serving its special purpose, produced further resemblances with Stoicism to lend support to a false interpretation.—I am, etc.

J. C. DAVIES.

Department of Classics,
The University,
Sheffield, Yorks.

Laryngitis and Aerosols

SIR,—A 39-year-old man was referred with a six-month history of progressive hoarseness. Biopsies of the right aryepiglottic fold and right ventricle of the larynx performed at the referring hospital showed a chronically ulcerated, hyperplastic squamous mucosa only. The inflammatory cell infiltration was predominantly plasma cell in type. Indirect laryngoscopy showed an oedematous larynx with a papilliferous lesion of the right aryepiglottic fold with extension into the medial wall of the right pyriform fossa. The larynx was fully mobile; there was no ulceration and no palpable lymph nodes. A repeat direct examination with multiple biopsies was again negative for carcinoma; the histological appearances being similar to the previous biopsy.

He was an asthmatic of seven years' duration, on low-dose steroids for four years. He originally used a pressurized aerosol of isoprenaline sulphate 4 mg./ml., but had changed to the stronger suspension containing 20 mg./ml. for the past 18 months. His asthma had worsened progressively over nine months to the extent that when seen he had been off work for five months, able only to manage one flight of stairs, or 200 yards on the flat as a maximum exercise at any one time, and unable to sleep without being woken three or four times each night by asthma. Coincident with the deterioration of his asthma, there had been an increasing use of the aerosol, so that a 400-dose aerosol was lasting only one week, equivalent to more than 50 doses per day. Patients have been warned that it is dangerous to exceed the recommended dosage of one to three doses, and that it should not be necessary for more than eight treatments a day.¹

One week prior to his readmission for a further direct laryngoscopy and biopsy, the patient changed back to the low dose isoprenaline aerosol which he had first obtained 18 months previously. There was a dramatic improvement in his voice over seven days and a considerable early improvement in his general condition. Subsequent follow-up on three occasions over two months confirmed that the improvement was maintained. He was back at work full time after two weeks and by two months his larynx and voice were normal; he was sleeping uninterrupted and had been swimming for the first time for seven years. Whereas he had previously become dependent on his aerosol he was now actively refraining from its use as much as possible. He had been changed at one month to an adrenaline aerosol and was using it only once or twice a week.

A presumptive diagnosis of carcinoma of the larynx had been made in this patient. However, because this seemed a strangely situated and small lesion to cause the severe degree of hoarseness he had, treatment was delayed until a positive biopsy could be obtained. A dramatic improvement in his laryngeal condition followed a reduction in the concentration and the frequency of use

of a pressurized aerosol containing isoprenaline.

There have been several reports of the dangers of excessive use of any sympathomimetic amine in bronchial asthma,^{2,4} and statistical evidence of a relationship between overdosage and mortality.^{5,6} The evidence for isoprenaline being the cause of this man's hoarseness must remain circumstantial. However, on clinical grounds alone it would seem a reasonable assumption.

I am grateful to Mr. H. J. Shaw for permission to report this case.

—I am, etc.,

G. E. STOLLARD.

Royal Marsden Hospital,
London S.W.3.

REFERENCES

- 1 Committee on Safety of Drugs, *Adverse Reactions Series*, 1967, No. 5.
- 2 Keighley, J. F., *Annals of Internal Medicine*, 1966, **65**, 985.
- 3 Pickvance, W., *British Medical Journal*, 1967, **1**, 756.
- 4 Greenberg, M. J., and Pines, A., *British Medical Journal*, 1967, **1**, 563.
- 5 Speizer, F. E., Doll, R., and Heaf, P., *British Medical Journal*, 1968, **1**, 335.
- 6 Inman, W. H. W., and Adelstein, A. M., *Lancet*, 1969, **2**, 279.

Pathogenesis of Pre-eclampsia

SIR,—It is true that research into pre-eclampsia has been bedevilled by lack of clinical definition of the large group of patients with hypertension and proteinuria in late pregnancy. Therefore it is of great interest to read Dr. Helen P. McEwen's claim that the presence of α_2 macroglobulin (α_2 M) in the urine in organic disease of the kidney distinguishes chronic renal disease from pre-eclampsia (10 January, p. 111).

If this is so, it might be assumed that this characteristic urinary protein pattern of chronic renal disease is the result of a different degree of glomerular permeability to proteins, which should be identifiable by differential protein clearances. Sixteen patients were studied in this hospital; nine with a clinical diagnosis of severe pre-eclampsia, four with proved nephrotic syndrome, and three with an undetermined cause of proteinuria. The protein clearance was invariably unselective—that is, $\text{IgG/transferrin} = 20\text{--}30\%$ —and afforded no help in the differential diagnosis of these patients.

