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OBSERVATIONS ON THE MEDICAL CONDITION OF MEN IN THE SEVENTH DECADE

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Discussion of the age of retirement has hitherto been handicapped by lack of information about the extent to which the medical condition of individuals in the seventh decade restricts or prohibits their employment. Our knowledge of morbidity in the elderly is derived chiefly from inquiries which have had much wider objectives, and the numbers in the appropriate age group were inevitably small (Sheldon, 1948; Hobson and Pember-ton, 1955; Richardson, 1956). If medical evidence is to assist retirement policy it is evidently required in sufficient detail to show the changes in physical capacity from year to year. Accordingly we have attempted to complete a medical examination of approximately the standard required for life insurance purposes in a group of representative men aged 60-69. The material is presented in two parts. Part I is concerned with the incidence of disease and its variation according to age and social class. Part II examines the effect of disease upon fitness for employment, and considers the significance of the results in relation to the broad question of retirement policy.

I. DISEASE INCIDENCE

It was thought that the most satisfactory means of obtaining a full medical examination of representative persons was to invite the co-operation of a number of general practitioners. Eleven Birmingham doctors consented to examine all men on their lists who were aged 60-69. It was estimated that there would be a little over 1,000—approximately 100 in each year of age—and, as it was not possible to increase the total substantially above this figure, it was thought better to restrict the inquiry to males rather than to obtain a much smaller number of examinations for both sexes. The doctors were chosen because of the representative character of their practices and because of their interest and experience in research; several of them are active members of the research panel of the College of General Practitioners.

There were 1,243 men in the appropriate age group, of whom 1,062 were examined (Table I). Of the remainder, 21 had died, 58 were untraced, and 102 were not examined

for other reasons. As the doctors made a serious attempt to see all individuals in their own homes or in their surgeries, we are satisfied that no serious bias has been introduced. Perhaps the most satisfactory test of the representativeness of the sample is its distribution according to age and social class (based on occupation). The 1951 Census has provided recent information about the composition of the total male population in the decade, and the distributions are compared in Tables II and III. The sample is evidently representative by age, and in respect of social class differs only by a small deficiency of men in class IV.

TABLE I.—Number of Men Aged 60-69 on the Lists of 11 General Practitioners

	No.	%
Men examined	1,062	85.4
Men not examined	21	1.7
{ Dead	21	1.7
{ Untraced ..	58	4.7
{ Other	102	8.2
Total	1,243	100.0

TABLE II.—Age Distribution

Age (Years):	60	61	62	63	64	65	66	67	68	69	Total
Birmingham { No. (sample) %	115 10.8	140 13.2	130 12.2	108 10.2	111 10.5	103 9.7	96 9.0	79 7.4	91 8.6	89 8.4	1,062 100.0
England and Wales* %	11.7	10.9	11.0	10.7	10.3	10.0	9.4	8.9	8.7	8.4	100.0

* From 1951 Census.

TABLE III.—Social Class Distribution

Social Class	Birmingham (sample)		England and Wales* (Men Aged 60-69) %	Birmingham County Borough* (Men Aged 15 and Over) %
	No.	%		
I	28	2.6	3.5	2.2
II	159	15.0	17.5	11.5
III	614	57.8	43.4	59.0
IV	108	10.2	17.1	14.3
V	153	14.4	18.5	13.0
Total	1,062	100.0	100.0	100.0

* From 1951 Census.

The information recorded in the inquiry was as follows.

(a) *Medical Data.*—The medical examinations were of "life insurance" type. In most cases they included a chest radiograph, and, whenever necessary, appropriate specialist investigation. Coronary disease was the subject of a separate inquiry, and all men with suggestive signs or symptoms were referred to one of us (A. G. W. W.) at a hospital clinic for full cardiological assessment.

(b) *Smoking Habits and Physical and Mental Demands of Occupation.*—The inquiry provided an opportunity to explore further the possible significance of these variables in relation to disease, particularly coronary disease. The method used in recording amounts smoked was that employed in other inquiries (Doll and Hill, 1950). A man was regarded as a smoker if at any time he had smoked 1 cigarette a day (or $\frac{1}{2}$ oz.—14 g.—of tobacco a week) for a year. Smokers were asked at what age they started, how much they were smoking at the time of inquiry, or, if they had given up smoking, the age at which they stopped and the amount smoked immediately before. The method of assessment of the physical and mental strain imposed by an occupation has been described elsewhere (Brown, Davidson, McKeown, and Whitfield, 1957).

