The Sewerman at Work*

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Since the publication, just over two years ago, of the Report of the Dale Committee on Industrial Health Services in Great Britain discussion and controversy have been mainly concerned with two emerging problems, first, the medical supervision of persons employed in small factories and, secondly, in non-industrial occupations. Dr. James Bell, a member of the staff of the Medical Officer of Health, Glasgow, in this admirable study of the sewerman at work has opportunely directed attention to a small non-industrial group, indeed one almost overlooked as an occupation except perhaps casually in relation to Weil's disease.

At the same time he has demonstrated what valuable field researches, not as specific projects but as part of daily practice, are available to industrial medical officers. The whole scheme in its planning, method, execution, analysis of results, conclusions and practical recommendations for preventive measures mark the author as one who has well learned the proper outlook and practice of occupational medicine.

The investigation, which embraced environmental, social, clinical, and laboratory studies with special reference to occupational hazards, occupied two-and-a-half years and directly concerned 42 sewer men, the total personnel employed in the maintenance of the 800 miles of public and common sewers in Glasgow, an industrial city of 1,089,555 persons.

Sewers and Sewage

To most of us sewers are pipes of various size but this, as described by Dr. Bell, is a very simplified conception of a very complex system.

"Public and common sewers vary in size from pipes measuring 9 inches to 2 feet in diameter, to stone and brick sewers 2 feet 9 inches to 4 feet 6 inches in height. Most Glasgow sewers are about 3 feet in height. Among the factors preventing the construction of self-cleansing sewers are the nature of the subsoil, the geography of the City and the amount of railway tunnelling within its boundaries. Thus periodic silt removal is necessary to ensure the free flow of sewage. Access manways are located at intervals of 20 to 200 yards, usually 60 to 80 yards, along each sewer."

Likewise sewage is generally regarded as water-borne human excreta, whereas to the sewerman in large industrial areas trade wastes of diverse nature and composition are the important constituents.

"Engineering works contribute oils and grease as well as pickling acid, cyanide and suds, while garages are a common source of paraffin, petrol and diesel oil.

* The Relationship between Occupation and Health as seen in Glasgow Sewermen. By James Bell (1953). *Trans. A.I.M.O.* 2, 141.

The Sewerman at Work: Report of the Investigations into the Health and Conditions of Work of Glasgow Sewermen. (1952). The Highways Committee, Corporation of Glasgow.

From chemical works weak acid, weak alkali, spent carbide, resins and other materials enter the sewers. Ammoniacal liquors containing phenol and tar compounds gain access from steel works and gas generators. The paper industry and wool scouring factories produce alkaline soaps while the offensive trades provide grease and other animal products. Although the discharge of materials liable to cause damage to the sewers is prohibited by legislation, enforcement is difficult and such materials are found from time to time."

The sewers are the working places of the men and the sewage, constantly varying in quantity and composition, determines the environmental conditions during working hours.

Sewermen

The sewer men, 42 in number, were in the age range of 35 to 64 years. There was continuity of employment and several had followed the job for over 25 years. Retirement from the job, usually in the early fifties, was premature and as a rule on medical grounds. All were married and wages ranged between £5 10s. and £6 15s. for a 44-hour week, a rate of pay among the lowest for adult males in Great Britain today.

Most had at least three children and about 50% lived in overcrowded houses without a bath.

The method of selection for the job is of interest; "all are recruited from the general labour force engaged in road repairing in the City. They are observed at work for several years and when a vacancy arises in the sewerage squads then a man who has proved his worth is selected."

As a group they were good citizens, of cheery disposition and almost fearless. Team spirit among them was high and indeed they regarded themselves as a *corps d'élite*, picked men.

The Working Environment

Dr. Bell assisted at various times in the work and so learned through personal experience the actual conditions and demands of the work. Working space was very cramped and involved severe physical strain and adverse postures. Within the sewer all was inky blackness and deathly silence. The air was still and damp and vitiated by the infinite variety of smells, of tarry compounds, paraffin and decaying vegetable or animal matter. Fortunately, however, the olfactory nerve quickly adjusts itself to most of these odours so that they are endured almost unperceived.

