

**OCCUPATIONAL HEALTH SERVICES IN SMALLER  
WORK PLACES IN BRITAIN**

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**INTRODUCTION**

PERHAPS the greatest problem in the planning and running of an occupational health service on a national basis is how to meet the health needs of the smaller work places. A small work place may be defined for our purposes as one too small to justify the employment of a full-time nurse. Such a definition has the practical advantage of covering all working groups whose needs must be met on a collective basis. It also includes all kinds of work places—factories, warehouses, building sites, mines, docks, farms, offices and shops. Some of these are covered in part by special legislation such as the Factories Acts or the Shops Act, but others are not.

The point at which a full-time factory nurse is needed depends as much on the nature of the work done as on the numbers employed. Thus, a heavy engineering works with 500 or less employees may provide enough work to keep a nurse fully occupied on nursing duties. By contrast, the needs of a factory employing 800 workers engaged in light electrical assembly may be fully met by two one-hour nurse sessions a day supplemented by adequate first-aid and emergency arrangements. In Great Britain, over 60 per cent of the factory population work in factories employing less than 500 people. The bulk of commerce is made up of small shops and offices, and even in the coal-mines 13 per cent of miners work in pits employing less than 500. It is clear, therefore, that a large proportion of the total working population, in factories and elsewhere, come within our definition.

The activities of small working units are almost as diverse as those of industry and commerce as a whole. Only massive production lines and the manufacture of major capital equipment are excluded. The health hazards and needs arising in the smaller work places do not differ substantially from those in the larger places. But because of the scatter and number of the working units, they can only be fully appreciated when the units are viewed collectively.

**THE VERY SMALL FACTORY**

The size of factories in Great Britain and the number of people employed in them are shown in Table I.

More than a million people work in 181,000 factories employing 25 people or less. The total number of these very small factories nearly doubled between 1936 and 1952, but has since decreased a little.

Some of these small factories are closely linked with larger ones, serving as tool rooms, or plating, painting, or finishing shops; often they manufacture some small component part. Others, such as garages, shoe repairers, jobbing printers, radio

THE VERY SMALL FACTORY

TABLE I  
DISTRIBUTION OF FACTORIES IN GREAT BRITAIN BY SIZE GROUPS—1959

Size group (persons employed)	Number of factories		Number of workers	
	Number in group (thousands)	Percentage of total	Number in group (thousands)	Percentage of total
1-10	150	69	559	7
11-25	31	14	546	7
26-50	17	8	624	8
51-100	10	4	749	10
101-250	7	3	1,196	16
251-500	3	1	1,021	14
501-1,000	1	0.5	890	12
1,001-2,000	0.5	0.3	745	10
2,001-5,000	0.2	0.1	677	9
5,001 and upwards	0.05	0.03	441	6
Total	220	100	7,448	100

(These figures, given by the Ministry of Labour and National Service, apply only to factories and workers defined by the Factories Act, 1937. They are based on numbers recorded at the last visit of a District Inspector before March, 1959.)

and television repairers, milk depots and laundries, may properly be described as "service industries". Though all these are "factories" by definition under the Factories Act, few of them look like factories or, indeed, were built as such. Many are situated in low-rental areas in old towns and were originally houses, shops, stables or garages. Sometimes they occupy multi-storey warehouses or railway arches. On modern industrial estates, they usually occupy purpose-built sectional factories.

The "symbiosis" between the large and small factory is of great value in modern industry. The big firm makes use of the small firm to avoid delays in its own tool room and to avoid upsetting a carefully planned production line. But the small firm has to be careful not to become too dependent on a single market; in any recession in such a market, the small man is the first to suffer. To play their full part, it is a great help if the small firms are close to the larger factories on which they depend for their orders. Because their overheads and profit margins are low, their prices are highly competitive. They can come into operation quickly to meet a special need or market and can change their processes relatively easily. They can, however, seldom afford to carry heavy capital equipment; so they tend to concentrate on light engineering. Many of them have a temporary life: if successful they move to larger premises; if unsuccessful, they quickly go out of business as their borrowing powers are small. In some premises containing several small units, there is an almost constant turnover of occupiers.

The manager is generally a productive worker himself and there is often a high output per man, due to skilled craftsmanship and close supervision. Office work is kept to a minimum. A friendly atmosphere is usual with few formalities in engaging or discharging staff, or in wage agreements. In general, trade union membership is low, but this is not true for all trades—the tailoring and electrical trades.