From these preliminary results we think it probable that with the exception of minimal change glomerulonephritis all proteinuria occurring in pregnancy will be unselective, and that the detectable presence of α_2 M in the urine will be determined solely by the quantity of proteinuria. We have, for example, found α_2 M in the urine of a severe pre-eclamptic with a protein loss of 13 g. per day and an absence of detectable α_2 M in a nephrotic with a proteinuria of 4 g. per day. Nevertheless, we do believe that the presence of α_2 M in the urine may have some prognostic value, as Dr. McEwen has recently claimed,¹ but considering the similarity of the protein clearance it would appear to us that this index of severity could be deduced more easily by accurate measurement of the proteinuria.

It is ironic that, while Dr. McEwen is rightly stressing the importance of detailed consideration of proteinuria in pregnancy, most obstetricians will entrust the

measurement of urinary protein to a nurse or medical student using Esbach's albuminometer. We have compared the results obtained from Esbach's test performed in the manner described by Varley² with the more accurate biuret method in 145 twenty-four-hour urine collections from 11 patients. Eight patients had severe pre-eclampsia and three had pregnancies complicated by the nephrotic syndrome. The proteinuria in all patients was unselective. The results are shown in the Figure below.

These data confirm the inaccuracy of the Esbach's technique at all levels of proteinuria. The use of this inaccurate method is particularly inappropriate in pre-eclampsia because if the hypertension has been successfully controlled by drugs the precise urinary protein loss may be the most important index of the severity of the pre-eclampsia available, and if it is true that appearance of α_2 M macroglobulin in the urine in pre-eclampsia is a harbinger of fetal death¹ accurate measurement of urinary protein in pre-eclampsia must have a similar predictive value.—We are, etc.,

J. W. W. STUDD.

J. D. BLAINEY.

Birmingham Maternity Hospital,
Birmingham 15.

REFERENCES

- 1 McEwen, H. P., *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 1969, **76**, 809.
- 2 Varley, H., *Practical Clinical Biochemistry*, 4th edition, p. 143. 1967. London, Heinemann.

Phage Treatment of Severe Burns

SIR,—Many methods of treating infected severe burns have been advocated, including immunization against the common infecting organisms, chiefly hospital-resistant staphylococci and *Pseudomonas pyocyanea*, which inhibit healing and are antibiotic resistant. In the first world war, I used this method of treating infected septic

wounds.¹ However, the treatment involves multiple injections and preparation of sera and vaccines. There is a much simpler and very effective method of tackling this problem which seems to be not generally known, which I introduced at the Princess Alice Hospital, Eastbourne, in 1930.

A severe case of burns in a young man had become infected, and was dressed with gauze well soaked in autogenous bacteriophage prepared as follows. Cultures were taken from the suppurating burns surface and flasks of glucose broth were inoculated from the individual organisms isolated, usually *Staphylococcus aureus* and *Ps. pyocyanea*. After two to three days, when a dense growth had occurred, the liquid medium was filtered through a Seitz filter and the filtrate tested for sterility, aseptically preserved, and used to impregnate gauze dressings which were applied to the burned areas.

To be successful the dressings must be well soaked with the phage. Quite a lot of this filtrate is needed, but this presents no problems to the bacteriologist. If more than one organism is isolated separate phages will be needed, usually two or three at most, mixed roughly in the proportion they appeared in the original cultures and films.

The results in the patient referred to were quite dramatic. The picture changed rapidly from that of an indolent, unprogressive septic state to a clean, healthy healing surface. This form of treatment is also very effective in severe carbuncles and boils.—I am, etc.,

GEOFFREY SHERA.

Eastbourne, Sussex.

REFERENCE

- ¹ Shera, A. G., *Vaccines and Sera*, p. 69, London, Oxford University Press and Hodder and Stoughton, 1918.

Overseas Doctors and Hospital Staffing

SIR,—May I please comment somewhat belatedly on the references to the estimated number of foreign graduates in the hospital service by 1978 in the progress report on hospital medical staffing and its appendix A (*Supplement*, 6 December 1969, pp. 53 and 55)? It is expected the number will be decreased from the present figure of 6,500 to about 4,000. This appears to conflict with the statement in the appendix that currently the number of overseas doctors is increasing by 700 to 800 a year. From this it might reasonably be inferred, if the rate continues unabated, that there is likely to be remaining in this country in 1978 rather more than 4,000.

