinction does, however, exist in precisely the way which is intended in their anglicized forms. Anaesthesia (*ἀνασθησις*) is used by Plato as a noun to mean "want of perception," as meaning "stupor," and in the same work he uses it adjectivally to mean "not subject to the senses" or "insensible"; it is also used as an adverb in Isocrates in an exactly similar way. On the other hand analgesia (*ἀναλγησις*) is used to describe "want of feeling," and the adjective *ἀνάλγητος* to describe "without pain"; but let us discard the particle *ἀν* and look at the parent words. *αἰσθάνομαι* and *αἰσθησις* are used without exception to describe "perception" in one form or another, while *ἀλγέω*, *ἀλγησις*, and *ἄλγος* are always used to convey the "sense of pain."

I do not think I need to carry the matter further, but I would like to remark that spinal "anaesthesia" would be more properly described as spinal "analgesia." I admit that Liddell and Scott quote Demosthenes as having used ἀναλγησία in the sense of ἀνασθησία, but I do not think the compilers of the volume (even in their first edition of 1843) had in mind such a distinction being drawn; if they had I am sure they would have disagreed with Dr. Fell, who selects this isolated instance to make the sweeping statement in his letter. Nowhere in Liddell and Scott can I find that "the adjective derived from analgesia was used to mean 'very painful'"; the particle ἀν would necessarily cause it to have precisely the opposite meaning; however, my lexicon and I are of a much earlier vintage than Dr. Fell and his edition of the lexicon and it may be that the translation of the classics is "sair altered noo." I am, however, συμπληρωτικός with Dr. Fell that he is a Cambridge man and has not enjoyed the advantages that accrue in the home of Liddell and Scott.—I am, etc.,

Stourport-on-Severn.
Worcestershire.

GILBERT R. A. ARMSTRONG.

Diet and Canine Hysteria

SIR,—In further reference to the letter (Feb. 1, p. 200) I sent you about a fortnight ago on the above subject it may interest your readers to know that I have just received a communication from the director of the National Veterinary School at Lyons, France. Prof. A. Brion says that "fright disease" or hysteria has been rife in France, especially in the south. All ages and all breeds of dogs seemed equally susceptible. He says, further:

"In France we do not believe there is any connexion between diet and canine hysteria. We have observed no reaction caused by the feeding of biscuits to dogs . . . and it has been proved in practice that the biscuits for dogs which we have had at our disposal were not harmful . . . mongrels which received only the scraps from the kitchen were equally affected. . . ."

"These are the arguments upon which we have reached the conclusion that biscuits do not play any part in the cause of canine hysteria. In any case, in France flour is not subjected to any bleaching or improving treatment. . . . We know only of a poor quality flour of 85-90% extraction and (during the occupation) no extraction. Therefore our dogs suffering from hysteria eat bread made without any addition of chemicals to the flour. . . . That is why the work of Sir Edward Mellanby, although very interesting, does not explain all cases of hysteria; and, in particular, the cause of the French hysteria is quite different."

These facts appear to bear great significance and seem to show that some other factor in the aetiology remains to be elucidated. In addition we do know that a large number of dogs in England subsist entirely upon horse flesh, and yet they too are not immune from hysteria.—I am, etc.,

London, N.W.11.

HAMILTON KIRK.

Endocrine Receptors

SIR,—In your editorial review (Jan. 18, p. 96) of the extremely valuable paper by Mr. Aleck Bourne (p. 79) on "Endocrines in Gynaecology"—a paper characterized by exceptionally wide experience and deep thought—you state, in relation to his conception of the reactivity of the organs to hormone stimulus (endocrine receptors), that "it seems strange that an idea so obvious should not have received closer attention in the great mass of work that has poured out in books and journals of all kinds in the last two decades."