The advantages of the intangible elements of this environment often outweigh the more measurable disadvantages of poor physical conditions, and many people prefer to work in small factories. The relationship between size of working groups

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and morale is discussed in Chapter 13. Sanitation is often primitive or even non-existent; lavatories and wash-basins are frequently shared between several firms. Overcrowding of workers is not as common today as it was 50 years ago, though overcrowding of machinery is still common enough. Heating, lighting, and ventilation are frequently inadequate, and machine guarding and fume extraction are often poor. The consequent risks run by the workers are, however, less than might be expected since dangerous operations are seldom done continuously for long periods at a time. Each operator tends to be a "jack of many trades", so his exposure to any potentially dangerous process, even if severe, is usually intermittent. First-aid facilities are usually poor.

A high morbidity rate for a disease such as dermatitis that would cause alarm and despondency in a large factory may pass unnoticed where each individual group of workers is small. Bourne (1956) has shown that 50 per cent of the cases of industrial dermatitis among hospital outpatients come from factories employing fewer than 50 people. From the national figures one would expect less than 25 per cent to arise in these small factories. The smaller the factory, the greater the apparent risk of dermatitis: the reason is almost certainly inadequate washing facilities. In a recent survey of small factories (Jefferys and Wood, 1960), workers, when asked about skin irritants, often commented that "we sort of get used to the stuff". One man dipped his bare arm into a fuming electroplating tank and commented as he wiped the liquid off on his trousers: "It stings a bit, but does not bother me. I am immune".

Trauma and foreign bodies in the eye are as much risks in the small factory as in the large plant. The added hazards from poor housekeeping are in some measure offset by the skill of the operators and the small numbers involved.

Among the hazardous processes with which we are personally familiar, carried on in small factories, may be mentioned the following: mercury distillation, melting of cadmium and beryllium, the use of lead compounds in accumulator reconditioning, degreasing with trichloroethylene, metal cleaning with carbon tetrachloride, electro-plating, shot-blasting, metal grinding and polishing, the use of a wide variety of solvents, "thinners", paints, caustic acids and alkalis.

A further health problem in small factories is the strain under which the owner-manager often works. He has perforce to be a designer, production engineer, works manager, progress chaser, sales manager, personnel manager and welfare officer. He works overtime at the bench with his men, and takes accountancy home on Sundays. He has plenty of worry and anxiety, not over promotion or discharge, but over the state of the order book and the overdraft. It is not surprising, therefore, that he sometimes gets irritable and shows signs of fatigue. These may go on to classic anxiety symptoms or to somatic manifestations of anxiety.

## THE MEDIUM-SIZED FACTORY

We define medium-sized factories as those employing between 26 and 500 people

## THE BUILDING OR CIVIL ENGINEERING SITE

towns, often in industrial areas, sometimes in the suburbs or on industrial estates. A number of the newer factories have been deliberately placed in residential or semi-rural areas, to exploit hitherto untapped sources of labour. Their activities and products are very varied, though some trades, such as shoe manufacturing and cotton spinning, are concentrated in certain areas. There are many highly specialized types of factory, such as the chemical plant with much capital equipment and few workers and, by contrast, the electrical assembly shop with little special equipment and a large number of workers.

The medium-sized factory may have grown from a small factory. Sometimes it starts as a breakaway from a large firm. It may sometimes be a small unit set up for a specific purpose by a large firm, in which case the degree of autonomy from central control which it enjoys varies with the policy of the parent firm. In the fully autonomous medium-sized factory, the tempo is often quicker and tougher, profits higher and security lower than in the satellite factory. Morale is often, but not always, better in the former, and trade union activity greater in the latter. Managerial strain in the autonomous medium-sized factory is much the same as in the very small factory. The boss is usually a powerful individualist, with a ruggedness of character which can withstand much emotional trauma. Nevertheless, a somatic hypochondria is by no means unusual.

In the satellite factory, everything depends on the calibre of the location manager and the degree to which he has freedom of action. Often, a general pattern of behaviour is imposed from above, with the result that there is a more complicated system for the recruitment of labour, superannuation schemes, canteen and other welfare services. Headquarters may maintain supervisory or advisory medical and safety services, with the result that there is often a higher level of environmental hygiene than in the medium-sized autonomous factory. An occasional result of an imposed welfare pattern is the employment of a full-time industrial nurse when there is not enough work to keep her fully occupied on medical and health matters. As a result, her time is taken up dealing with trivia which her presence produces, and with paper work, which the personnel department or headquarters demand or which she manufactures. In consequence, because her turnover of real nursing work is small, her technical skill declines, which is unfair both to industry and the nurse.