(c) *Employment and Fitness for Employment.*—Doctors recorded information about each individual's occupation, and attempted to assess fitness for employment at the time of examination. These subjects are discussed in Part II, where the methods are described.

Age Variation in Disease Incidence

It is not easy to find a satisfactory means of presenting the incidence and significance of disease in a group of individuals. A catalogue of all diseases identified is of little value, both because it takes no account of their relative importance as a cause of disability and because the occurrence of more than one condition in the same individual makes it impossible to assess the proportions with or without disease. We have therefore restricted our examination to two observations: (a) the proportion of individuals in whom one or more diseases were present, and the extent to which these diseases were causing disability; and (b) the frequency of the commonest diseases, and the extent to which they were causing disability. For this purpose we have included only diseases which would be regarded clinically as significant, and excluded those trivial conditions—dental caries, minor skin eruptions, etc.—which are of little practical importance and would give a wholly false impression of the incidence of significant disease. All men considered to be free of disease would undoubtedly be acceptable for insurance purposes as “first-class lives,” although not all of those considered to have disease would necessarily be unacceptable. (A condition such as hernia, for example, does not preclude acceptance.) A disability which might restrict or prohibit employment was considered to be “severe”; a disability of any lesser degree was regarded as “moderate.” The statement that an individual had a disease causing no disability is to be interpreted in the sense that he was in no appreciable degree inconvenienced by it.

TABLE IV.—Percentage of Men with Disease or Disability

Ages (Years):	60-61	62-63	64-65	66-67	68-69	Total
Men with no disease	24.7	18.5	19.2	18.3	17.2	19.9
“No disability”	39.6	38.2	40.2	43.4	31.7	38.6
Moderate disability	25.9	35.3	29.9	24.6	31.7	29.6
Severe disability	9.8	8.0	10.7	13.7	19.4	11.9
No. of men	255	238	214	175	180	1,062

Table IV gives the incidence of disease (all types) and disability according to age. The proportion of men with no disease decreases slowly through the decade, from about 1 in 4 at ages 60-61 to 1 in 6 at 68-69. In nearly half the cases, however, the diseases present were causing no disability. The most striking trend is the increase in the proportions severely disabled, from 1 in 10 at ages 60-61 to 1 in 5 at 68-69. This increment is most pronounced in the last years of the decade.

Table V shows the proportion of men affected by each of the eight commonest diseases, of which much the most frequent were bronchitis (253 men), defective hearing (228), and hypertension (176). In each of these three conditions, and in defective vision, there is a fairly marked age trend, and together they account for a considerable part of the

TABLE V.—Percentage of Men with Each of the 8 Diseases Most Frequently Encountered in the Sample

Disease	Age (Years)					Total	No. of Men Affected	Percentage of Affected Men in whom the Disease Caused Disability
	60-61	62-63	64-65	66-67	68-69			
Bronchitis	22.7	23.1	20.6	23.4	30.6	23.8	253	53.4
Defective hearing	20.0	21.8	16.4	21.7	28.9	21.5	228	6.1
Hypertension	13.3	20.6	15.9	15.4	18.3	16.6	176	11.4
Coronary disease	9.8	7.6	9.3	7.4	7.2	8.4	89	44.9
Peptic ulcer	6.7	10.9	10.7	7.4	4.4	8.2	87	12.6
Defective vision	5.9	7.1	7.5	10.8	10.0	8.0	85	14.1
Hernia	6.7	5.0	7.0	7.4	7.8	6.7	71	2.8
Osteoarthritis	5.1	8.0	7.0	3.4	8.9	6.5	69	34.8
No. of men	255	238	214	175	180	1,062		

increase in disease incidence with age (Table IV). Table V also gives for each disease the percentage of affected men with disability: it is highest in bronchitis (53.4%), coronary disease (44.9%), and osteoarthritis (34.8%). In the other five common conditions relatively few (less than 15%) of those affected were in any way disabled.

Social-class Variation in Disease Incidence

Variation in mortality according to social class (based on occupation) is well established from national statistics, and it was evidently of interest to examine the class variation in morbidity in a group of representative men. The observation has a special relevance in the present context, since we shall be concerned later with fitness for employment in different occupations. As in the previous section, we consider separately (a) the incidence of disease and disability, and (b) the frequency of the commonest diseases.

