of the commonest conditions in their practice, and thereby failing to save life and sight.—I am, etc.,

DONALD S. McLAREN.

American University of Beirut,
Beirut, Republic of Lebanon.

REFERENCES

- 1 Oomen, H. A. P. C., McLaren, D. S., and Escapini, H., *Tropical and Geographical Medicine*, 1964, 16, 271.
- 2 Awdry, P. N., Cobb, B., and Adams, P. C. G., *Central African Journal of Medicine*, 1967, 13, 197.
- 3 MacManus, E. P., *Central African Journal of Medicine*, 1968, 14, 166.
- 4 McLaren, D. S., Read, W. W. C., and Tchalian, M., *Proceedings Nutrition Society*, 1966, 25, 28.

Corneal Disease

SIR,—I note that Mr. J. E. Cairns in his article on corneal disease (4 April, p. 33) states that surgical removal of a pterygium has a recurrence rate of some 50%.

This, of course, used to be true. Mr. Cairns seems to be unaware of the fact that the use of eye drops consisting of a 1/2,000 solution of triethylene thiophosphoramide (Thio-Tepa) reduces the recurrence rate to less than 1%. The drops are used every three hours during the waking period for six to eight weeks. The solution keeps its activity for at least two weeks if stored in a refrigerator and gives better results and none of the complications that can occur with beta-radiation therapy.—I am, etc.,

J. M. WHAITES.

Rockhampton,
Australia.

Antidiuretic Activity of Oxytocin Preparations

SIR,—We must bring to your attention two errors in the article by Dr. G. Roberts, and others (18 April, p. 152).

First, the authors have unfortunately misinterpreted the *British Pharmacopoeia* 1968 monograph on oxytocin (p. 702). The B.P. does not state that the inherent antidiuretic activity of oxytocin is 5, but only that in the B.P. preparation of oxytocin injection the vasopressor activity present should not be greater than 1 unit per 20 units of oxytocic activity. Oxytocin tablets, B.P. should not have more than 1 unit of vasopressin activity per 100 i.u. of oxytocin. The B.P. (1968) caters for preparations made by synthesis and from natural sources; the latter may contain vasopressin.

It is generally agreed that the purest form of oxytocin does possess some intrinsic antidiuretic activity. This cannot be stated in international units of vasopressin in the strict sense, any more than one type of penicillin can be said to possess x units of the activity of another type of penicillin. There is, however, a remarkable degree of quantitative agreement among workers^{1,2} on the very small amount ("about 1%", to quote the references) of intrinsic antidiuretic activity in pure oxytocin; this percentage also appears to be applicable to man.³

Secondly, the authors attempt to compare the oxytocic potencies of "oxytocin" and prostaglandin F_{2α} on a weight basis. Their calculation, however, is based on the defined activity of the International Standard for oxytocic, vasopressor, and antidiuretic substances. This consists of an

acetone-extracted powder of posterior pituitary and thus contains considerable quantities of inert material. The oxytocic activity of pure oxytocin is generally believed² to be approximately 450 international units/mg. Thus on a weight basis oxytocin is at least 200 times more potent than stated in the article.

Finally, whenever large doses of any oxytocin preparation are to be given clinically, we should like to emphasize the importance of using highly purified preparations of oxytocin which are not contaminated with vasopressin. In this respect we are in agreement with the point made by the authors. But, to make it more strongly, it is a pity the authors did not specify whether the preparations of oxytocin they used were of natural or synthetic origin.—We are, etc.,

D. R. BANGHAM.

Division of Biological Standards,
National Institute for Medical Research,
London N.W.7.

J. LEE.

Department of Physiology,
Charing Cross Hospital Medical School,
London W.C.2.

REFERENCES

- 1 Walter, R., Rudinger, J., and Schwartz, I. L., *American Journal of Medicine*, 1967, 42, 653.
- 2 Berde, B., Boissonnas, R. A. in *The Pituitary Gland*, Vol. 3, ed. G. W. Harris and B. T. Donovan. London, Butterworth, 1966, p. 624.
- 3 Fabian, M., Forsling, M. L., Jones, J. J., and Pryor, J. S. *Journal of Physiology*, 1969, 204, 653.

Paraquat and Adrenal Cortical Necrosis

SIR,—I wish to report a fatal case of paraquat poisoning with a new postmortem observation—adrenal cortical necrosis. The patient, a healthy farmer of 61, was drunk with rum when he took paraquat (Gramox-

one) by mistake. At admission to the hospital no clinical evidence of the poison could be elicited. Despite treatment he died 40 hours after ingestion of paraquat. Paraquat was demonstrated in blood and gastric contents.

At necropsy, besides pulmonary congestion, oedema, and haemorrhage, and superficial erosions of oesophagus and stomach, both adrenals showed greyish discoloration of their cortices. Histologically the adrenals showed diffuse cortical necrosis, the zona fasciculata and zona reticularis being predominantly involved (see Fig.). Zona glomerulosa and medulla appeared unaffected. The adrenal vein was not thrombosed.

The common systemic lesions of paraquat have been well documented in the past¹, but adrenal cortical necrosis has not been described in the human. Clark *et al.*² observed adrenal cortical necrosis in rabbits. They showed that the necrosis involved the outermost zone of adrenal cortex, whereas in the present case it was confined to the zona fasciculata and reticularis. The zona glomerulosa was relatively intact. The presence of focal neutrophil infiltration in the myocardium raises the possibility of toxic myocarditis as the cause of death, but the possibility that the bilateral adrenal lesion was also a contributing factor cannot be ruled out.—I am, etc.,

A. H. NAGI.

Queen's University
Department of Pathology,
Royal Victoria Hospital,
Belfast.

REFERENCES

- 1 Bullivant, C. M., *British Medical Journal*, 1966, 1, 1273.
- 2 Clark, D. G., McElligott, T. F., and Hurst, E. W., *British Journal of Industrial Medicine*, 1966, 23, 126.

Phage Treatment of Severe Burns

SIR,—Dr. E. J. L. Lowbury's letter (25 April, p. 236) in relation to phage-resistant staphylococci is significant. I can only say that the phages I produced were strikingly effective in cleaning up infection and accelerating healing.

In reply to Dr. B. R. Sandiford (30 May, p. 541) may I say that the phage content of the broth filtrates I employed in the treatment of septic burns was certainly tested for lysogenic properties on broth cultures of staphylococci recovered from the burns with positive results.—I am, etc.,

A. G. SHERA.

Eastbourne, Sussex.

Vaccination against Rubella

SIR,—I would like to take issue with the author of your Today's Drugs article on prophylaxis against rubella and mumps (2 May, p. 282), in which he states "further information regarding the duration of immunity produced by vaccination [rubella] is needed before this type of programme [vaccination of school children] can be started".

It was shown by Prinzie and others¹ as long ago as February 1969 that the haemagglutination inhibition antibody titres following vaccination were sustained at the same level for two years. Other investigators have reported similar findings, and continu-

Necrosis involving both inner zones and sparing the outermost zone of adrenal gland. (H. and E. $\times$ 80.)