

Rising sickness absence in Great Britain— A general practitioner's view*

ADRIAN SEMMENCE, M.D.

Abingdon, Berks.

THE amount of time off work due to sickness in Britain is causing concern.^{1, 2, 3, 4} The problem is not uniquely nor even principally Britain's, and sickness absence is rising in other western industrial countries such as Holland,⁵ West Germany,⁶ Sweden,⁷ and also in the USA.⁸

There has been a great deal of research into the association of industrial, occupational, socio-economic, geographic, cultural and other factors with increased sickness absence and it has been said that in the broad field of occupational medicine more studies have appeared under the label of absenteeism than under any other heading.⁹ There is, however, a dearth of studies of individuals with high sickness absence records over a period of years; it is to such studies that the general practitioner working in the British National Health Service, responsible for the co-ordination of all medical and social services for a defined list of patients, is in a unique position to contribute.

The cost in Britain

In the year ending June 1967, 301.1 million working days were lost in Great Britain due to certified sickness.¹⁰ This is in addition to the considerable amount of sickness absence not recorded in these statistics, for example, most certified absence terminating before the fourth day of incapacity, absence due to industrial injury, uncertificated sickness absence, sickness occurring in uninsured workers such as widows and married women, absence of most non-industrial civil servants of less than six months' duration or of persons becoming chronically ill (for more than a year) before paying three years' National Health Insurance contributions. The cost to the National Insurance fund in 1966-67 of £261.8 million was only a fraction of the cost to the community in lost production, estimated at £1,200 million,¹⁰ and of the cost borne by many firms in retaining an extra 5 per cent of employees to cover sickness absence. Comparison with the fewer than three million working days lost through industrial stoppages in 1967¹¹ gives a further perspective of the size of the problem.

Since the mid 1950's there has been a substantial increase in episodes of sickness absence, affecting short absences in particular, most evident in the summer months¹² and involving mainly the under 45's.¹³ This is not to say that the younger age groups are responsible for most working days lost; the chronic sick (the 1 to 2 per cent of the insured population who have been sick for more than a year) account for a third of the total work-loss days and the proportion of the chronic sick in the younger age groups is decreasing but increasing in the older.¹⁴⁻¹⁵ Nor is it to say that the average number of days lost in a year has altered greatly; it was 13.0 in 1953-54 for the average male¹⁴ and was 14.8 in 1967¹⁶ (figure 1). What it does mean is that the decrease of absence due to the eradication of industrial hazards such as silicosis and of chronic illnesses such as tuberculosis has been matched by an increase in days lost for other reasons, either new diseases or an increased prevalence of some of the old, and that the decrease in prolonged

*A report to the Nuffield Foundation on a Travelling Fellowship to Holland, West Germany, Sweden, the United Kingdom, Canada and the United States of America in 1969-1970.

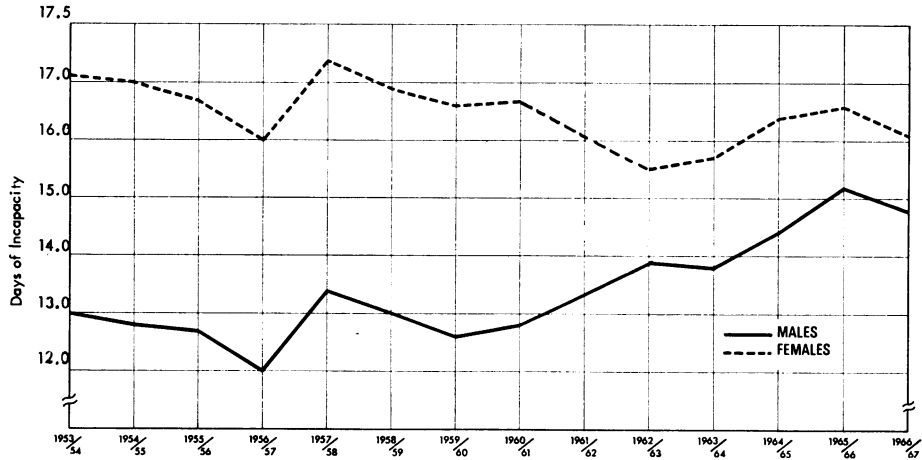


Figure 1

Days of incapacity per insured worker per year.^{14 16}

TABLE I

APPROXIMATE COMPARISON BETWEEN 1954/55 AND 1960/61 IN TERMS OF SPELLS COMMENCING AND TOTAL DAYS OF INCAPACITY STANDARDIZED WITH EQUIVALENT 1951 POPULATION. SELECTED CAUSES* WHERE A TREND WAS PRESENT OVER THE SEVEN YEARS.¹⁸

Cause	MALES		FEMALES	
	Days	Spells	Days	Spells
<i>Falls: 1954/55 to 1960/61</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Tuberculosis (respiratory)	58	50	63	47
Diseases of skin	24	22	23	22
Rheumatism	21	11	32	17
Appendicitis	20	19	31	20
Ulcers of duodenum	33	22	—	—
Ulcers of stomach	27	16	—	—
Asthma	27	17	—	—
Pleurisy	30	—	37	—
Anaemias	19	—	26	—
<i>Rises: 1954/55 to 1960/61</i>				
Sprains and strains	64	66	43	49
Displacement of intervertebral disc	58	76	63	78
Nervousness, debility, headache	34	28	16	19
Vascular lesions	24	33	70	—
All injuries and accidents	18	37	15	28
Psychoneuroses and psychoses	8	19	24	18
Diabetes mellitus	23	40	—	—
Bronchitis	17	9	—	—
Arteriosclerotic and degenerative heart disease	12	21	—	—
Complication of pregnancy	—	—	94	98
Abortion	—	—	97	83
All causes	—	16	—	16

Where no figures are shown, no discernible trend was present.

TABLE II
SICKNESS BENEFIT
Days of certified incapacity in various periods (a) from specified causes and corresponding age standardized rates per 1000 persons at risk (b).^{1a}

Detailed list numbers	Unit	Males				Females					
		1954-55		1962-63		1960-61		1962-63		1967-68	
		186.51	12787	0.90	1.18	75	84	120	1.82	134	117
All causes	Million Rate	199.88	212.79	190.26	250.92	16678	76.07	16980	15452	76.66	17563
Diabetes mellitus	Million Rate	12766	13880	0.64	1.71	0.58	0.47	1.20	1.17	114	114
Arteriosclerotic and degenerative heart disease	Million Rate	11.00	12.01	2.11	16.46	373	408	389	379	1.63	408
Bronchitis	Million Rate	26.11	33.85	4.99	1060	4.69	4.60	4.99	1098	4.60	1096
Sprains and strains of joints and adjacent muscles	Million Rate	1612	2208	0.44	2194	986	1098	933	0.69	0.71	160
Injuries of other and unspecified nature	Million Rate	1.35	2.29	0.83	5.12	119	141	83	1.24	1.24	1.58
		5.13	6.20	1.24	9.02	262	251	229	1.24	1.24	361
		354	404	229	589						

(a) Commencing on first Monday in June
(b) 1954/55 and 1960/61 standardised to population in 1951, 1962/63 and 1967/68 standardized to population in 1962/63.

absence due to chronic disease in the younger age groups has been absorbed by an increasing number of short term absences in these groups.

The diagnoses

In Great Britain diagnoses are classified from the general practitioner's final medical certificate. Patients see these certificates so that the more frightening or disreputable disorders tend to be under-reported. In 1961, for example, there were only 3,540 spells of sickness absence ascribed to malignant disease in men but there were 24,000 deaths in males aged 15-64 due to it, *i.e.* seven deaths for every spell of sickness.¹⁷ Mental illness is now more socially acceptable and part of its reported increase may be because the general practitioner is less likely to misrepresent it on a medical certificate.

In spite of these inaccuracies trends can still be discerned. The dramatic fall in absence due to tuberculosis, both in new episodes of disease and days lost per episode (table I) has been mentioned before. Sickness absence due to some other diseases has also decreased—appendicitis, skin disorders and peptic ulcers among them. Spells and days lost to rheumatism have also declined but have been more than matched by the rise ascribed to prolapsed intervertebral disc—a decline due perhaps more to diagnostic fashion than to a reduction in disease. Backache alone still results in as much time lost at work as strikes.

TABLE III
NEW CLAIMS TO SICKNESS BENEFIT IN ENGLAND, WALES AND SCOTLAND.¹⁸

<i>Year</i>	<i>Weeks ended</i>	<i>Average of total weekly new claims (thousands)</i>	<i>Epidemic influenza virus</i>
1956-57	25/12-2/4	164.5	
1957	13/8-19/11	279.1	A2
1957-58	24/12-1/4	204.3	A2
1958-59	23/12-31/3	248.8	A2 and B
1959-60	22/12-29/3	183.5	
1960-61	20/12-28/3	244.7	A2
1961-62	19/12-27/3	241.7	B
1962-63	18/12-26/3	246.1	A2
1963-64	17/12-24/3	209.4	A2
1964-65	22/12-30/3	217.2	A2 and B
1965-66	21/12-29/3	275.4	A2 and B
1966-67	20/12-28/3	207.3	

A rise in time off work because of disorders associated with prosperity and mechanization, diabetes mellitus for example, has also occurred (table II). Incapacity due to arteriosclerotic and degenerative disease has shown a marked increase for men every year since 1958-59. In 1966-67 it accounted for 15 million male work-loss days, an increase of about 50 per cent on the 1958-59 figures.¹¹ Accidents and violence now rank fourth in causes of death in Great Britain and must be responsible for part of the rise in time off work due to injuries.