Table VI and Fig. 1 show the incidence of disease and disability according to social class. The variation is so striking that it should be noted that the method of assess-

TABLE VI.—Incidence of Disease and Disability Related to Social Class

Social Class	No. of Men	Percentage of Men with:		Percentage of Men with Disease who were Disabled
		Disease	Disability	
I	28	60.7	14.3	23.5
II	159	69.2	26.4	38.2
III	614	81.3	39.1	48.1
IV	108	85.2	53.7	63.0
V	153	86.9	63.4	72.9

ment was such that it would not be expected to exaggerate the differences. Even if doctors took relatively more care in examination of their well-to-do patients, and we have no reason to suppose that they did, it would reduce rather than increase the social-class trend. And while the decision on what constituted a *severe* disability was related to some extent to occupation, the decision about *moderate* degrees of disability was not. Since the disabilities referred to in Table VI and Fig. 1 include both types, we are satisfied that their identification was not influenced by occupation or social circumstances.

From class I (professional, etc., occupations) to class V (unskilled occupations) the proportion of men with disease increases regularly from approximately 2 in 3 to 6 in 7, and the proportion with disability from 1 in 7 to 2 in 3. Even more striking, perhaps, is the trend in the proportion of men with disease who were disabled—from 1 in 4 in class I to 3 in 4 in class V.

Table VII shows the percentage of men with each of the eight diseases most frequently encountered in the sample, according to social class. There is no evidence of a consistent relationship in either hernia or osteoarthritis. The incidence of peptic ulcer increases consistently from class I to class V, but the association is known to be different in gastric and duodenal ulcer, and since numbers are not large enough to permit separate examination of the two types we shall not consider it further. The remainder of this discussion is concerned with the social-class variation in the incidence of the other five diseases referred to in Table VII.

FIG. 1.—Percentage of men with disease or disability related to social class.

TABLE VII.—Percentage of Men, by Social Class, with Each of the 8 Diseases Most Frequently Encountered in the Sample

Disease	Social Class					No. of Men Affected
	I	II	III	IV	V	
Bronchitis ..	10.7	13.2	24.4	25.0	34.0	253
Defective hearing ..	7.1	11.3	22.3	25.0	28.8	228
Hypertension ..	0.0	14.5	17.1	17.6	19.6	176
Coronary disease ..	10.7	11.9	6.7	10.2	9.8	89
Peptic ulcer ..	3.6	6.3	8.1	9.3	10.5	87
Defective vision ..	3.6	3.8	7.5	11.1	13.1	85
Hernia ..	10.7	5.7	6.4	8.3	7.2	71
Osteoarthritis ..	7.1	3.8	7.2	8.3	5.2	69
No. of men ..	28	159	614	108	153	1,062

Chronic Bronchitis

We have already noted that in the seventh decade chronic bronchitis was both the most common disease and the one associated most frequently with disability (over half of the men affected were in some degree disabled (Table V)). It is shown in Table VII that incidence is very sharply related to social class. Since it has been reported that incidence is also related to smoking habits (Leese, 1956) it was thought worth while to use the data recorded on smoking habits in an attempt to assess the relative importance of these two

FIG. 2.—Percentage of men with bronchitis related to social class.

influences. This subject has been examined more fully elsewhere (Brown, McKeown, and Whitfield, 1957a), and the results are summarized in Fig. 2. Among non-smokers the incidence of chronic bronchitis appears to be unrelated to social class, whereas among smokers it increases sharply as social circumstances deteriorate. The data suggest that men in professional and related occupations (classes I and II) increased their risk of chronic bronchitis very little by smoking, whereas for men in unskilled occupations (class V) the risk was trebled. It was shown that this result cannot be attributed to social-class variation in the amount of tobacco smoked. We have no direct information about the cause of this interrelationship between smoking and

FIG. 3.—Mean arterial pressure related to social class. (Vertical lines give one standard error above and below the means.)

social class; but since some other infective diseases affecting the respiratory tract (for example, pneumonia) are also more common in less favourable social circumstances, it is scarcely surprising that there should be class variation in response to tobacco in respect of a disease such as chronic bronchitis.