## THE BUILDING OR CIVIL ENGINEERING SITE

There are approximately 750,000 workers engaged in building and civil engineering contracting and a further quarter of a million in painting and decorating. The distribution in size of firms follows the usual pattern of a few large concerns, more of medium size, and a multitude of small ones.

By an extension of the Factories Act, 1937 in the form of the Building (Safety, Health and Welfare) Regulations, 1948, they were brought under the supervision of the Factory Inspectorate. The Regulations provide minimum standards for safety, health and welfare and for the notification and investigation of accidents.

Building and engineering sites are dangerous places and severe and fatal accidents are not uncommon. In 1957, nearly 15,000 accidents were reported to the Chief Inspector of Factories and of these 156 were fatal. The commonest causes of these accidents were persons and objects falling, often not from any great height, and from plant, particularly lifting appliances and transport vehicles.

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Some well-known hazards, such as falling through asbestos or other fragile roofing and the collapse of trenches, are still causing a number of accidents. Cement and lime dermatitis and eye injuries due to foreign bodies and chemicals are fairly common.

These problems of health and safety are accentuated by the transitory nature of building sites and changes in the work force. Also, much work on building sites has a time bonus which leads workers to ignore time-consuming safety precautions. In the early days of a project, there may only be a few skilled men on the site. As it progresses, more workmen, many unskilled, may be involved and they may be working for subcontractors who are unaware of what other work is being done above or beneath them. This most dangerous stage lasts until, in the case of buildings, the walls, floors, and roofs are complete and the unskilled labour withdrawn. Over and above the statutory provision of first-aid equipment, there is a real need for minor casualty service such as a visiting nurse can give. Such facilities are provided by the Harlow Industrial Health Service and are much appreciated (Taylor, 1959).

## OTHER INDUSTRIAL EMPLOYMENT

The coal-mines, docks, railways and other concerns now under public ownership are large industries, but all contain many small working groups. Table II shows the distribution of coal-mines by size.

TABLE II  
DISTRIBUTION OF COAL-MINES IN GREAT BRITAIN BY SIZE-GROUPS

<i>Size-group (persons employed)</i>	<i>Number of mines</i>		<i>Number of workers</i>	
	<i>Number in group</i>	<i>Percentage of total</i>	<i>Number in group</i>	<i>Percentage of total</i>
1-19	377	28	3,300	0.5
20-499	437	33	85,700	12
500 or more	524	39	607,900	87
Total	1,338	100	696,900	100

(Abstracted from Ministry of Power Statistical Digest, 1956.)

The Acts of Parliament responsible for the nationalization of these industries included various provisions for safety, health and welfare. The standards and application of these regulations inside each industry differ, even though the occupation is the same. The health services are examples of collective organization based on an industry rather than a region. The difficulties of extending the services to the smaller working units is much the same as in private industries. Indeed, small local units of both private and nationalized industries have joined area co-operative health schemes where they exist.

## SHOPS

There are about half a million shops in Great Britain and more than 2½ million persons work in them; of these 60 per cent are in shops employing less than 10 persons (see Table III).

## OFFICES

TABLE III

## DISTRIBUTION OF SHOPS IN GREAT BRITAIN BY SIZE-GROUP—1950

Size-group (persons employed)	Number of shops		Number of workers <sup>1</sup>	
	Number in group (thousands)	Percentage of total	Number in group (thousands)	Percentage of total
2 or less	267	50	402	18
3-9	230	43	1,027	45
10-99	33	6	617	27
100 or more	0.8	0.2	219	10
Total	531	100	2,265	100

<sup>1</sup>Approximately 25 per cent of all shop workers are part-time.

(Abstracted from Census of Distribution and Other Services, 1950.)

In the main, the risks to which shop workers are exposed are few, though there are special hazards for such workers as butchers and bakers. Shop work, however, generally entails a great deal of standing. There is the strain of peak periods of selling alternating with the boredom of slack periods; and shop assistants have to cope with both management and the public (Oldershaw, 1953). The Shops Act, 1950, lays down environmental standards and the local authority is responsible for enforcing them. In the case of food shops, many of the regulations are designed to protect the public rather than the individual worker. Only a few of the large or multiple shops provide special medical services for their employees.