Bronchitis cost over 38 million days in 1967-68 compared to nearly 25 million in 1954-55 (table II). Each year the most days of incapacity are lost through respiratory diseases (66 million in 1966-67, over half of them due to bronchitis).¹⁰ Though the effect of an influenza epidemic on new claims is enormous (table III) influenza is responsible for only a small proportion (2 per cent in 1966-67 for example)¹⁰ of the total of work loss days.

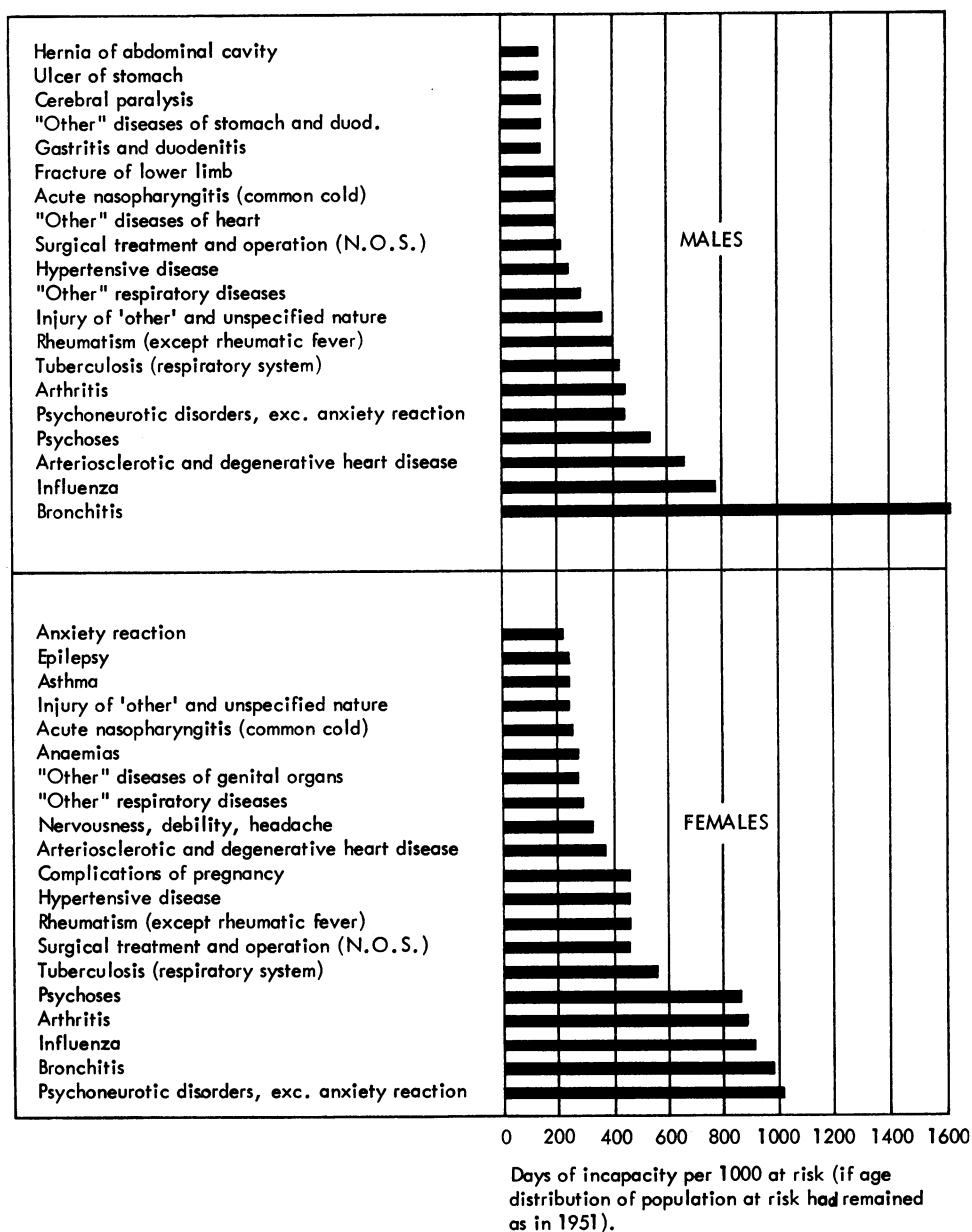


Figure 2

Working days lost per 1,000 insured population (of equivalent 1951 age distribution) by selected causes, Great Britain 1960-61.¹⁸

Though bronchitis contributes most to the total of work loss days (figure 2) it is not as important a cause of long-term illness as the psychoses. Only 600 (0.7 per cent) of the 86,300 men unfit for work because of bronchitis on 30 May 1964 had been unfit for 15

years or more, whereas 8,080 (31 per cent) of the 25,860 men with psychoses had been so (table IV).

A major part of the rise in sickness absence in the past decade has been under the heading 'symptoms, senility and ill-defined conditions'. This, together with mental, psychoneurotic and personality disorders accounted in 1966-67 for 11 per cent of total sickness benefit expenditure.¹⁰ Time off work due to new diseases, such as beryllium and benzene poisoning, or mesothelial tumours from exposure to crocidolite, is counted in the industrial injury benefit statistics and plays no part in the rising sickness absence figures.

TABLE IV
NUMBERS OF MALE CLAIMANTS UNFIT FOR WORK ON 30 MAY 1964 FOR OVER 15 YEARS BY SELECTED CAUSES (ALL CAUSES 18,300)¹⁵

	<i>Number</i>	<i>Percent</i>
Tuberculosis	680	3.7
Syphilis	40	0.2
Neoplasm	20	0.1
Multiple sclerosis	480	2.6
Cerebral paralysis	580	3.2
Arteriosclerotic and degenerative heart disease	340	1.9
Bronchitis	600	3.3
Arthritis and rheumatism	960	5.2
Accidents	680	3.7
Psychoneuroses and psychoses	9,200	50.3

Group factors in sickness absence in Great Britain

In general, women lose more time due to medically certified illness than men, lower social classes more than upper, the old more than the young, employed more than self-employed, Welshmen and northern Englishmen more than southern Englishmen. The proportion of men who become incapacitated for work from 'all causes' is highest in Wales, followed by regions in England north and west of a line from the Humber to the Severn, and is lowest in regions south and east of a line from the Wash to the Isle of Wight. A similar relationship occurs for a wide range of disease groups and confirms what might be expected from mortality data.²⁰ The relationship between social class, occupation and sickness absence due to 'all causes' and some illnesses is shown in tables V and VI and the correlation between social class (and certain environmental

TABLE V
AGE STANDARDIZED INCEPTION RATES OF INCAPACITY AMONG MEN IN DIFFERENT CLASSES OF OCCUPATION¹¹
(PERSONS INCAPACITATED PER 100 MEN AT RISK)

<i>Class of occupation</i>	<i>Causes of incapacity</i>			
	<i>All causes</i>	<i>Bronchitis</i>	<i>Arthritis and rheumatism</i>	<i>Psychoses and psychoneuroses</i>
Professional and intermediate (I and II)	18	1.5	0.7	0.4
Skilled (III)	28	3.5	2.5	0.7
Partly skilled (IV)	31	4.3	3.0	0.8
Unskilled (V)	35	5.7	4.0	1.3

factors) and mortality in table VII. Although factors of occupation and environment play the major part in the differences there may also be ethnic differences in illness behaviour and sickness absence, illustrated by Zola's studies²¹ of Italian, Irish and Anglo-Saxon Americans, or even religious differences, exemplified by the greater number of complaints by Roman Catholic than by Protestant workers in Holland.⁹

The higher sickness absence rates of women, who lost on average 17.6 days in

1967-68 compared to the men's 16.3¹⁹ is shown in figure 1, and the increase in sickness absence that occurs in both sexes with increasing age is shown in figure 3.

The rate of sickness absence of the self-employed has risen steeply since 1949, although self-employed men received only 1.79 weeks of sickness benefit in 1967-68 compared with 2.64 weeks by employed men.¹⁹ The self-employed now have similar long term illness rates but much lower short term,¹⁸ perhaps because a self-employed person can carry on his normal occupation at home during a minor illness while the employee cannot.