Arterial Pressure

For the purposes of the classification used in Table VII a man was regarded as hypertensive if his diastolic pressure was above 100 mm. Hg or his systolic pressure above 200. However useful such a division may be for clinical purposes, recent work has emphasized its arbitrary character in view of the fact that arterial pressure is continuously distributed (Hamilton, Pickering, Roberts, and Sowry, 1954). In an examination of the effect of certain environmental influences on arterial pressure (Brown, McKeown, and Whitfield, 1957b) we therefore restricted attention to distributions and means. Among the influences considered was social class, and the relationship of mean systolic and diastolic pressures to this variable is shown in Fig. 3. Contrary perhaps to expectation, although there has hitherto been no worthwhile evidence on the matter, both systolic and diastolic pressure tend to increase as economic and social circumstances deteriorate. In the full report it was shown that arterial pressure was unrelated to physical and mental demands of occupation, but was lower in smokers than in non-smokers.

Coronary Disease

As stated above, all men with signs or symptoms suggestive of coronary disease were referred for full cardiological assessment, and the diagnosis was confirmed in 89 cases. A report of the results of this inquiry has been given elsewhere (Brown *et al.*, 1957). In the present context we are concerned only with the association between incidence and social class, and (in Part II) with the extent of the limitation imposed upon fitness for employment. Affected men were divided into two groups: those who had had a coronary occlusion (39) and those with other manifestations of ischaemic heart disease (50). Fig. 4 shows the proportion

FIG. 4.—Percentage of men with coronary disease related to social class.

of patients with each form of the disease according to social class; because numbers are relatively small it has been necessary to group classes I and II together. The incidence of manifestations other than infarction increases regularly from classes I and II to class V—that is to say, in the opposite direction to the well-established trend of mortality. The incidence of infarction appears to decrease from class I to class V, but numbers are small and the relationship is not consistent. In general the effect of social class on morbidity is less marked than its effect on mortality, and when all forms of the disease were considered together there was little evidence of a trend. It was concluded previously (Brown *et al.*, 1957) that the social-class variation was more evident in the form the disease takes than in its incidence.

Hearing and Vision

It should be said at once that the method of assessing auditory and visual acuity was relatively crude, having had no other object originally than to establish whether the condition of either sense would restrict or prohibit employment. They were therefore assessed with glasses or hearing-aids if normally used, and it is not possible to say to what extent the results reflect the condition of the aids rather

than of the sense organs. But whatever the explanation, the marked association with social class (Table VII) was considered of sufficient interest to justify its illustration (Fig. 5). The proportion of men with defective hearing and defective vision is about four times higher in class V than in class I.

FIG. 5.—Percentage of men with defective hearing or defective vision related to social class.

II. FITNESS FOR EMPLOYMENT

In Part I we examined the incidence of disease and disability in 1,062 representative men in the seventh decade. Here we are concerned with a medical assessment of fitness for employment, particularly of men beyond retirement age, and with the possible significance of the results in relation to retirement policy.

At the outset it should perhaps be emphasized that the inquiry is concerned with only one of the two main problems posed by age of retirement. The first is the welfare problem: from the point of view of their health and happiness, at what age should men and women cease to work? Even if we ignore the effect on health of a higher income at work than in retirement—and at the present time it is unrealistic to do so—the question is evidently a complex one to which the answer must differ from one occupation to another. Moreover, because the decision to cease or continue employment is in part determined by physical fitness, it will be extremely difficult to assess the effect of retirement on health. Our observations are related only to the second question, which is an economic one: to what age can individuals contribute effectively to production and services? The answer to this question depends only partly on medical evidence, but it is the lack of this evidence which has hitherto restricted discussion of it.

Methods

The methods used in the inquiry have been described in Part I, but we must discuss more fully what we have regarded as a man's occupation, and the somewhat complex matter of assessment of fitness for employment.

Because of changes of occupation, which are known to be particularly frequent in the later years of working life, it was by no means easy to decide what should be regarded as a man's original occupation—that is, the job upon which he had chiefly been engaged during his working life. The point was an important one, both in relation to the association between occupation (or social class based on occupation) and disease, and because it was hoped to inquire whether a man was physically capable of doing his original job as well as any alternative employment. We have therefore considered the original occupation to be the work done just before retirement age (65) in the case of men aged 65–69, or the work on which they were then engaged, or were last engaged, in the case of men aged 60–64. It

is true that this procedure makes no allowance for earlier changes of employment, but we are satisfied that, defined in this way, the original occupation was in most cases that in which men had been employed for most of their working lives. 87% had been in the same job for more than five years and 76% for more than 10 years.