## OFFICES

More than 2 million people are classified by the Registrar General (1957) as clerical workers and a further million are in occupations carried out predominantly in offices. Since the war the proportion of office workers to production workers has increased in many industries, especially in the large firms. As many office workers get nearer the shop floor and more productive workers are involved in recording machine data, the difference between the type of work is becoming less. The rationale for keeping them separate in respect of legal standards for health, safety and welfare is therefore diminishing.

The small office, like the small factory, is often dark and dingy and is furnished with chairs and desks which take little account of the comfort and efficiency of those who work in such establishments. Not enough is known of the risk of infection, whether it be colds or tuberculosis, but there is some evidence that the risk is less in small than in large units (Stewart and Hughes, 1949). The need for minimal environmental standards is clear and was well stated in the Gowers Report (1949).

The apparent increased risk of coronary heart disease in sedentary workers introduces a new problem to industrial medicine. Health examinations of higher executives with a view to the early detection of deviations from normality and the prevention of tension states are widely practised in the United States of America and increasingly in Great Britain, but the precise role and value of these examinations has yet to be demonstrated. The problems of measurement in the fields of social psychiatry and psychosomatic disease are great. It is to be expected, however,

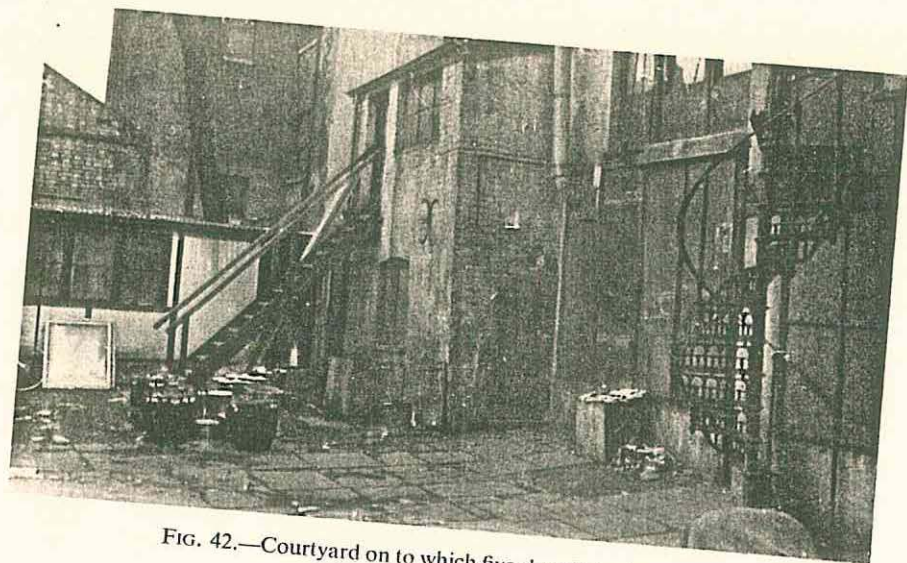


FIG. 42.—Courtyard on to which five slum factories open.