TABLE VI

AGE STANDARDIZED INCEPTION RATES OF INCAPACITY AMONGST MEN IN THREE DIFFERENT OCCUPATIONAL GROUPS¹⁷

(ALL MEN, EACH CAUSE—100)

Diagnosis	Men incapacitated per 100 at risk		
	Agricultural workers	Coal Miners face workers	Professional and technical workers
Acute upper respiratory tract infection	40	284	87
Influenza	60	234	80
Bronchitis	47	205	51
Chronic sinusitis	55	300	97
Arteriosclerotic and degenerative heart disease	33	61	100
Psychoses and psychoneuroses	45	196	64
Arthritis and rheumatism	60	338	37
Gastro-enteritis and colitis	38	335	79
Eczema and dermatitis	48	283	57
Peptic ulcer	50	263	44
All causes of incapacity	67	188	75

Examples of industrial groups found to have higher sickness absence rates are day rather than shift workers,²² workers with less than three weeks' holiday a year, and workers in large rather than small factories.³ The continuing controversy among behavioural scientists^{9, 23} on the significance of these and other related findings highlights the difficulty of formulating theories of group, far less individual, sickness absence rates.

Individual proneness and prediction of liability to illness

For disease or illness to occur one factor, the 'necessary cause'—bacterial, viral or chemical for example—must exist but its presence alone is not sufficient to produce disease and other factors must coincide; herpes labialis is a good example. King²⁴ has described how the study of disease has progressed from the germ theory and doctrine of specific etiology to social medicine and medical sociology. Many studies^{25, 26, 27} have shown that some people have a greater likelihood of becoming ill than others, and the familiar face syndrome²⁸ is a well recognized one in general practice. Hinkle²⁵ points out that in any working environment the potential causes of disease are widespread and yet most of the time only a few people become ill. In observing a population of 3,000 subjects over 20 years he found that those people having the greater amount of sickness absence not only had more episodes but had also a greater variety of illnesses, ranging from overwhelming bacterial infection to new growths and to disorders of affect and thinking. Hagnell,²⁹ reviewing the population of a Swedish town 10 years after a preliminary study, found that a group who had given a higher score on a psychiatric

TABLE VII

CORRELATIONS OF MORTALITY FROM ALL CAUSES DURING 1958-64 WITH LOCAL ENVIRONMENTAL INDICES IN THE COUNTY BOROUGH²⁰

<i>Environmental index</i>	<i>Sex-age groups</i>			
	<i>Male</i>		<i>Female</i>	
	<i>45-64</i>	<i>65-74</i>	<i>45-64</i>	<i>65-74</i>
<i>Socio-economic indices</i>				
Population density	+0.49	+0.43	+0.41	+0.35
Overcrowding in households	+0.48	+0.44	+0.32	+0.31
Social class	+0.55	+0.64	+0.48	+0.57
Education	+0.45	+0.58	+0.43	+0.62
Pre-war unemployment	+0.62	+0.50	+0.55	+0.45
Income levels	+0.60	+0.66	+0.50	+0.68
Households per car	+0.75	+0.66	+0.72	+0.60
Percentage pop. aged under 15	+0.40	+0.53	+0.31	+0.46
Migration	+0.48	+0.51	+0.36	+0.44
<i>Air pollution</i>				
'Domestic' air pollution	+0.74	+0.67	+0.57	+0.56
Smoke	+0.48	+0.45	+0.37	+0.42
SO ₂	+0.53	+0.51	+0.39	+0.40
<i>Climate</i>				
Latitude	+0.65	+0.58	+0.53	+0.60
Sunshine	-0.53	-0.55	-0.73	-0.67
Temperature	-0.54	-0.53	-0.54	-0.67
Rainfall	+0.52	+0.38	+0.61	+0.44
<i>Water supplies</i>				
Total hardness	0.55	-0.59	-0.58	-0.58
Calcium content	0.66	-0.64	-0.65	-0.65
$r < -0.33$ or $r > +0.33 : P < 0.01$ $r < -0.41$ or $r > +0.41 : P < 0.0001$				

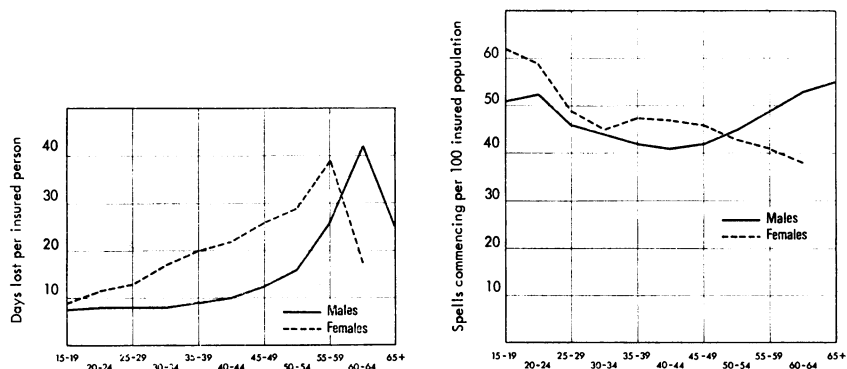


Figure 3

Working days lost per insured person by age. Great Britain, 1957/58¹⁸

Spells commencing per 100 insured population by age. Great Britain, 1957/58¹⁸

screening questionnaire had developed a significantly increased amount of carcinoma and other diseases.

There is statistical evidence also for this theory of proneness to illness, based on the frequency distribution of illness episodes in populations following a negative binomial rather than a Poisson (random) curve.^{30, 31, 32} Proneness, however, is not the only explanation of such a curve²⁶ and one important source of bias can be the 'tendency to report' rather than 'tendency to have' phenomenon which has confounded research into accident or sickness proneness; for example, some patients may attend for causes that others would not, and again one doctor may certify sickness for reasons that his colleagues would not. Mechanic³³ uses the term 'illness behaviour' to refer to the ways in which given symptoms may be differently perceived, evaluated and acted (or not acted) upon by different kinds of persons. In the presence of symptoms an individual has at least three choices; he may seek diagnosis, enter into some treatment, or absent himself from work. He may do all, some, or none of these. Parsons^{34, 35} has defined the rights and obligations of the sick rôle in Western societies. The invalid is exempt from normal social responsibilities, and it is recognized that he is not to blame for his state. His obligations are a desire to get well and to seek help to do so. Conflict between social expectations and personality dynamics centres on the secondary gain that can accrue from the rights of the sick rôle—permission to stay off work among them. In a survey of employees³⁶ sorted by psychological screening questionnaires into three groups of illness vulnerability, the most vulnerable reported more influenza to the company health service than the least. However, examination of all employees showed that the least vulnerable had just as much serological evidence of influenza as the most. That is, the differences were due to different reporting characteristics rather than to differences in susceptibility to infection.

This concept of illness behaviour does not settle the argument whether illnesses are due to differences in individual proneness or in differing individual perceptions, though studies of the mortality of elderly people removed from their home into an institution³⁷ and of the mortality of bereavement³⁸ suggest that the psychological stress of separation leads to illness rather than merely to illness behaviour. But as Cobb³⁹ suggests, the concept broadens the interpretative base where appropriate without ruling out possible effects of psychological distress on the illness itself.

In predicting liability to illness past experience has been the most useful index so far. Hinkle²⁵ has shown that, though individual patterns of illness fluctuate from year to year, there is frequently a positive correlation between past and present illness episodes in studies over longer periods. Glasser⁴⁰ used a mathematical model based on seasonal variability of absence and individual absence record in 1961 to predict, very accurately, the absence behaviour of a group of 4,548 employees of the *New York Times* during 1962 (table VIII).

Study of family records can also predict sickness experience and Huygen⁴¹ at Nijmegen with family records going back to 1943 and a stable population is able to predict illness experience, or at any rate illness behaviour, in many of his patients. Marinker⁴² demonstrates how illness experience repeats itself in succeeding generations and general practice studies^{27, 43} show how a small group of patients account for a considerable part of the illness experience of a practice over a number of years.

TABLE VIII
OBSERVED AND EXPECTED MEAN NUMBER OF
ABSENCES OF NEW YORK TIMES EMPLOYEES IN
1962 CONDITIONAL UPON 1961 EXPERIENCE³⁵

1961 Absences	Mean number of absences 1962	
	Observed	Expected
0	0.43	0.63
1	0.94	1.08
2	1.51	1.53
3	1.94	1.98
4	2.51	2.43
5	2.64	2.88

Physical examination or other cross-sectional examination limited to one point in time is a relatively poor predictor (though the accuracy of prediction obviously increases with increasing frequency of examination) and psychological characteristics are in some respects more valuable as predictors of future health than physical examinations alone.²⁵ Base line measurements for any longitudinal study of sickness absence should, therefore, include psychological assessment. Considerations of time, lack of skilled help in psychological investigation in general practice and wide variations in the diagnosis of psychiatric illness by general practitioners⁴⁴ suggest the use of self-administered questionnaires in such an assessment. Some of these, such as the Cornell Medical Index or the Minnesota Multiphasic Personality Inventory seem to be too cumbersome for general practice use⁴⁵ but a questionnaire such as Goldberg's,⁴⁶ readily completed and scored, validated in England and producing results which correlate closely with independent psychiatric examination, appears a suitable instrument.