The assessment of fitness for employment is even more complex, and at the outset we should distinguish sharply between two alternative systems of appraisal. It is possible to interpret fitness as the ability to do a job, and, so considered, it is determined by mental capacity as well as by physical condition. This method has had a limited application where there is a measurable end-product, service, etc. It cannot be applied to all occupations, including some of the most responsible ones, or indeed to any occupation unless it is possible to observe an individual's performance when he is actually at work. For this reason the method could not be used in the present investigation, and it was necessary to rely on an alternative and less ambitious procedure. We have inquired whether each individual was medically fit for employment. Such an assessment takes no account of initiative, aptitude, vitality, etc., qualities which may be of extreme importance in determining suitability for a specific occupation. It merely indicates whether on medical grounds an individual could be regarded as fit or unfit to do full-time work.

Even the appraisal of medical fitness for employment presented certain difficulties. It is of little value to inquire whether an individual is physically capable of doing a job for which by education and experience he is quite unfit. After completing a full medical examination doctors were therefore asked to consider: (a) whether a man appeared to be fit enough to do his original work (defined above), and (b) whether if not fit to do his original work he was able to do any other work for which his training and experience were sufficient. The first question can usually be answered confidently, and, while there must be some reservation about the second, we believe that the answer can usually be taken to indicate whether, having regard to his medical condition, general background, and the range of occupations available in the area, a man could be regarded as employable.

Finally, it should be emphasized that fitness was assessed only in relation to full-time work. Part-time employment of the elderly is a subject of special importance which has been discussed recently by Le Gros Clark (1957). But in the present inquiry it was not considered possible to assess fitness for part-time work, in view of the wide range of physical demands which it involves. But there is no doubt that some of the men whom we have classified as unfit would be capable of doing part-time work.

Employment Beyond Retirement Age

The 1% sample of the 1951 Census showed that in Great Britain approximately half the men (48.7%) aged 65–69 were doing full-time work. It is scarcely surprising that the proportion should be higher in Birmingham (about two-thirds), where the diversity of occupations is so great that opportunities of employment for the elderly are probably as good as they are anywhere. Three in every 4 men in the sample were working in their 66th year and 1 in 2 were still at work in the last year of the decade (Table VIII).

Reasons for continuing to work beyond retirement age in England and Wales were examined in an investigation conducted by the Ministry of Pensions and National Insurance (1954). Three main grounds were given: financial need (44.7%), feel fit enough (25.3%), and prefer to work (20.2%).

TABLE VIII.—Percentage of Men Employed

Age (Years):		60	61	62	63	64	65	66	67	68	69	Total	60–64	65–69
Birmingham (sample)	No. of men	115	140	130	108	111	103	96	79	91	89	1,062	604	458
	% employed	94.8	93.6	92.3	90.7	88.3	69.9	75.0	64.6	61.5	51.7	80.3	92.1	64.8
		91.4	89.1	89.4	85.7	82.9	58.4	50.7	46.9	45.1	40.8	70.1	87.8	48.7
Great Britain*														

* From 1% sample, 1951 Census.

The report recognized that the second was less a reason than a desirable condition for remaining at work, and we have considered it preferable to classify replies as follows: financial need, personal preference, and other reasons (Table IX).

TABLE IX.—*Employed Men: Percentage of Men Remaining at Work for Different Reasons*

Age (Years):	60-64	65-69
Financial need	85.6	78.5
Personal preference	13.1	20.5
Other reasons	1.3	1.0
Total (No. of men)	100.0 (556)	100.0 (297)

Among the 297 men aged 65-69 still at work, the percentages giving these reasons were 78.5, 20.5, and 1.0 respectively. In view of the difference in method of classification it is scarcely surprising that the proportion of men who gave financial need as the main reason for remaining at work should be lower in the earlier inquiry, in which many must have been included in the 25.3% who merely stated that they felt fit enough to go on working.