Hazards of the Job

These include accidents, specific occupational diseases, infectious diseases, and postural strains.

Among accidents are drowning, physical trauma, and gassing by carbon monoxide, benzene, and sulphuretted hydrogen. Specific occupational diseases include leptospirosis, dermatitis, conjunctivitis, and miner's nystagmus.

Leptospirosis was the subject of special investigation. Departmental records revealed that between 1910 and 1950, 28 men contracted this infection, 23 of them since 1925. The case mortality was 28.6%.

"In order to protect the sewermen certain special arrangements have been made. Each man is provided with a card on which are his name, address, occupation, notes advising washing of hands before meals, consultation with a medical practitioner as early as possible in any illness, and recommending that the card should be shown to every doctor treating the sewer. By arrangement with the local general practitioners and at the request of the Master of Works, I visit each sewerman who is off sick. This precaution is taken so that a diagnosis of leptospirosis can be made as early as possible. At such a visit a sample of blood is taken and submitted for a Schuffner test."

Routine Schuffner tests on all the employees revealed serum changes suggesting a previous undiagnosed attack of the disease. Moreover, preventive vaccination has been introduced in an endeavour to protect the men against the possible serious effects of any future natural infection.

"The working posture of sewermen, dictated by limitation of working space, causes very great strain on the lower part of the spine. Lifting and pulling are done with the back acutely bent and hence low back-ache is common among sewermen."

Dr. Bell found evidence of osteo-arthritis of the lumbar spine and he is further of the opinion that because of the working posture conditions of the back, which in most types of employment would cause little discomfort, produce major disability in sewermen.

The average annual sickness loss of time per sewerman employed is about two weeks, which, relative to other Corporation employees, is not considered to be unduly high. The analysis of sickness by cause is summarized in the table.

The great merit of the enquiry is revealed in the recommendations which Dr. Bell felt justified in submitting for action. (1) Improved ventilation in sewers; (2) improved lighting in sewers; (3) review of trade wastes entering sewers; (4) improved rodent control in sewers; (5) washing and changing facilities (use might be made of the new cleansing department depots as an

TABLE
PERCENTAGE LOSS OF TIME AND PERCENTAGE NUMBER
OF CASES DUE TO DISEASE GROUPS IN GLASGOW SEWER-
MEN IN 1945-50

Disease Group	Percentage of Total Absence	Percentage of Total Cases
Accidents	0.7	2.3
Alimentary tract disorders ..	25.8	18.2
Genito-urinary system ..	4.0	4.5
Infectious diseases :		
(a) Leptospirosis	20.2	11.4
(b) Infectious parotitis ..	2.1	2.3
Nervous disorders	15.7	4.6
Respiratory diseases	5.4	13.6
Rheumatic conditions	22.3	36.3
Skin diseases	3.8	6.8
All Groups	100.0	100.0

alternative to building new ablution centres); (6) improved working clothing; (7) laundering of working clothing; (8) use of mechanical transport for equipment; (9) periodic medical examination of sewermen (say annually); (10) recruitment of men under 35 years of age; (11) limitation of service as sewermen to not more than 20 years; (12) policy with regard to retirement of sewermen found unfit for further service in the sewers. After 20 years of faithful service in this arduous work it does not seem right that men should be left stranded at an age in the middle 50s with only a small superannuation pension on which to plan a family budget. In the past, many sewermen, still fit for certain types of work, have been condemned to unemployment, often for the first time in their lives, because of this lack of a policy.

Local authorities throughout the country are large employers of labour including clerical workers, skilled artisans, and labourers and office cleaners. In relation to these employees the local authorities have an unrivalled opportunity for the full practice of occupational medicine and the promotion of health through effective medical supervision and maintenance of good environmental conditions. Superannuation examinations do not constitute the whole of occupational medicine.