Schilling⁴⁷ points out that the presymptomatic or early diagnosis of chronic disease is a challenge to modern medicine which has not been taken up by hospitals, general practitioners or public health services.

Community measures to reduce sickness absence

In Great Britain there is a significant correlation between incapacity for work due to bronchitis and both smoke and sulphur dioxide content in high density residential areas.¹⁷ Community measures to reduce sickness absence must involve, therefore, the prevention of air and water pollution as well as the control of communicable disease, the reduction of noise, road traffic accidents and the like. There is no doubt, also, that the abolition of cigarette smoking would be the greatest possible single contribution to the improvement of the public health. The price of failure to achieve this over the next decade will mean the death of more than half a million men and women living now, and many millions of man years of lost working time and chronic invalidism.¹⁶

The welfare of disabled people and protection in their occupations are community responsibilities which in Great Britain are recognized as being somewhat unsatisfactory⁴⁸ and are undergoing review. At present all industries except fishing fleets and underground miners must accept a 3 per cent quota of workers on the Register of Disabled Persons though in fact only 52 per cent of firms actually do so.⁴⁸ Some factories where work is done indoors or at benches could accept a higher quota, for example, and positive encouragement for really disabled persons to register would help.⁴⁹

No society has yet removed the entire financial burden of illness from all its workers though most professional workers, for example, in Western societies, with the possible exception of the USA, suffer no income loss during illness unless it is prolonged. For the rest, absence from work due to illness entails some loss of income, presumably to ensure that 'we do not set the reward for illness so high that good health becomes unattractive'.⁵⁰ Although studies have shown unnecessary use of medical services⁵¹ descriptions of unnecessary sickness absence are largely anecdotal⁵² and its extent unknown. The close correlation between social class and occupation and mortality and sickness absence statistics suggests that it may be small. In Great Britain some of the rise in total work loss days since the early 1950's can be accounted for by the accumulation between 1948 and 1958 of previously unrecorded long-term chronic illness work loss days,¹⁸ by the increase in the size of the working population, by the increase in the proportion of older age groups in the working population and by the increasing number of survivors of illnesses previously fatal.

If, however, the amount of pseudo-sickness is large, what community measures can be invoked? The close correlation in the past between unemployment and sickness absence (figures 4 and 5) suggests that a large pool of unemployment results in less

sickness absence. This may have been the case during the world slump of the 1930's, or even in the immediate post-war period, but is not now. High sickness absence in Wales, for example, is paralleled by a high unemployment rate. One would expect, if fear of unemployment were a major factor in reducing sickness absence, that employed non-whites in the USA, because non-whites have nearly double the white unemployment rate,⁵⁴ would have a lower sickness absence rate than whites of the same age, occupation and income living in the same area of the country. In fact the sick absence rate of non-whites is rather higher, on average one day more per year, and factors such as the financial need to work beyond the usual retirement age are thought to play a major part in the

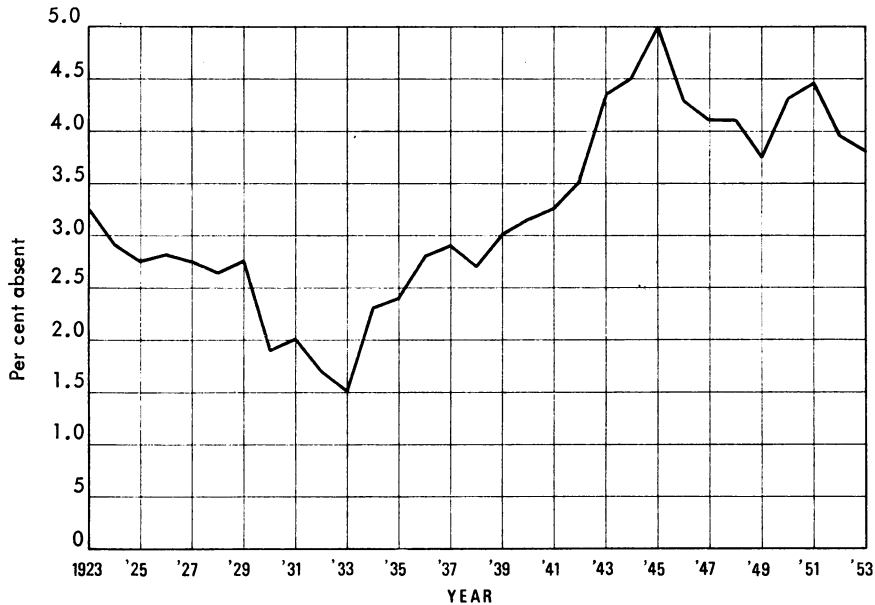


Figure 4

Annual sick absence rates, New York Telephone Company, 1923/53⁵³

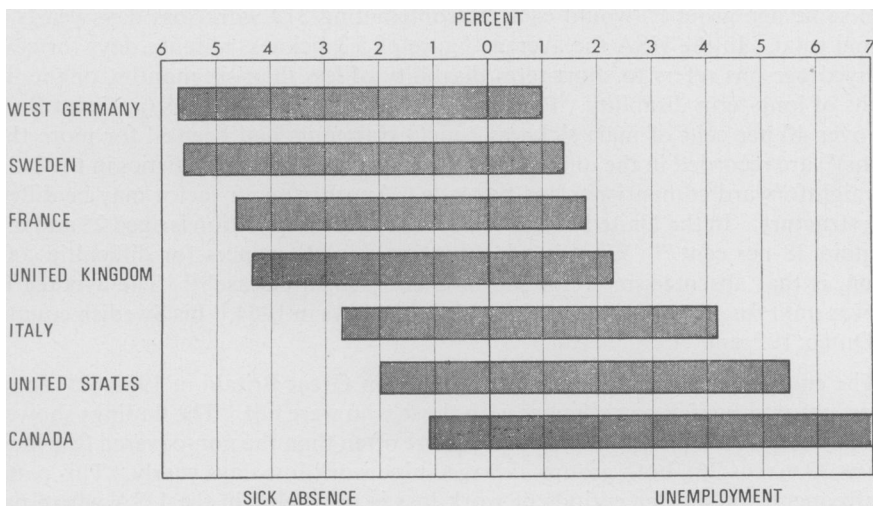


Figure 5

Sick absence (1956) and unemployment rates (1960), selected Western Nations⁵³

difference.⁵⁵ Obviously some correlation between unemployment and sick absence exists, if only because in times of labour shortage people physically or mentally incapable of a proper day's work are given employment.

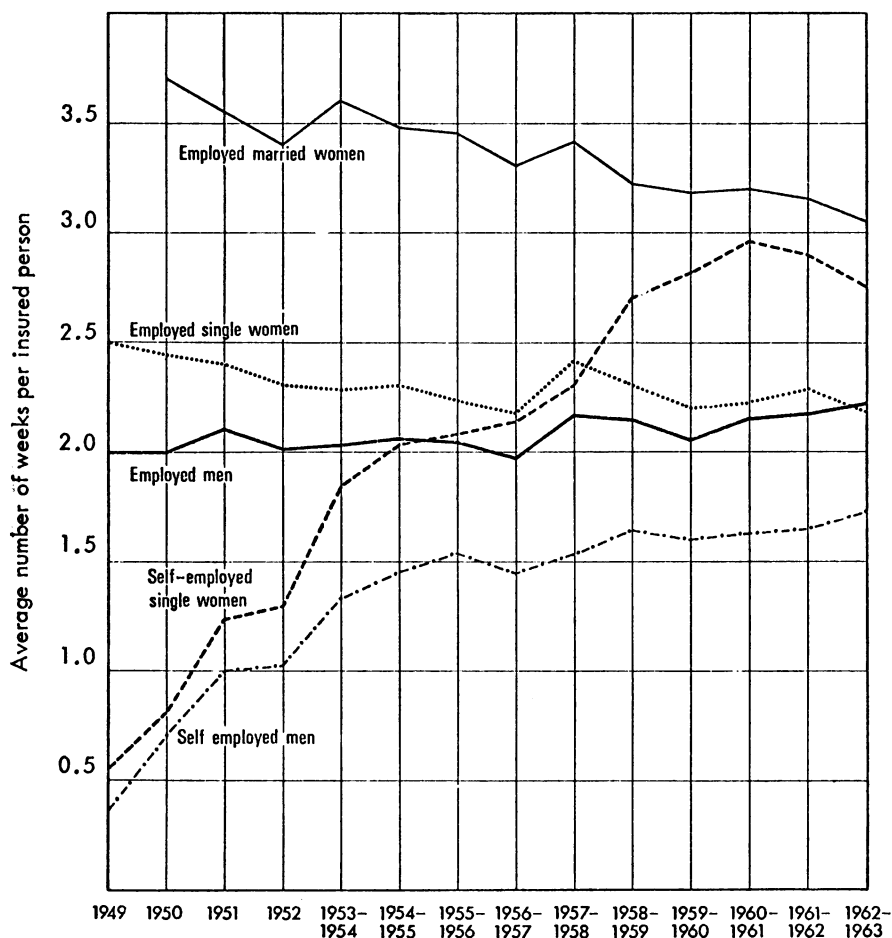
Conversely protection against the financial consequences of illness has been adduced as an important reason for the different responses to illness in Europe and North America,⁵⁰ as American employees are not generally paid during periods of illness. The ease with which the Swedish employee can obtain sickness benefit (the first seven days of illness being self-certified) and his higher social benefits (income related since 1967 and payable from the second day of illness) may be thought important factors in the 17 days off work the average male Swede had in 1967 compared to the 15 of his British counterpart. The difference, however, may be due merely to the fact that sickness absence in Sweden is recorded from the second day of incapacity and not from the fourth as is generally the case at present in Britain. Nor in the United States itself does financial protection against illness appear to have a constant effect on sickness absence. Federal employees, protected, had 6.4 work loss days due to illness in 1967 compared to the 5.3 of private wage and salary workers, a proportion of whom were unprotected. But they in turn were off sick more than state and local government employees, mainly protected, who had 4.8 work loss days.⁵⁶

