now being developed for use under clinical conditions, and this, coupled to electro-diagnosis, should prove helpful for the provision of screening facilities. At the same time it is important to clarify the clinical picture, to learn more about the several causes of the condition, and to determine whether there is, for example, an age factor, as this would help to get the problem into some sort of perspective.

1 *System of Ophthalmology*, ed. Sir S. Duke-Elder, Vol. 4. London, Kimpton, 1969.
2 Dowling, J. E., *American Journal of Ophthalmology*, 1960, **50**, 875.
3 Carr, R. E., Ripps, H., Siegel, I. M., and Weale, R. A., *Investigative Ophthalmology*, 1966, **5**, 497.
4 Rushton, W. A. H., *Journal of Physiology*, 1961, **156**, 193.
5 Arden, G. B., and Weale, R. A., *Journal of Physiology*, 1954, **125**, 417.
6 Kelsey, J. H., and Arden, G. B., *British Journal of Ophthalmology*, 1971, **55**, 38.
7 Peukert, E., *Zentralblatt für Verkehrs-Medizin, Verkehrs-Psychologie und angrenzende Gebiete*, 1958, **4**, 202.

Deaths from Tuberculosis

Almost all tuberculous patients can be cured by modern chemotherapy. Advanced methods for diagnosis and treatment of the disease are generally available throughout Britain. It is therefore surprising that 2,000 deaths annually are attributed to the disease, a quarter of them undiagnosed before death.

A report by the Research Committee of the British Thoracic and Tuberculosis Association[1] shows that many of these deaths are avoidable. An investigation of deaths occurring during a three-month period in 1968 disclosed 263 people whose death was due to active tuberculosis. At least one avoidable factor responsible for or contributing to death was identified in 211 (80%).

Diagnostic error occurred in 20% of the patients in whom diagnosis was made only after death. This error resulted most commonly from a mistaken assumption of the rarity of tuberculosis and failure to recognize unusual forms of the disease. The usual mistake in general practice was to attribute respiratory symptoms too readily to chronic bronchitis without excluding tuberculosis and other disease by chest radiography. Ready access for the general practitioner to chest x-ray services is a continuing necessity. Mismanagement in hospital occurred mainly in elderly patients. In this series 40% of the deaths were in patients aged over 70 years. Omission of chest radiography in patients predisposed to tuberculosis, including diabetics, alcoholics, and those receiving long-term corticosteroids, was another important error in hospital practice.

Widespread disease in old people is too readily attributed to carcinomatosis in the absence of histological confirmation, and such patients are inadequately investigated for tuberculosis. Generalized tuberculosis in the elderly may lack the characteristic features of generalized miliary tuberculosis. They present with a severe systemic illness, insidious in inset and progress, in which general malaise, wasting, and fever occur in the absence of miliary mottling and choroidal tubercles. The tuberculin test is sometimes negative, and bacteriological or histological proof of the disease is usually difficult to obtain. This cryptic disseminated tuberculosis is best diagnosed by a therapeutic trial of isoniazid with para-amino salicylic acid.[2]

Extrapulmonary forms of tuberculosis are rare in British patients. In contrast, tuberculosis in Asian and African immigrants often occurs as miliary, peritoneal, intestinal, and lymph-node disease. It may present as an obscure condition, and the cause is easily overlooked. With immigrant patients especially it is important to be alert to the possibility of unusual forms of tuberculosis.

Medical care was regarded as unsatisfactory in 57% of the patients in the series. Most commonly chemotherapy was inadequate. The rules of chemotherapy are deceptively simple but errors often occur in the prescribing or administration of the drugs, and the patient may fail to take them as prescribed because of forgetfulness, indolence, or ignorance. Long-term domiciliary chemotherapy needs to be closely supervised by a skilled chest clinic team, which should include a specially trained health visitor.

The patients were judged to have been largely responsible for their own deaths from tuberculosis in 40% of the series. The most clearly defined factors associated with the patients' failures of co-operation were old age, mental disorder, and alcoholism. In all these groups there is a tendency for the patient to ignore symptoms or to attribute them to old age or chronic disorders from which the patient knows himself to be suffering. The community welfare services have an important part to play here in maintaining contact with aged people living alone and neglected at home and in the supervision of the inmates of common lodging houses or reception centres, some of whom are alcoholics or mentally ill.

This survey shows that in the prevention of tuberculosis today more support for the immigrant by the community services is needed in view of the high notification rates in this group. And the commonest avoidable factor leading to death was failure to observe generally accepted standard practice. It seems that undergraduate and postgraduate medical education in Britain is deficient in the field of tuberculosis.

1 British Thoracic and Tuberculosis Association, *Tubercle*, 1971, **52**, 1.
2 Proudfoot, A. T., Akhtar, A. J., Douglas, A. C., and Horne, N. W., *British Medical Journal*, 1969, **2**, 273.

Gas Gangrene of the Eye

The words "gas gangrene" carry with them echoes of the first world war and that sad catalogue of battle casualties with their crepitating limbs and inexorable fate. Though in the antibiotic era in peacetime Britain the infection is rarely seen, it does sometimes attack the eye. And even if it is recognized and treated at the earliest stage the eye is almost inevitably lost.

Two recent case reports, one from Exeter and one from Cape Town, remind us of this mortifying risk. In both cases foreign bodies entered the eye while the patient was hammering. The first patient was adjusting his car wheel, and the second was a boy who was working in a dirty backyard. In both cases all seemed well for a few hours, but within a day the patient was febrile, with an indurated orbit, brownish mucopus welling from the eye, and a pathognomonic bubble of gas lying beneath the cornea. Within a few days the eye in both cases had to be eviscerated, and after intensive penicillin treatment the orbital induration and oedema slowly subsided. Hyperbaric oxygen was given to the boy, but its inhibiting effect on the spread of the clostridia was thought to work only in the extraocular tissues, because most intraocular structures are avascular and