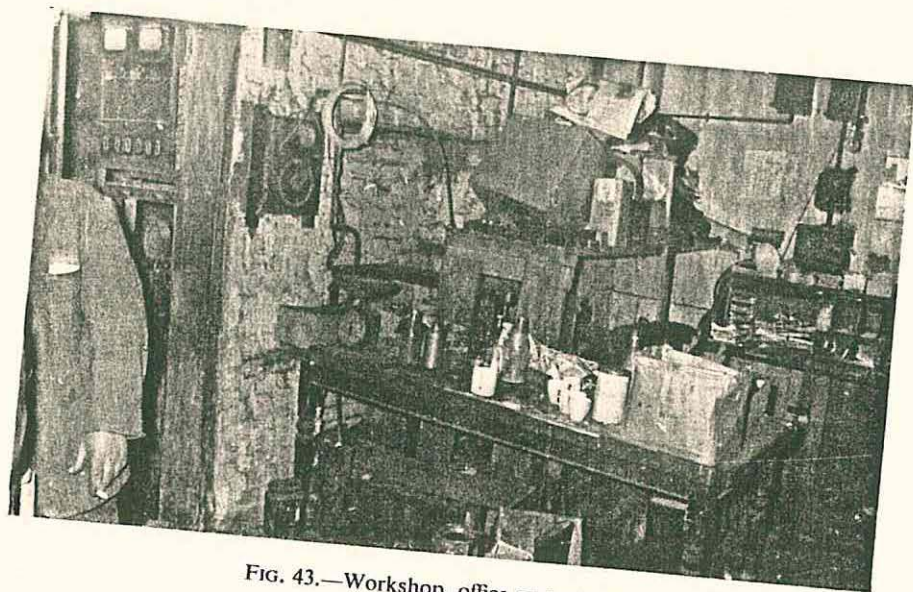


FIG. 43.—Workshop, office or canteen?



FIG. 44.—Flatted factory in Birmingham. (*Photograph by courtesy of the architects, Philip Shelcker, in association with A. G. Sheppard Fiddler.*)



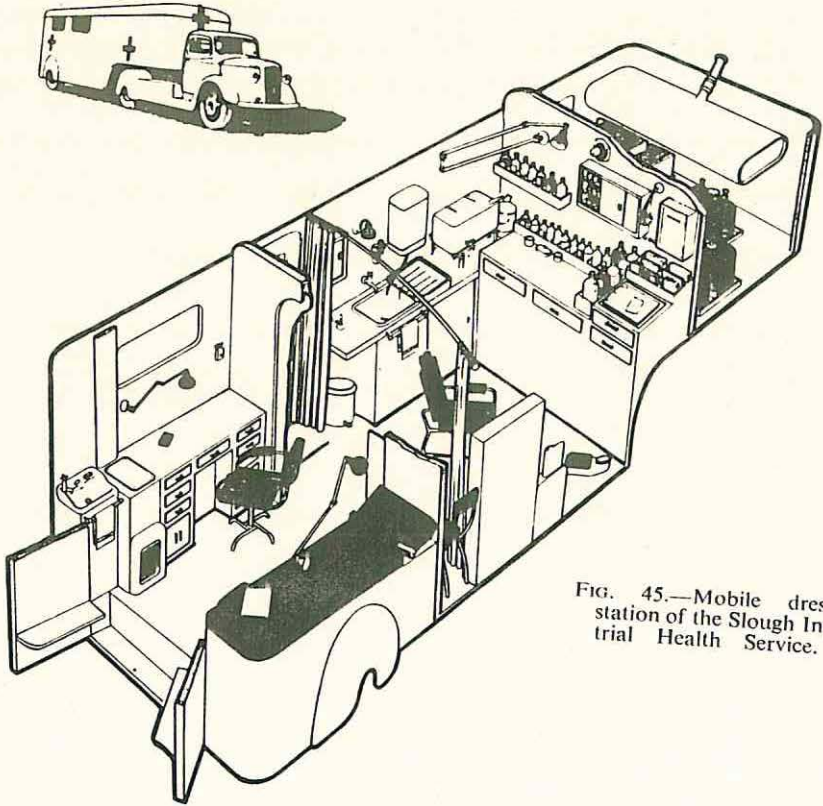


FIG. 45.—Mobile dressing station of the Slough Industrial Health Service.

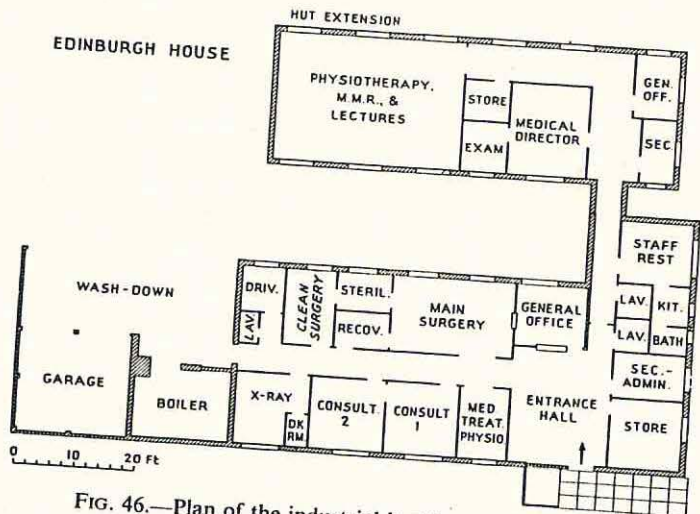


FIG. 46.—Plan of the industrial health centre at Harlow.