Problems arise in making international comparisons because, among other factors, there is lack of standardization of age of retirement (67 in Sweden), in defining the size of the working population (in Great Britain only certain working married women are included), in counting work loss days (whether week-end illness is counted for example), and in determining the length of the working year (312 days in Great Britain, 255 in the USA). The report due shortly of the International Collaborative Study of Medical Care Utilization⁵⁷ in 12 areas in the USA, UK, Canada, Finland, Poland, Argentina and Yugoslavia in which work loss days in the sample populations will be among the data recorded, will make international comparisons easier. In a preliminary report⁵⁸ a greater proportion of the population studied in Chittenden, USA, had a greater number of 'disability days' than the population of Chester, England, and it may yet transpire that the gap between the sickness absence rates of the USA and UK is smaller than it appears. Under the British system of recording a large proportion of the 2.3 million male and a smaller proportion of the 3.8 million female severely disabled, non-institutionalized adults aged 18-64 in the USA (and a proportion of the 700,000 institutionalized of the same age group)⁵⁶ would each be contributing 312 work loss days yearly to the national total. In the USA the average figure of 5.3 sickness absence days for currently employed persons refers to short-term disability of less than six months, or the first six months of long-term disability. People ill for more than six months (in Great Britain in 1963 over 40 per cent of male sickness benefit claimants had been ill for more than six months)¹⁵ are recorded in the unemployment and social security statistics in the USA and no straightforward comparisons can be made. Another major factor may be differences in age structure. In the United States 46 per cent of the population is aged 25 and under,⁵⁹ in Britain 38 per cent.⁶⁰ What is apparent, making allowances for difficulties of comparison, is that absenteeism is not yet another 'English disease'.⁶¹ The average British male was unfit for work because of sickness for 14 days in 1964,¹¹ his Swedish counterpart 15,⁷ Dutch 19,⁵ and West German 20.⁶²

The enquiry into incapacity for work made in Great Britain in 1961-62⁶³ compared workers covered by sick pay schemes with those who were not. The findings showed that although the covered group were off work more often than the non-covered (the incidence rate was 30 versus 26), both groups averaged nine work-loss days yearly. This pattern of more frequent but shorter periods of work loss is paralleled in the USA where patients with hospital insurance tend to have a higher incidence of hospitalization but shorter stays⁶⁴ and is precisely the one causing anxiety in Great Britain today, namely that as

younger workers with their more frequent but shorter absences reach middle age their pattern will be superimposed on the less frequent but longer absence presently recorded in older workers.⁴ However, the enquiry and the US hospital data show that duration of incapacity may be shortened when people stay away from work at the onset of illness, or go into hospital early rather than late. In fact, more frequent but shorter absences may yet prevent less frequent but longer, and in terms of total work loss days much more serious, absences.

Nor are measures to exclude selected groups from sickness benefit likely to be helpful. Married women, whose sickness rates are consistently higher than single women, are an obvious target. Three quarters of them already exercise their option of paying only a small sum for accident insurance and are not covered for sickness absence.¹⁹ As can be seen from figure 6, however, in spite of the doubling of maternity related sick-



Notes:

1. Single women include spinsters, widows and divorced women
2. Since 1958-59 short-term illnesses amongst non-industrial civil servants have not been included
3. Figures relate to men aged 15-64 and women aged 15-59
4. The period covering the first half of 1953 has not been shown

Figure 6

Average number of weeks of sickness benefit per insured person per year. Great Britain, 1949 to 1962-63¹⁸

ness that occurred between 1954 and 1960¹⁸ the overall rates of these married women whose absences appeared in the statistics (*i.e.* those electing to pay the full rate) are dropping and it can also be seen that employed single women now have less absence than men. If a working woman is also expected to run a home then this increased sickness absence may be part of the price that the community pays for her contribution to its wealth. In some, mainly communist, countries and in enlightened industrial firms elsewhere these women's needs have been recognized by the provision of nurseries and shopping and other facilities in efforts to reduce absence.

Attempts to limit the range of illness for which sickness benefit is payable are also likely to be unhelpful. In Germany ever since the founding of the first national compulsory sickness insurance scheme (covering, however, only a small part of the labour force) by Bismarck in 1883, free medical treatment, free medicine and cash allowances were not payable in cases, among others, of psychoneurosis and psychosis, nor in congenitally determined illness. The difficulties that arose in determining the emotional content of a physical illness and vice versa, and in deciding, for example, whether blindness due to a congenital squint was compensatable need not be elaborated, and played some part in the abandoning of these restrictions in 1965.

Industrial measures to control sickness absence

With adequate records the occupational health doctor can help in production, in production planning, personnel management and health care policy. Schilling,⁴⁷ for example, found the eye injury rate in an engineering plant was high and on investigation found the lighting of the lathes so poor that the worker had to have his nose almost to the machine to see what he was doing. Improved lighting and goggles reduced the casualty rate.

In collecting such records, grouping workers merely by sex, by five age groups (15 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64) and by four job categories (unskilled labour, skilled labour, administrative staff, executives) results in 40 separate personnel groups, but unless these demographic features are taken into account and statistically evaluated and standardized, differences in accident and sickness rates can give rise to unjustified conclusions. Further subdivision by using the 17 main groups of the International Classification of Diseases (ICD)⁶⁵ to record absences in these personnel groups is not likely to be practical even in the largest factories. Hogerzeil,⁶⁶ therefore, has evolved a simplified diagnostic scheme which can be related to the ICD if necessary. The 'macro-diagnostic' groups consist of:

	<i>Corresponding main diagnostic groups of the ICD.</i>
1. Short-term absence of 1-3 days, irrespective of diagnosis	—
2. Absence due to acute respiratory diseases	VIIIa
3. Absence where the diagnosis is unknown	XVII
4. Absence due to traditional diseases:	
4.1 Subjective diagnoses	V
4.2 Subjective-objective diagnoses	IX, XIII, XVII
4.3 Objective diagnoses	I, II, III, IV, VII, VIIIb, Xa, XII, XIV
5. Absence due to disturbance of menstruation or pregnancy	Xb, XI
6. Absence not terminated on day selected to tabulate results	—

Short-term illness, macro-diagnostic group one, is the particular bane of the industrial medical officer. Though the chronic sick account for a third of the national total of working days lost they are not usually included in industrial data and the industrial medical officer is much more aware of the disruptive effect of frequent short-term

illness on production. Work after the war suggested that the risk in short-term absence was due to a rise in neuroticism in factory workers, higher than in the rest of the population, because of processes of industrialization and urbanization, so that neurosis was said to be responsible for a quarter to one third of all industrial absenteeism in Britain⁶⁷ and two fifths in Holland.⁶⁸ Later psychiatric studies⁶⁹ in samples of the Dutch working population showed, however, that the incidence of mental disturbance amongst factory workers was much lower than earlier studies had suggested and that in any case the majority of neurotics worked with satisfaction. The rise appears to have occurred because relatively minor ill health is no longer ignored or accepted and the diagnosis responsible that called 'sociosis' by de Groot,⁷⁰ loosely interpreted as disorders of well-being to which everyone is subject but which in some people result in absence from work. From the industrial medical officer's or personnel manager's point of view a rise in short time absence points to psychosociological and personnel management problems such as lack of good human relations and job satisfaction or disorganization of a department. Action to be taken involves investigation of the department concerned or of the management of the factory itself if the problem is not localized.

The classical experiments⁷¹ involving workers in the Western Electric Company at the Hawthorne Works in Chicago in the 1920's and 30's showed that wage incentives, shorter hours, rest breaks and shift systems had less effect on output than factors of group morale and acceptance and management-worker communication, and that these factors had a major effect on the physical health of the workers concerned.