Table X shows the reasons given by retired men for leaving work. The fact that ill-health is given as a reason under both compulsory and voluntary retirement requires

TABLE X.—*Retired Men: Percentage of Men Who Retired for Different Reasons*

Age (Years) at Retirement:	Under 65	65-69
Compulsory retirement { Ill-health	42.7	13.4
Age limit	10.1	36.1
Other reasons	2.2	0.9
Voluntary retirement { Ill-health	21.4	19.3
Other reasons	23.6	30.3
Total (No. of men)	100.0 (89)	100.0 (119)

an explanation. In the first case it implies that a man was asked to leave because in view of his health he was considered unfit for further employment, and in the second that because of his health he chose to retire. Among the 89 men who left before 65, ill-health was the most common reason (57 cases), but it was relatively less frequent among the 119 men who retired after 65, of whom 39 left because of ill-health and 43 because of an age limit. Although they confirm the predominant importance of ill-health as a cause of retirement, the results are not strictly comparable with those given in the Ministry of Pensions and National Insurance Report (1954), in which the earlier of the two age groups included men who had recently passed the 65th birthday. (In the present inquiry they are shown in the age group 65-69.) It should be mentioned that our estimates are based on men who had retired at the time of examination, and take no account of those who changed their work after age 65. There were in fact 38 men who left their original employment, usually because they were required to do so under an age limit, and subsequently found other work.

Social-class Differences in the Frequency of Employment

The number of men is not large enough to permit separate examination of the incidence of employment in single occupations, but by grouping occupations it is possible to relate it in the usual way to social class. As would be expected, the proportion of men employed beyond retirement age in

each social class reflects to some extent the predominance of financial need as a cause of continued work (Table XI). Below the age of 65 class differences are small, but above 65 the percentage of men employed was highest in class V (unskilled occupations) and lowest in class I (professional, etc., occupations). The trend between the classes is not entirely regular, however, and is much less marked than that previously noted in the incidence of disease and disability and in fitness for employment (referred to below). The significance of financial need as a reason for not retiring is assessed in Table XII according to social class. While

TABLE XI.—*Percentage of Men Employed Related to Social Class*

Social Class	60-64	65-69
I	94.1 (17)	54.5 (11)
II	92.9 (85)	60.8 (74)
III	92.2 (359)	66.7 (255)
IV	93.2 (59)	59.2 (49)
V	89.3 (84)	68.1 (69)

Numbers of men are given in parentheses.

TABLE XII.—*Employed Men: Percentage of Men Remaining at Work Because of Financial Need Related to Social Class*

Social Class	60-64	65-69
I	56.3 (16)	50.0 (6)
II	64.6 (79)	62.2 (45)
III	89.4 (331)	79.4 (170)
IV	87.3 (55)	86.2 (29)
V	96.0 (75)	89.4 (47)

Numbers of men are given in parentheses.

it is relatively much more important in class V than in class I, it is perhaps surprising that even among men in professional and related occupations it was the reason given in half the cases.

Fitness for Employment Beyond Retirement Age

In Part I we attempted to assess the incidence of disease and disability in the seventh decade; a disease was considered to cause disability if a man was inconvenienced to any appreciable extent by it. In the present context we are concerned with the greater degrees of disability which restrict or prohibit employment. As stated above, a man's fitness for full-time employment was assessed in relation to his original occupation, and, if he was not fit for his original occupation, to any other job for which by training and experience he might be suited. The second was a less exacting standard than the first, and the decision that a man could meet neither implied that on medical grounds he was regarded as unfitted for full-time work. The results are given in Table XIII. Of men in the whole decade approximately 1 in 10 was unfit for full-time employment; 4 in 5 could do their original work. Among those above retirement age (65-69) the corresponding proportions were 1 in 7 and 3 in 4. The proportions of unfit men did not rise very sharply until the last years of the decade, being 8.3%, 16.5%, 13.2%, and 23.6% for men aged 66, 67, 68, and 69 respectively.

There were 104 men who were considered unfit for full-time employment, and in Table XIV we have attempted to assess the relative importance of different diseases as the cause. As would be expected from the fact that it was both the commonest disease in the decade and the one associated with the highest incidence of disability (Part I), bronchitis was the most frequent cause of unfitness for employment (33 cases), and, with hypertension (10 cases) and

TABLE XIII.—*Percentage of Men Considered to be Fit for Employment*

Age (Years):	60	61	62	63	64	65	66	67	68	69	Total	65-69
Men fit for original employment	87.0	89.3	92.3	89.8	86.5	81.6	84.4	73.4	72.5	58.4	82.8	74.4
Men unfit for original, but fit for other employment	7.0	4.3	1.5	1.9	8.1	8.7	7.3	10.1	14.3	18.0	7.5	11.6
Men unfit for employment	6.0	6.4	6.2	8.3	5.4	9.7	8.3	16.5	13.2	23.6	9.7	14.0
Total (No. of men)	100.0 (115)	100.0 (140)	100.0 (130)	100.0 (108)	100.0 (111)	100.0 (103)	100.0 (96)	100.0 (79)	100.0 (91)	100.0 (89)	100.0 (1,062)	100.0 (458)

coronary artery disease (7 cases), accounted for about half the men affected. No other single disease was common, the remainder being attributable to a large number of different conditions each of which was responsible for from one to four cases.