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that better health and lower sickness-absence rates in office workers will follow as much from improvement in the social environment as the physical.

### OTHER NON-INDUSTRIAL EMPLOYMENT

Agriculture is the biggest single industry in Great Britain and there are about half a million farm and agricultural holdings in the country. Two-thirds of these rely substantially on the farmer and his family for labour. Accidents are not uncommon on farms, especially when tractors and circular saws are used. Toxic hazards from the use of insecticides are increasing, but in the main the health problems on farms are due to their relative isolation and consequent delay in treating minor injuries. The Agriculture (Safety, Health and Welfare) Act, 1956, regulates some dangers and requires provision for first aid. It is, however, more likely to be enforced on large farms employing seasonal labour than it is on the family farm.

Other occupations, such as work in hotels and restaurants, indoor and outdoor entertainment, fishing, shipping, and domestic service, employ small groups and each has its own special problems. To devise an occupational health service capable of meeting the needs of everyone, whatever their job, presents an enormous problem of organization.

### HEALTH NEEDS OF SMALLER WORK PLACES

Viewed individually, the health needs of smaller work places are not always obvious. Nevertheless, collectively they produce a multitude of problems.

#### **Injury and illness at work**

Accidents happen in every kind of work place, though their frequency and nature depend on the processes undertaken. In the small factory, efficient first aid for cuts, burns, chemical splashes and foreign bodies in the eye can speed recovery and prevent loss of working time. More skilled treatment that can be provided by the industrial nurse or doctor is seldom available; the second line of defence, therefore, is usually the hospital casualty department.

Illness at work is often trivial; for example, the severe cold, dysmenorrhoea, mild dyspepsia, or headache. The problem here is one of medical common sense, in which those responsible for first aid are not usually trained. Aspirin or APC tablets are usually found in the smallest first-aid boxes, together with a jumble of miscellaneous bottles and remedies. The routine for those taken ill at work, when obviously beyond the home-medicine-chest stage, is referral to the family doctor. This involves waiting either for an evening surgery or for a home visit. In the absence of any efficient industrial health service, minor accidents and illnesses occurring at work are substantial causes of absenteeism which can be prevented.

#### **Medical examinations**

In smaller work places, the only examinations are, as a rule, those made by the appointed factory doctor. Such examinations, of young people and workers in dangerous processes, may take place in the doctor's own surgery or in primitive

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conditions in the factory, and be done in such a manner as to be of little value. Examinations of young people, properly carried out, with the emphasis on counselling rather than detecting defects, can be of real value in helping the difficult transition from school to work (Herford, 1957). In addition, pre-employment examinations are desirable in selected jobs; for example, foundry workers, crane drivers, lorry drivers and chemical operatives. Examination after prolonged absence from work, with a view to fitting the job to the capacity of the worker, is also well worth while. In the smaller work place, such examinations are almost unknown.

### The working environment

The survey at Halifax, sponsored by the Ministry of Labour and National Service (1958), lists the defects in the working environment found in 797 factories, employing 28,699 workers. Some of the results are summarized in Table IV.

TABLE IV  
WORKING CONDITIONS IN 797 HALIFAX FACTORIES

<i>Working conditions</i>	<i>Cleanliness (percentage)</i>	<i>Washing facilities (percentage)</i>	<i>Overall environment (percentage)</i>
Good	—*	18	14
Satisfactory	72	49	61
Unsatisfactory	28	33	25

\* The "good" category was not used in the classification of cleanliness.

Studies were made of heating and ventilation, air space, wash places, sanitary accommodation, wall decoration, floor construction and cleanliness, seating, natural and artificial lighting, noise and plant layout. In the factories employing up to 10 persons, washing facilities, cleanliness, lighting and temperature were the worst features. In the group as a whole, poor ventilation was the most common defect. In the food processing factories, conditions were generally good.

Improvement in the working environment must be a combined operation, depending on co-operation between management, workers and the factory inspectorate. If to these can be added day-to-day or regular visits of industrially trained nurses and doctors, not as inspectors but as colleagues, a slow but steady pressure towards improving working conditions can be maintained. Statutory provisions for clean running hot and cold or warm water in smaller factories has been greatly strengthened under the Factories Act, 1959.