Herzberg⁷² points out that the only way to motivate an employee is to give him challenging work in which he can assume responsibility and that kicking him physically or psychologically is a total failure. Absence of hygiene factors such as good supervisor-employee relations and liberal fringe benefits can make a worker unhappy, but their presence will not make him want to work harder. He goes on to say that if only a small percentage of the time and money devoted to hygiene were given to job enrichment efforts, the return in human satisfaction and economic gain would be large.

The acute respiratory disease, macro-diagnostic group 2, refers to epidemic virus disease. The level of absence due to this group would decide on the value of a large scale immunization programme and a rise would alert the necessity for supervision of the bronchitic high risk groups and for the planning department to anticipate a drop in production.

Group 3 consists of diagnoses administratively unknown because of lack of communication between doctors responsible for treatment and statistical departments, and also medically unknown diagnoses. It takes account of the frequent difficulty of making a firm diagnosis at the first patient-doctor contact; some recording procedure that will allow later sorting is necessary. It includes also the 'symptoms senility and ill defined' group of the ICD, in which a large part of the increase in new claims in Great Britain has occurred.

The traditional diseases group is sub-divided into:

- 4.1 Subjective diagnoses, where no objectively demonstrable or measurable pathological substrate is present and where the condition of the patient can only be determined by doctor-patient interaction (neuroses, psychoses, psychopathic personality, for example).
- 4.2 Subjective-objective diagnoses, where although there is an objectively demonstrable or measurable pathological substrate the classification of the condition needs also doctor-patient interaction for an interpretation of the cause of absence. This group includes psychosomatic disorders and accidents.
- 4.3 Objective diagnoses, where the factors causing absence from work can be objectively demonstrated or measured.

Examining the health records of the employees of the Philips plant at Eindhoven, Hogerzeil⁶⁶ found that since 1950 there had been virtually no increase in 4.1, a slight but constant increase in 4.2, and no alteration in 4.3.

In addition to research into the causes of industrial disease and the promotion of

industrial health the occupational health service in Sweden is responsible for the primary medical care of industrial workers. Experience there has shown that the ideal health centre covers several industries with a total of 1,500-2,000 employees, staffed by an industrial physician, industrial nurses, physiotherapists, secretaries and safety engineers.⁷³ All employees from the director to the janitor are given primary care, and a man with a sore throat at 7.30 a.m. can be investigated and prescribed an antibiotic immediately rather than returning home to make arrangements for treatment by another primary care physician. The disadvantages are that the service does not generally extend to workers' families nor to home visits.

This discussion of industrial measures to reduce absenteeism has been confined mainly to medical aspects of the problem but is not intended to ignore the even greater importance of personnel management. The personnel manager, occupying the 'neutral chair' in an industrial concern is a key figure in problems of sickness absence.

Supervision of sickness absence

To suggest that the amount of pseudo-sickness may be small and that large scale measures to control it are not likely to be effective is not to deny its existence. Referral of nearly 536,000 cases to the regional medical officer, the British equivalent of the Dutch and German control doctors, in 1967 resulted in 11 per cent of the workers concerned returning to work before the interview, 21 per cent failing to attend for examination, and a further 10 per cent being found fit to return (table IX). The rise in short-term absence in the younger age groups, the vagueness of the diagnosis involved, the evidence of manipulation of illness to start and finish at times such as shift change-over days most convenient

TABLE IX

NUMBER AND RESULTS OF REFERENCES FOR EXAMINATION OF INSURED PERSONS MADE TO REGIONAL MEDICAL OFFICERS OF THE MINISTRY OF HEALTH, THE SCOTTISH HOME AND HEALTH DEPARTMENT, AND WELSH BOARD OF HEALTH

MALES AND FEMALES	References Thousands	Result—Per cent				
		<i>Incapable of work</i>	<i>Not incapable of work</i>	<i>Incapable of normal occupation but not incapable of alternative work</i>	<i>Evidence of recovery submitted before examination</i>	<i>Failed to attend examination</i>
1959	579.4	46	10	3	23	19
1960	596.7	44	10	2	23	20
1961	563.9	44	11	2	23	20
1962	510.7	50	10	2	18	19
1963	544.9	51	10	2	18	20
1964	567.9	50	10	2	18	21
1965	581.0	49	10	2	16	22
1966	511.5	53	10	2	13	22
1967	535.6	55	10	2	11	21
1968	546.0	56	10	3	10	22

to the worker,⁴ all suggest that some abuse occurs. Ashworth⁷⁴ estimated that in 1955-56, 6 per cent of patients drawing sickness benefit in his general practice were doing so for reasons not strictly speaking medically justified but that half of these had good sociomedical grounds—a mother staying at home to look after a sick child who might otherwise be in hospital, for example.

In Sweden the employee certifies himself for the first seven days of incapacity. If he is ill for longer a medical certificate is mandatory, as is specialist referral if illness is prolonged beyond 90 days. At any time, and in all cases where more than six self-certificated episodes lasting less than a week occur within a year, he may be asked to provide certificates from the start of incapacity. When this occurs the episodes of illness of the person concerned usually decrease dramatically.⁷⁵ A small number of officials, not medically qualified, investigate some cases of persistent sickness absence. The doctor providing primary care, therefore, and the specialist, have minimal supervisory rôles. This is a less complicated system of control doctors than in Holland where certification is in the province of a separate corps of practitioners employed by state-supervised sickness funds. This system is carried further in Germany where there is a career structure of control doctors or *vertrauensarzt* employed by an organization consisting of nearly 2,000 independent insurance and statutory sick funds. Certification for the first week of illness is the province of the general practitioner, for longer periods that of the control doctor. From 1970 the employer in west Germany will be responsible for paying wages for the first six weeks of illness and this function of the control doctor will become less onerous.

Judging by the experience of other countries there does not appear to be a case for creating a more elaborate superstructure of control doctors. Indeed, the most complicated, the west Germans', is about to be simplified, and in Holland the supervisory function of the control doctor is becoming less important and will be taken over by especially trained lay people or nurses. The main rôle of the insurance doctors will be to advise employees and employers on the suitability of jobs for workers off work for prolonged periods due, for example, to chronic bronchitis, cardiac infarction, or accident.

If no new powers are to be vested in the regional medical boards then the burden of supervision of unnecessary sickness absence will continue to be placed on the industrial medical officer and general practitioner. No one has yet decided what constitutes abuse of sickness benefit nor how large the problem is, and examination of the individuals responsible will help in defining the problem. In an ideal system where the data of an individual's illness treated at home, at work, in hospital or anywhere else were recorded centrally, then the illness and the associated absence from work could be related to socio-economic and other pressures on the individual as well as to the industrial hazards of his occupation and the pathological complications of his disease process. This central recording occurs in group insurance schemes organized by industrial concerns such as Philips of Eindhoven, and advantages in efficiency of distribution of medical care are obvious. However, the ethical problems involved are likely to prevent the widespread implementation of such schemes.

The advantages of the Philips and Swedish systems without many of the disadvantages or the need for new apparatus could be obtained here by integrating the occupational and National Health Services, an integration which was first proposed in 1951⁷⁶ and supported by Porritt⁷⁷ in 1962. An analogy can be made between the worker attending the factory's health centre and a traffic accident victim attending the casualty room of a hospital. He is given treatment involving a prescription, a certificate, and an appointment to return if necessary, is referred for physiotherapy or other treatment and his general practitioner, notified of the salient facts, can continue to look after him at home if he has to stay off work. As Wofinden⁷⁸ says, 'One can only hope that if and when the government decides to provide a new administrative framework for an integrated national

health service, the opportunity will be taken to include within, and as part of it, a specialized and unified occupational health service'. Current discussion about this framework⁷⁹ could produce such an opportunity.

Because of the National Health Service list system, under which he is responsible for the care of a definable population and because for the foreseeable future he will co-ordinate all medical and welfare services for his patients⁸⁰ the general practitioner in the United Kingdom is in a unique position to investigate individuals with high sickness absence records over a number of years. The value of these investigations would be enhanced by information from the occupational health services of short term absence from work, an important part of the area where abuse is likely to occur but also, as has been shown,⁸¹ an important index of imminent social breakdown. To make these studies the general practitioner must first identify the patients responsible.

The identification in general practice of individuals with a high sickness record

This is a problem of extracting and tabulating data already recorded in the patient's file. Time, lack of which is said to be a major reason for the paucity of morbidity statistics from general practice⁸² is of primary importance and if the recording procedure is time consuming and its use prolonged, it is likely to lose its appeal for all but the most enthusiastic physicians.⁸³ In a group practice, where patients may be seen by partners without common research interests, this precludes, I think, the general use of an instrument such as the 'E' book⁸⁴ for recording total practice morbidity. Mechanical data retrieval methods, already used in British general practice,⁸⁵ are a possible solution. The desirability of introducing a national scheme for linking selected vital and medical records has been emphasized by the Medical Research Council in England and Canada, and steps have been taken to introduce such schemes in Scotland and Northern Ireland.⁸⁶ The Oxford Record Linkage Study⁸⁷ is being extended to several general practices in the area and facilities such as these, particularly if local Department of Health and Social Security records could be integrated, would provide the basis for a study of individuals with a high sickness absence record over a number of years.