I think that such a comment is probably doing an injustice to several endocrinologists. Certainly from my own writings I can with ease choose the following brief extracts to indicate that reactivity of the end-organs has been considered as playing an important part in endocrinology, as in other branches of physiology and medicine. Thus, in the introduction to *Major Endocrine Disorders*, London, published in 1938, I stated, "The reaction of the tissues to hormones, which is variable, is also important"; and then, after giving examples, I end the paragraph with the sentence, "The reactivity of the tissues, therefore, is an important factor in determining the effects of hormone secretion." In a paper on "Endocrine Therapy" in 1939 (*Practitioner*, 143, 502), I stated, in regard to psychological

impotence and the failure of testosterone propionate in this condition, "Since these doses are much greater than those that are effective in a complete castrate, it would seem that psychological processes can not only prevent an endocrine gland from functioning (e.g., anorexia nervosa), but can apparently prevent a hormone circulating in the blood in supernormal concentrations from acting on an end-organ." Finally, in a "Discussion on Exophthalmos" at the Royal Society of Medicine (*Proc. roy. Soc. Med.*, 1945, 38, 666), I put forward the theory that "if it was accepted that the pituitary thyrotrophic hormone produced exophthalmos both in Graves's disease and in the exophthalmic ophthalmoplegic group, in the latter the thyroid was incapable of responding to the thyrotrophic hormone."

I think, therefore, you will agree that the importance of reactivity of tissues, or of end-organs, has been emphasized in endocrine literature. These statements of fact in no way detract from the enormous value of Mr. Bourne's fundamental observations nor from the usefulness of his term, endocrine receptors. May I add that I am very heartily in agreement with the views expressed in your leading article as to the need for a team of workers with adequate equipment to undertake fundamental research in this important field of endocrinology—mainly that dealing with the sex hormones.—I am, etc.,

London, W.1.

S. L. SIMPSON.

Trilene in Labour

SIR,—I should like to make a few comments with regard to Mr. D. M. Stern's letter (Feb. 1, p. 199). As long as the limitations of trilene are recognized the drug is, I think, a most useful addition to the armamentarium of the anaesthetist. I have not had any personal experience of its uses in labour, but general practitioner friends are enthusiastic as to its efficiency as an analgesic and its simplicity of administration, particularly by means of Freedman's inhaler, apart from cheapness and portability.

For general surgical procedures I find it a most useful adjuvant to nitrous oxide and oxygen in cases where these gases by themselves would not be of sufficient potency to produce a smooth anaesthetic, while a minimum amount of additional trilene is all that is needed in most cases. Trilene is relatively non-irritant, so that the introduction of the vapour into the circuit produces practically no disturbance of the respiratory rhythm, and induction is therefore rapid. This factor is, incidentally, of importance in a busy operative session. Trilene in small amounts appears to have very slight, if any, post-operative toxic effects. Again, its non-inflammability makes it a useful anaesthetic agent if diathermy is to be employed. But not only is any degree of relaxation very difficult to obtain with trilene, also it is generally recognized that it is dangerous to "push" the drug. My own practice is to decrease the flow of trilene directly an uncomfortable tachypnoea occurs and, if this still persists, to change over to ether or some other agent.

It therefore would appear likely that to procure the necessary relaxation a higher percentage of trilene was used in the cases of caesarean section quoted than was conducive with safety. It would be interesting to know whether there were any signs of cardiac abnormality prior to death. I have also found trilene most useful for in-patient dentistry. Used nasally, as an adjuvant to gas-oxygen, a smooth anaesthetic can be procured for a total clearance, allowing the dental surgeon ample time for careful and unhurried manipulations, while the patient recovers consciousness almost immediately after removal of the nose-piece. Bleeding does not appear to be increased.—I am, etc.,

Amersham, Bucks.

BERYL L. HARRISON.

SIR,—Mr. D. M. Stern (Feb. 1, p. 199) has made some interesting comments on the use of trilene in midwifery. The figures given for mortality in caesarean section are certainly alarming—i.e., 5 deaths in 82 cases. One wonders why its use was persisted in after, say, the first 2 or 3 fatalities.

I have used trilene for women in labour over a period of some years and I have not had reason to regret it. Some time ago I described my experiences using a Clover or Hewitt's inhaler. Since then a number of correspondents have written giving favourable impressions. I have used the drug in