The environment of workers other than factory operatives is largely unknown, and at present there is no comprehensive legislation to provide for their health, safety and welfare. It is known that conditions in many small offices and shops leave much to be desired; but whatever statutory provision is ultimately made, regular visits by nurses and doctors will certainly be helpful in bringing about any improvement.

### Specific hazards

Advice on the medical and safety aspects of any particular machinery, chemical or physical process is seldom sought by the manager of a small factory, except occasionally from the supplier of the equipment or product. The police function

of the factory inspectorate inhibits approaches for advice, even though it would be willingly given if sought. A routine three-monthly visit by a doctor can provide the opportunity for manager and workers to discuss their problems. Where there is mutual respect, advice is often accepted, as a result of persuasion rather than police activity, though the latter will still be needed for the few.

### EXISTING SERVICES

The environmental standards in our factories have improved greatly during the last century. This improvement has occurred both as a result of greater knowledge and concern about hygiene generally, and the activities of the official inspectors. The factory inspectorate with its full-time district, medical and other specialist inspectors, aided by the appointed factory doctors, have enforced the Factories Acts widely over the country. The public health inspectorate through its medical officers of health and health inspectors have also enforced those sections of the Factories Acts which come within their jurisdiction. However, though the worst conditions and practices of the past may have gone, many small slum factories still exist (Figs. 42 and 43). In a few areas in Birmingham and London where small factories have been displaced by slum clearance schemes, new "flatted factories" or "unit workshops" have been built (Fig. 44). Such establishments provide an unrivalled opportunity for developing and maintaining an excellent physical environment.

The size of the two inspectorates is, however, inadequate for the problem today. Further, the value of their inspections is reduced by the confused overlap of their functions. Where a hazard in a small work place comes to the notice of the factory inspectorate, investigation is thorough and the remedies effective, but all too often the conjunction is a matter of chance. The employers dislike being visited because of the police powers vested in the inspectorate; yet, in our experience, once initial suspicion has been overcome, a happy and useful relationship can be established.

Where a small work place is part of a large concern, there is often a medical department at headquarters which determines the pattern of the firm's health services. Typically, there is an industrial nurse, and monthly, quarterly or *ad hoc* visits from a full-time industrial medical officer. Sometimes a local general practitioner (often the appointed factory doctor) is employed for one or more sessions a week; where men only are employed, the nurse may be male. This pattern is seen in factories and some non-manufacturing units; for example, some of the nationalized industries and a few of the large multiple stores.

More usually, there is a self-appointed first-aid worker, with some nursing or ambulance experience, sometimes acquired in the armed forces; he may also be the foreman or charge-hand. Often the grubby first-aid box is found in the boss's office or the storeroom, which may be locked up. Any problems beyond the scope of the first-aid worker are referred to the local hospital casualty department. Local general practitioners are seldom able to help with casualties because they cannot neglect their own surgeries, or because they are out on their rounds. Occasionally a medium-sized factory with a full-time nurse will make her services available, without extra charge, to smaller neighbours. Such informal arrangements often work well.

The Radiological Protection Service is an example of a special official service

available, on payment of a fee, to anyone using radioactive sources. There is, however, great difficulty in getting appropriate scientific investigations of many other environmental problems. Local hospitals are usually helpful over biological tests, such as blood counts and liver-function tests, but the need for an occupational hygiene laboratory service is familiar to all doctors who work in industry.

There is no doubt that the most effective and economic health care for small working units is provided by a co-operative industrial health service. The prototype of these services is that on the Slough Trading Estate, developed by Dr. Austin Eagger, which employs four full-time doctors, a team of part-time consultants, and a substantial nursing and physiotherapy staff. There is an occupational hygiene laboratory, available on a fee basis to non-member firms anywhere in the country. Nearly 200 firms, employing 17,000 workers, belong to the service. There is a splendidly equipped central clinic, two dressing stations, and a mobile surgery (Fig. 45). The cost of the service, excluding its residential rehabilitation unit, is about £32,000 per annum. Members' subscriptions amount to about £18,000 per annum, most of the balance being met by a contribution from the North-West Metropolitan Regional Hospital Board (Slough Industrial Health Service, 1957).

The Harlow Industrial Health Service is broadly similar to the Slough service, but is on a smaller scale, and is staffed by local general practitioners working a rota basis. It operates from an industrial health centre (Fig. 46), located in the centre of the main industrial estate, and a second smaller centre on a second estate is now under construction. The service costs about £12,500 per annum and members' subscriptions at present amount to about £8,500 per annum. The deficit is met by a grant from the Nuffield Provincial Hospitals' Trust.