To make such a study some generally accepted diagnostic coding system must be employed and the International Classification of Diseases is the obvious choice. However, it has been shown that it is not particularly applicable to general practice.^{83, 88} Any diagnostic categorization should include 'conditions' such as socio-economic stress, marital difficulties, teenage tantrums, if it is to be a realistic reflection of what goes on in general or primary medical practice.⁸³ Bain and Spaulding⁸⁹ have tried to overcome this problem by extending the International Classification of Diseases to code common presenting symptoms, and although in large scale investigations this is a major advance, in small populations the number of headings subdivided by other fundamental demographic data—age, sex, socio-economic status and occupation—results in sub-groups so small as likely to be meaningless. This criticism applies also to simplified versions such as the Royal College of General Practitioners' modification.⁹⁰ These objections may be partly responsible for the fact that of 98 countries (two thirds of the World Health Organization membership in 1965) capable of submitting morbidity statistics centrally only 25 had statistics of general practice consultations, and of these only ten used the ICD or 'A' list (an intermediate list of 150 categories).⁸²

These difficulties can be overcome by using the macrodiagnostic classification described by Hogerzeil, which, with minor modifications is applicable to general practice morbidity studies as well as those of sickness absence, which can be translated into the ICD when necessary and which fulfils the criterion of ease of recording.

Having identified his patients with a high sickness absence record and recorded the diagnoses responsible, what can the general practitioner do to get them back to work?

General practice measures to reduce sickness absence

First the general practitioner can maintain a high clinical standard so that illness is treated promptly and efficiently. His administrative standards also should be high, so that, using an 'at risk' register he can, for example, give chronic bronchitics influenza vaccine before an epidemic begins and can screen regularly for anaemia and osteomalacia those of his patients who have undergone partial gastrectomy or for thyroid dysfunction those treated with radio-active iodine.

His prognostic standards must also be high. The recent example in the United States where several hundred air crew members were grounded because of electrocardiograph changes not recognized as normal at the time is salutary.⁹¹ Scheff⁹² has made the important point that doctors are over-sensitive to the dangers of not diagnosing an illness which is present, but relatively insensitive to the dangers attendant on diagnosing an illness where none exists. Taylor and Fairrie⁹³ in their study of disability in middle age found a proportion of men disabled because of an over cautious prognosis given many years before. The same study showed that the degree of physical impairment was less important than emotional structure in determining ability to adjust to disablement.

This adjustment, and the assessment of socio-economic factors in a particular illness, can be assisted by the general practitioner's co-ordination of the multitude of social and rehabilitative agencies available. His knowledge of these and of the potential value of the Register of Disabled Persons is often inadequate.⁹³ Close liaison with social workers can permit social problems, often associated with chronic neurotic disability, to be recognized as such so that patients can be offered immediate access to sources of help appropriate to their needs and lengthy temporizing minimized.⁹⁴

We can help also in educating our patients in the judicious use of health resources, which now, because of the recent amalgamation of the Ministries of Social Security and Health, include sickness benefit. We attempt to educate them in the effective use of one such resource—ourselves—by persuading them to come into the consulting room if their medical condition permits rather than be visited at home, to make requests for visits early so that the day can be planned and to reduce unnecessary night calls, and there is evidence to suggest that this campaign is succeeding.^{95, 96} A similar process of education in the appropriate use of sickness benefit is more likely to be successful in dealing with the abuse of it by the minority than wide scale restrictive measures. This implies that general practitioners continue to certify sickness, though it might be possible to devolve part of the responsibility to attached local authority staff such as health visitors and district nurses who are providing some of the primary care in some practices.^{97, 98}

Finally, general practice as a whole can contribute towards the identification of high risk groups and to research into the prediction of future health. Long-term studies of conditions such as chronic heart disease, along the lines of the Framingham study in the US, now to be abandoned because of lack of funds⁹⁹ are entirely possible in general practice in Great Britain especially since direct general-practitioner access to regional laboratories is now the rule.

Summary

The rise in sickness absence in Great Britain is due mainly to an increase in the frequency of short-term absences and the total of days lost in the year by the average employee has altered little over 15 years. It is possible that these frequent short absences may result eventually in a decrease in time lost from chronic illness, which is responsible for the greater part of the national total of work loss days. The parallel and apparently greater rise in absence in other Western countries and the close relationship between sickness absence and mortality data suggests that the amount of pseudo-sickness in Great Britain is not excessive and that absenteeism is not yet another 'English disease'. If this is so, wide scale control measures are unnecessary and supervision should continue to be

exercised by the general practitioner and industrial medical officer. This implies that sickness continues to be certified by the general practitioner, though there may be a case for both general practice attached and industrial health medical staff assuming part of the responsibility. A reduction in sickness absence is likely to be achieved by the integration of the occupational health and National Health Services and closer association between general practitioners and industrial medical officers would increase the efficiency of primary medical care. The greatest contribution the general practitioner can make to the problem is the longitudinal study of individuals with high sickness absence records. This involves certain practical problems, which, with the greater support now afforded general practice research, are not insuperable.

Acknowledgements

I am grateful for the patience and kindness of those who helped me in Holland, west Germany, Sweden, the United Kingdom, Canada and the USA and especially for the help and facilities given me by Dr Kerr L. White, chairman of the Department of Medical Care and Hospitals, The Johns Hopkins school of Hygiene and Public Health, Baltimore, Maryland, USA, and by Dr Philip Bonnet, professor of health services administration in the Department, in which I spent a large part of the fellowship.

REFERENCES

1. Leading articles. (1968). *British Medical Journal*. 2, 316.
2. Society of Occupational Medicine. (1968). In *Proceedings of the Symposium on Absence from Work Attributed to Sickness*. Edited by A. Ward Gardner. London.
3. Malcolm, D. W. (1968). In *Proceedings of the Symposium on Absence from Work Attributed to Sickness*. Edited by A. Ward Gardner. London.
4. Howell, R. W. (1968). In *Proceedings of the Symposium on Absence From Work Attributed to Sickness*. Edited by A. Ward Gardner. London.
5. *Social Insurance Sickness Statistics 1964*. (1968). The Hague. Netherlands Central Bureau of Statistics.
6. *Research Report No. 13*. (1966). Washington D.C., U.S.A. Department of Health Education and Welfare.
7. Allmän Försäkring 1967. (1969). Stockholm. Riksförsäkringsverket.
8. *Industrial Hygiene Digest* June 1968. (1968). Pittsburgh. Industrial Hygiene Foundation of America Inc.
9. Gadourek, I. (1965). *Absences and well-being of workers*. Assen. Van Gorcum & Comp. N.V.
10. O.H.E. Information Sheet No. 6. (1969). London. Office of Health Economics.
11. Annual Report of the Chief Medical Officer of the Department of Health and Social Security for the year 1968. London. Her Majesty's Stationery Office.
12. Morris, J. N. (1965). *Proceedings of the Royal Society of Medicine*. 58, 821.
13. Raffle, P. A. B. (1966). *Journal of the Institute of Actuaries Students' Society*. 18, 71.
14. Digest of Statistics Analysing Certificates of Incapacity. (1958-1961). London. Ministry of Pensions and National Insurance.
15. Digest of Statistics Analysing Certificates of Incapacity. (1961-1964). London. Department of Health and Social Security.
16. Annual Report of the Chief Medical Officer of the Ministry of Health for the year 1967. London. Her Majesty's Stationery Office.
17. Alderson, M. R. (1967). *British Journal of Preventive and Social Medicine*. 21, 1.
18. Work Loss Through Sickness. (1965). London. Office of Health Economics.
19. Department of Health and Social Security. (1970). Personal communication.
20. Gardner, M. J., Crawford, M. D. and Morris, J. N. (1969). *British Journal of Preventive and Social Medicine*. 23, 133.
21. Zola, I. K., quoted by Kasl, S. V. and Cobb, S. (1966). *Archives of Environmental Health*. 2, 246.
22. Taylor, P. J. (1967). *British Journal of Industrial Medicine*. 24, 93.
23. Likert, R. (1961). In *New patterns of management*. New York. McGraw.
24. King, S. H. (1962). In *Perceptions of illness and medical practice*. New York. Russell Sage Foundation.
25. Hinkle, L. E., Plummer, N. and Whitney, L. H. (1961). *Journal of Occupational Medicine*. 3, 417.
26. Froggatt, P., Dudgeon, M. Y. and Merrett, J. D. (1969). *British Journal of Preventive and Social Medicine*. 23, 1.
27. Jacob, A. and Pearson, J. (1967). *Journal of the Royal College of General Practitioners*. 13, 303.
28. Kemp, R. (1963). *Lancet*. 1, 1223.