A ten-year estimate on almost any aspect of medical care is notoriously unpredictable, and accurate estimates of the number of foreign graduates in Britain within the next five to ten years are clearly conjectural. Furthermore, these estimates rest largely upon the arrival of immigrants from India and Pakistan, who together seem to account for at least one-third, possibly more, of all Commonwealth immigrants entering each month. It would also be wise to note very

carefully what plans already exist for comprehensive health care in India, where the number of doctors trained in modern scientific medicine likely to be required by 1976 will double.¹ The inescapable division between Pakistan's two wings makes it improbable there will be a stable pattern of nation-wide health care in that country within the foreseeable future. Therefore Pakistan graduates surplus to available posts locally are perhaps more likely to be available for employment within the N.H.S. in the more hospital junior grades.

SIR,—At the Annual Conference of Local Medical Committees last June it was resolved that the £800,000 in the Group Practice Loans Fund should be used for general practitioner medical charities, subject to suitable safeguards (see *Supplement*, 21 June, 1969, p. 144).

In the past there have been instances of resolutions being passed or rejected by delegates who have had no opportunity of seeking the instructions of those they represented. On more than one occasion this has resulted in the executive committee finding itself committed to a course of action the consequences of which have not been fully considered or debated in depth.

No such excuse can be made for the resolution to which we refer. Moved as an amendment to the report of the General Medical Services Committee upon the fate of the Group Practice Loans Fund, it was circularized by the proposing body to every local medical committee well before the meeting. The motion was "starred" and, being taken first in its group, it was understood by all interested parties that many succeeding amendments would fall if it were passed. The debate upon this contentious subject lasted nearly an hour. Every alternative to the solution of this problem was clearly spelt out by Dr. J. C. Cameron speaking as chairman of the G.M.S.C., and he made plain the difficulties that lay in the winding up of this Fund started some 15 years earlier. Representatives, members of the G.M.S.C., and of council expressed their

It therefore seems wholly unreasonable to rely on a steady supply of overseas doctors either from India or Pakistan to bolster our own resources, even if this continues to be thought to be morally justifiable. Entry mainly for postgraduate study over a limited period is another matter, wholly to be encouraged.—I am, etc.,

H. VINCENT CORBETT.

Liverpool 1.

REFERENCE

- ¹ Rao, K. N. *Indian Journal of Medical Education*, 1966, 3, 227.

L.M.C. Resolution on Group Practice Loans Fund

various views before the amendment was carried by a very large majority, a decision noted by the press and the subject of leading articles (5 July, 1969, p. 6).

Seven months later we have yet to read reference of any action taken by the G.M.S.C. in the reports of its proceedings in the *Supplement*. We recognize that there may exist legal difficulties in the implementation of the expressed wishes of Conference—one of the few bodies that can claim to be truly representative of its particular branch of the profession. We also know, however, that those in whose hands ultimate decision rests can, if they wish, resolve these problems. An Enabling Act would be unopposed and retrospective legislation is not without precedent. We also recognize that delaying tactics may be used by proposals presented to the next Conference and so on.

The views of the profession have been almost overwhelmingly conveyed, and it seems hardly conceivable that if he is made fully aware of the facts the Secretary of State, whose sympathetic attitude towards the under-dog is well known, would not use his great influence in support of one of the most unselfish proposals that has ever been placed before him.

Sir, we believe that the Annual Conference this coming summer, mindful of its predecessor's resolution, will, in a climate in which there appears to exist a certain air of mistrust, view the outcome of this charitable exercise most critically.—We are, etc.,

R. ALEXANDER.
D. ANNISS.
H. V. BLAKE.
F. B. BRIGGS.
P. J. BRYCE-CURTIS.
H. C. I. BYWATER.
J. R. CALDWELL.
G. F. M. CARNEGIE.
J. A. A. CHAMBERLAIN-WEBBER.
B. W. CHRISTOPHER.
J. O. COLLIN.
DAVID E. DART.
Sussex.

E. J. DENNISON.
G. DORMAND.
D. FARO.
M. J. GILKES.
R. W. GLENN.
D. GODWIN.
D. J. GOODING.
P. F. GRAY.
RALPH GREEN.
G. C. GUNDERSSEN.
MICHAEL HALL.
J. L. HARTLEY.

N. W. A. HARVEY.
J. D. W. HUNTER.
R. M. LODGE.
JAMES W. MURDOCH.
C. R. PALMER.
COLIN RUCK.
F. R. RYLE.
E. G. SIBLEY.
R. B. TULK-HART.
W. F. de C. VEALE.
J. R. WRIGHT.

* * The Secretary informs us that the resolution was sent to the Department of Health on 20 August, 1969, and first discussed there on 1 October. The matter has been raised

repeatedly with the Department since then. The delay was considered by the G.M.S. Committee at its meeting on 19 February (see this week's *Supplement*, p. 66).—ED., *B.M.J.*