Like the Slough service, the Harlow service is fully mobile, the sisters doing daily rounds of member firms for dressings and treatment. First-aid boxes are supplied and stocked by the service, and workers are trained in first aid. Besides seeing patients at the centre, each doctor has a special responsibility for one or more factories, which he visits regularly, to see patients and to advise on environmental problems. The service has been extended to cover building sites, warehouses and shops. There are at present about 45 member firms, with something over 6,000 workers. It is hoped that, as the town and its industry grows, the service will become self-supporting (Taylor, 1958, 1959).

The Central Middlesex Hospital Occupational Health Service is the newest venture in this field, started in 1957 by Dr. T. O. Garland. It differs from the others in that it is being built in an older, ill-planned, and congested industrial area and is based on a hospital. In other respects, it aims to give the same kind of mobile service as at Slough and Harlow.

Professor R. C. Browne in Newcastle is planning yet another variant on the pattern, based on his University Department of Industrial Medicine. In return for a much smaller subscription, member firms will receive advice on industrial hygiene and workers can be referred to Professor Browne's out-patient department. This departure from the pattern built around a casualty service will be of special interest, since both Dr. Eagger and Lord Taylor have found the approach to industrialists and workers has had to start from the provision of an efficient service for treating casualties.

## PLANS FOR THE FUTURE

The omission of an industrial health service from the comprehensive cover provided by the National Health Service Act of 1947 was due largely to ignorance as to the means by which the desired effect could be achieved. The Dale Committee of 1951 expressed pious hopes that the omission would be remedied, but made no practical proposals. It is still undecided how such a service should be run and who should run it. Faced with the obvious need to treat casualties and those taken sick at work, industry has started to develop services on its own. By 1955, a review of 21,693 factories showed that 421 had full-time doctors and 3,195 part-time doctors, and there has since been further growth (Ministry of Labour and National Service, 1955). Employers are creating piecemeal an industrial health service, despite the lack of an official plan. So far this has been mainly in the large firms, but the Halifax survey confirms the need in the smaller ones too. Indeed, the real problem in any national plan is how to meet the needs of the 217,000 small factories and the shops, offices, warehouses, building sites and other work places in which more than half our workers are employed. It is clearly not possible, in terms of both nursing and medical manpower, to try to meet the needs of each working unit individually. The most practical solution is a collective service, or rather a series of collective services, each on a local or area basis. For success, each service must fulfil the following criteria:

(1) It must have an entity of its own, whether it is based on an existing factory medical department, an *ad hoc* industrial health centre, or a hospital. This is essential to gain the support of industrial users, and of the workers, and to inspire the loyalty of those who provide the service.

(2) Both management and workers must participate fully in its running and control. In the Slough, Harlow and Central Middlesex services, this has been achieved by the creation of non-profit-making charitable companies, with fully representative controlling councils.

(3) Its nurses and doctors must be fully mobile, so that the service penetrates regularly, as well as whenever specially needed, to the workshop floor.

(4) It must provide fully for the treatment of minor and intermediate casualties and ailments occurring at work, up to the point where transfer to hospital or bed-care at home is necessary.

(5) It must provide for medical examinations whenever these are indicated for occupational reasons.

(6) It must include the study of the working environment, and specific occupational hazards.

(7) It should train and supervise the work of those responsible for first aid.

(8) It should make minimum calls on the pool of skilled nursing and medical personnel available. Though there must be a nucleus of full-time nurses and doctors, much of the work can and should be done by general practitioners. To play their part effectively, however, they must be in partnership or group practice, and must receive some special training in industrial medicine.

In the first instance, such a service will be judged by both management and workers by its success in saving unnecessary loss of working time. Once an efficient casualty service has been built and confidence established, advice on

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occupational health and the working environment follows, and is accepted quite naturally.

Patterns will vary with needs in different areas. Detailed area surveys and plans are therefore the first essential. Whether the whole cost should ultimately be carried by industry, or what form any continuing State contribution should take, is an open question. The pilot experiments have, however, conclusively shown that substantial initial financial support from outside is essential. None of the three pilot schemes could have been created by small industry alone. The financial stimulus came from either the Nuffield Provincial Hospitals Trust or the Nuffield Foundation. In a national plan, only the State can provide the initial pump-priming which is a prerequisite for success.

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