29. Hagnell, O. (1966). *Annals of the New York Academy of Sciences*. **125**, 846.
30. Russell, W. T., Whitwell, G. P. B. and Ryle, J. A. (1947). *British Journal of Industrial Medicine*. **4**, 56.
31. Sutherland, T. and Whitwell, G. P. B. (1948). *British Journal of Industrial Medicine*. **5**, 77.
32. Taylor, P. J. (1967). *British Journal of Industrial Medicine*. **24**, 169.
33. Mechanic, D. and Volkart, E. H. (1960). *Journal of Health and Human Behavior*. **1**, 86.
34. Parsons, T. (1952). In *The social system*. New York. The Free Press of Glencoe, Inc.
35. Parsons, T. (1958). In *Patients, physicians and illness*. p. 165. Edited by E. G. Jaco. New York. The Free Press of Glencoe, Inc.
36. Cluff, L. E., Canter, A. and Imboden, J. B. (1966). *Archives of Internal Medicine*. (Chicago). **117**, 159.
37. Lieberman, M. A. (1961). *Geriatrics*. **16**, 515.
38. Rees, W. D. and Lutkins, S. G. (1967). *British Medical Journal*. **4**, 13.
39. Kasl, S. V. and Cobb, S. (1966). *Archives of Environmental Health*. **12**, 246.
40. Glasser, J. H. (1969). In *A stochastic model for industrial illness absenteeism*. Annual Meeting, American Public Health Association, November 11th, 1969.
41. Huygen, F. J. A. (1969). Personal communication.
42. Marinker, M. L. (1969). *Journal of the Royal College of General Practitioners*. **17**, 227.
43. Semmence, A. (1969). *Journal of the Royal College of General Practitioners*. **17**, 304.
44. Sheppard, M., Cooper, B., Brown, A. C. and Kalton, G. W. (1966). In *Psychiatric illness in general practice*. London. Oxford University Press.
45. Semmence, A. To be published.
46. Goldberg, D. (1969). In *The assessment of the severity of non-psychotic psychiatric illness by means of a questionnaire*. D. M. Thesis. University of Oxford.
47. Schilling, R. S. F. (1969). *American Journal of Public Health*. **59**, 1366.
48. Townsend, P. (1967). In *The disabled in society*. London. Greater London Association for Disabled.
49. Taylor, P. J. and Fairrie, A. J. (1968). *British Journal of Preventive and Social Medicine*. **22**, 86.
50. Editorials. (1966). *Journal of the American Medical Association*. **196**, 448.
51. Hull, F. M. (1969). *Journal of the Royal College of General Practitioners*. **18**, 65.
52. Ayres, C. E. (1966). In *The guaranteed income*. New York. Doubleday & Co. Inc.
53. Enterline, P. E. (1966). *Archives of Environmental Health*. **12**, 467.
54. The Sun. (December 28th, 1969). Baltimore.
55. National Center for Health Statistics. (1969). Series 10, No. 56. Washington D.C.
56. Social Security Bulletin (January 1969). Washington D.C. U.S. Department of Health Education and Welfare.
57. National Center for Health Statistics. (1969). Series 2, No. 33. Washington D.C.
58. White, K. L., Andjelkovic, D., Pearson, R. J. C., Mabry, J. H., Ross, A. and Sagen, O. K. (1967). *New England Journal of Medicine*. **277**, 516.
59. U.S. Census of Population, 1960. Detailed Characteristics. (1963). Washington D.C. U.S. Government Printing Office.
60. Census, 1961. Summary Tables. (1966). London. Her Majesty's Stationery Office.
61. The Times. (January 2nd, 1970). London.
62. AOK Federal Association. (1970). Bad Godesberg. Personal communication.
63. Report on an Enquiry into the Incidence of Incapacity for Work, Part 1. (1964). In *Scope and characteristics of employers' sick pay scheme*. London. Her Majesty's Stationery Office.
64. Research and Statistics. (1966). Note No. 11. Washington D.C. U.S. Department of Health Education and Welfare.
65. Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death. (1967). Geneva. World Health Organisation.
66. Hogerzeil, H. H. W. (1966). *Tijdschrift voor sociale geneeskunde*. **44**, 77.
67. Fraser, R. (1947). Report No. 90. London. Medical Research Council.
68. Alphen de Veer, M. R. van. (1955). In *Success and failure in industry*. Assen. Van Gorcum & Comp. N. V.
69. Daniëls, M. J. M. (1958). In *Onaangepastheid in de werksituatie*. Nijmegen. Dekker & Van de Vegt. N.V.
70. Groot, M. J. W. de. (1958). In *Kwantitatieve benadering van het verzuim door Neurosen bij Nederlandse fabrieksarbeiders*. Leiden. Nederlands Instituut veer Praeventieve Geneeskunde.
71. Roethlisberger, F. J. and Dickson, W. J. (1967). In *Management and the worker*. New York. John Wiley & Sons, Inc.
72. Herzberg, S. (1968). *Harvard Business Review*. **46**, 1, 53.
73. Forssman, S. (1969). In *Recent experience of occupational health in Sweden*. Stockholm. Arbetsmedicinska Institutet.
74. Ashworth, H. W. (1961). *Medical World*. **95**, 97.

75. Lambert, B. (1969). In *Upprepade korta sjukdomsfall*. Göteborg. Pehr Dubb Journalen.
76. Report of a Committee of Enquiry on Industrial Health Services. (1951). London. Her Majesty's Stationery Office.
77. A Review of the Medical Services in Great Britain. (1962). London. Social assay, for Medical Services Review Committee.
78. Wofinden, R. C. (1969). *Transactions of the Society of Occupational Medicine*. 19, 76.
79. Ministry of Health. (1968). In *National Health Service: The administrative structure of the medical and related services in England and Wales*. London. Her Majesty's Stationery Office.
80. Reports from General Practice II. (1965). In *Present state and future needs*. London. College of General Practitioners.
81. Hughes, J. P. W. (1969). *Transactions of the Society of Occupational Medicine*. 19, 58.
82. Smith, A. (1969). *Bulletin of the World Health Organisation*. 40, 569.
83. Last, J. M. and White, K. L. (1969). *Medical Care*. 7, 41.
84. *Journal of the College of General Practitioners*. (1963). 6, 219.
85. Acheson, E. D. and Forbes, J. A. (1968). *British Journal of Preventive and Social Medicine*. 22, 105.
86. Record Linkage. (1969). *British Journal of Preventive and Social Medicine*. 23, 203.
87. Acheson, E. D. (1967). In *Medical record linkage*. London. Oxford University Press.
88. Some Contrasts in Morbidity Distribution. (1966). *Journal of the College of General Practitioners*. 11, 74.
89. Bain, S. T. and Spaulding, W. B. (1967). *Canadian Medical Association Journal*. 97, 953.
90. *Journal of the College of General Practitioners*. (1963). 6, 207.
91. Report of the First International Symposium on Cardiology in Aviation, November 1959. U.S. Aerospace Medical Center. Brooks Air Force Base, Texas.
92. Scheff, T. J. (1967). In *Mental health and social processes*. New York. Harper & Row.
93. Taylor, P. J. and Fairrie, A. J. (1968). *British Journal of Preventive and Social Medicine*. 22, 183.
94. Sylph, J., Kedward, H. B. and Eastwood, M. R. (1969). *Journal of the Royal College of General Practitioners*. 17, 162.
95. Stevenson, J. S. K. (1964). *British Medical Journal*. 1, 1370.
96. Marsh, G. N. (1968). *British Medical Journal*. 1, 633.
97. Forbes, J. A., Mutch, L. M. M., Smith, G. T. and Tulloch, A. J. (1967). *British Medical Journal*. 3, 856.
98. Hasler, J. C., Hemphill, P. M. R., Stewart, T. I., Boyle, N., Harris, A. and Palmer, E. (1968). *British Medical Journal*. 3, 734.
99. Denver Post. (26 October, 1969).

SIR ASTLEY PASTON COOPER, BART., 1768-1841

He was the idol of the Borough school—the pupils followed him in troops, and, like Linnaeus, who has been described as proceeding upon his botanical excursions accompanied by hundreds of students, so may Sir Astley be depicted traversing the wards of the hospital with an equal number of pupils, listening with almost breathless anxiety to catch the observations which fell from his lips upon the several cases presented to his view. But, on the days of operation, this feeling was wound up to the highest pitch—the sight was altogether deeply interesting; the large theatre of Guy's crowded to the ceiling—the profound silence obtained upon his entry—that person so manly and so truly imposing—and the awful feeling connected with the occasion—can never be forgotten by any of his pupils. The elegance of his operation—without the slightest affectation—all ease—all kindness to the patient, and equally solicitous that nothing should be hidden from the observation of the pupils—rapid in execution—masterly in manner—no hurry—no disorder—the most trifling minutiae attended to—the dressings generally applied by his own hand.

THOMAS JOSEPH PETTIGREW, F.R.S., F.A.S., F.L.S.
Biographical memoirs of the most celebrated physicians, surgeons, etc. 1840.
 London. Fisher, Son and Co. p. 3.