Preliminary Communications

Infective Pneumoconiosis due to Anonymous Mycobacteria

The chief hazard of pneumoconiosis in Britain is the complication known as progressive massive fibrosis (P.M.F.). The origin of P.M.F. is widely held to be tuberculous, but although tubercle bacilli were isolated by Rivers *et al.* (1957) in 35% of cases at necropsy, Carpenter *et al.* (1956) found only 1.7% positive in life. Such findings indicate that tuberculosis is generally terminal and not necessarily causative. The object of the present note is to suggest that the organisms known as anonymous mycobacteria may be responsible for many cases of P.M.F. Although less virulent than tubercle bacilli, these bacteria can cause disease indistinguishable from tuberculosis and have been suspected of a particular association with pneumoconiosis (Marks and Trollope, 1960). Experimental infection with anonymous mycobacteria is reported by Byers and King (1959) to be aggravated by the administration of coal-mine dust.

The pneumoconiosis medical panels of South Wales have been accustomed to submit to this laboratory specimens of sputum from patients with P.M.F. who present any indication of a tuberculous infection. Since February, 1960, however, sputum examination has been extended to all the P.M.F. cases seen, without any selection. The unexpected consequence of this change has been a sharp increase in the incidence of anonymous mycobacteria, not observed in the remainder of the laboratory's material.

The accompanying Table compares the incidence of anonymous mycobacteria during the 12 months after selection of cases was discontinued (designated 1960) with that in the previous seven years. The numbers of each of the three main types—photochromogens (P), scotochromogens (S), and non-chromogens (N)—are shown in parentheses. A control group is included of men aged 40 or more attending the Cardiff Chest Clinic, few of whom suffer from P.M.F. The size of this control group was calculated from the total of Cardiff males submitting specimens and a sample of 1,500 analysed for age. Approximately 1.2 specimens of sputum were submitted per patient in each series.

Comparison of Incidence of Anonymous Mycobacteria

	Total No. of Patients	Patients Yielding Anonymous Mycobacteria		Incidence of Positive Cases
		Repeatedly	Singly	
Unselected P.M.F. cases 1960	554	5 (1P, 4N)	6 (6N)	2.0%
Selected P.M.F. cases 1953-9	1,590	7 (6P, 1N)	4 (1S, 3N)	0.7%
Controls 1953-60	6,576	2 (2P)	2 (2N)	0.06%

Strains of anonymous mycobacteria isolated repeatedly from morbid material in the absence of other pathogens may be regarded presumptively as causing infection, whereas those isolated on only one occasion can usually be disregarded as contaminants. However, the incidence of strains isolated singly was far higher in P.M.F. cases than in the controls. Follow-up of the positive P.M.F. cases was very limited, especially in the unselected group, and its improvement would no doubt

have increased the proportion of cases positive repeatedly. It is possible also that some of the strains isolated singly from P.M.F. cases were derived from infections of short duration. In any event, infection by anonymous mycobacteria was at least 30 times, and possibly 60 times, as common in unselected P.M.F. cases as in the controls.

The photochromogen and non-chromogen types of anonymous mycobacteria are chiefly responsible for infection in Britain. The additional yield of anonymous strains in 1960, when the less seriously ill P.M.F. patients were examined, appears to have been limited to non-chromogens, suggesting that these cause the milder infections. This presumption accords with the relative virulence of the two types experimentally and with the experience of Kamat *et al.* (1961) that symptomless infections are more often due to non-chromogens.

Of the series of 554 unselected P.M.F. cases seen by the medical panel, 2.7% had tubercle bacilli in their sputum compared with 2.0% having anonymous mycobacteria. It is probable that infections by the latter are mostly short-lived and that they would be shown by bacteriological study of individual patients over a period to be more frequent than active tuberculosis. The normal habitat of anonymous mycobacteria is unknown, but no doubt many are free-living and frequently inhaled. The capacity to resist their invasion appears to be impaired in pneumoconiosis, and, since their potential pathogenicity is well established, it seems reasonable to regard these organisms as seriously as tubercle bacilli in the aetiology of P.M.F. Further observation might best be directed at pneumoconiotics who have not yet developed P.M.F. and include a study of skin sensitivity to the appropriate mycobacterial antigens.

I am grateful to Dr. R. W. Thomas, Senior Medical Officer, Pneumoconiosis Medical Panel, Cardiff, for his co-operation and to Miss Diane Besley for help with records.

J. MARKS, M.D., M.R.C.P., Dip.Bact.,
Tuberculosis Reference Laboratory
(Public Health Laboratory Service), Cardiff.

REFERENCES

- Byers, P. D., and King, E. J. (1959). *Lab. Invest.*, **8**, 647.
Carpenter, R. G., Cochrane, A. L., Miall, W. E., Jarman, T. F., and Hockaday, G. (1956). *Tubercle (Lond.)*, **37**, 225.
Kamat, S. R., Rossiter, C. E., and Gilson, J. C. (1961). *Thorax*, **16**, 297.
Marks, J., and Trollope, D. R. (1960). *Tubercle (Lond.)*, **41**, 133.
Rivers, D., James, W. R. L., Davies, D. G., and Thomson, S. (1957). *Brit. J. Industr. Med.*, **14**, 39.

Proposals for new regulations to replace the existing Food Standards (Soft Drinks) Order, 1953, have been issued. The proposals include specific descriptions for the labelling of soft drinks made from citrus fruits or the juice of citrus fruits. They will revise the standards of composition for some of these drinks, increasing the minimum sugar requirements and reducing the maximum permitted quantity of saccharin. They also require that where soft drinks contain saccharin this must be declared on the label, and specify the acids permitted for use in soft drinks. The proposed regulations will apply to all sales, including sales in bottles or containers by caterers, but not to sales in glasses or cups. Copies of the proposals can be obtained from Food Standards Division, Ministry of Agriculture, Fisheries and Food, Great Westminster House, Horseferry Road, London S.W.1 (Telephone: Victoria 8511, ext. 6295). Comments on them should be forwarded to the Division by December 8.