TABLE XIV.—*Diseases Causing Unfitness for Employment*

Disease	No. of Men	
	Unfit for Employment	Employed
Respiratory disease:		
Chronic bronchitis and emphysema ..	33	7
Pulmonary tuberculosis ..	3	1
" fibrosis ..	2	1
Cardiovascular disease:		
Hypertension and its sequelae ..	10	2
Coronary artery disease ..	7	2
Peripheral vascular disease ..	3	—
Mitral incompetence ..	1	—
Thyrocardiac disease ..	1	—
Primary pulmonary hypertension ..	1	1
Neurological disease:		
Hemiplegia ..	4	—
Parkinson's disease ..	3	—
Polynuritis ..	2	—
Tabes dorsalis ..	1	—
Paraplegia ..	1	—
Meniere's disease ..	1	—
Cervical spondylosis ..	1	—
Psychiatric disease:		
Depression ..	2	1
Anxiety ..	4	—
Hysteria ..	2	—
Defective vision ..	2	—
" hearing ..	1	—
Skeletal disease:		
Osteoarthritis { knees ..	2	—
" spine ..	1	—
" generalized ..	1	—
Rheumatoid arthritis ..	1	—
Old fractures ..	3	—
Gunshot wounds ..	1	1
Carcinomata ..	2	—
Alimentary disease:		
Peptic ulcer ..	2	—
Post-gastrectomy syndrome ..	1	—
Varicose ulcers ..	2	—
Generalized eczema ..	1	—
Addison's disease ..	1	—
General feebleness ..	1	—
Total ..	104	16

Table XV gives the proportion of men fit for employment according to work status at the time of examination. Almost all the men who were employed were considered to be physically capable of working (in this case fitness refers to the ability to do the original or a different occupation). Among retired men the incidence of unfitness was much higher, and of those fit to work the majority did not wish to be employed. Perhaps the most significant conclusion suggested by the table is that there was no substantial reserve of retired and fit men seeking or even ready to take employment; it was only 4.4% in the age group 65–69.

Social-class Differences in Fitness for Employment

Social-class variation in the incidence of disease and disability was perhaps the most striking of the observations presented in the first part of this report, and it would be expected that these differences would be reflected in the more severe test of fitness for work. The results are given in Table XVI, in which the examination has been restricted to men above retirement age—that is, 65–69. From class I to class V the percentage of men unfit for any employment increased from 9.1% to 17.4%, and the percentage unfit for their original occupation from 9.1% to 36.2%. It is also evident that in class I all men capable of full-time work

could do their original job, whereas the proportion in class V was only about half. This difference is no doubt affected to some extent by the less exacting physical requirements of the occupations open to those in class I, but it also results from their much lower incidence of disease and disability.

We have also examined the relationship between fitness for work and the physical and mental demands of employment. These influences were assessed by inviting men to say whether the physical demands of their original occupation were "very heavy, moderately heavy, light, or sedentary," and the mental demands "severe, moderate, or trivial." The limitations of this appraisal were discussed previously (Brown *et al.*, 1957), but it was considered that

TABLE XVI.—*Percentage of Men Aged 65–69 Considered to be Unfit for Employment Related to Social Class*

Social Class	No. of Men	Percentage Unfit for Any Employment	Percentage Unfit for Original Employment
I	11	9.1	9.1
II	74	5.4	12.2
III	255	14.9	24.3
IV	49	18.4	40.8
V	69	17.4	36.2

TABLE XVII.—*Percentage of Men Aged 65–69 Considered to be Unfit for Employment Related to Physical Demands of Occupation*

Physical Demands	No. of Men	Percentage Unfit for Any Employment	Percentage Unfit for Original Employment
Very heavy ..	72	18.1	48.6
Moderately heavy ..	133	13.7	27.5
Light ..	183	13.7	18.6
Sedentary ..	50	10.0	12.0

TABLE XVIII.—*Percentage of Men Aged 65–69 Considered to be Unfit for Employment Related to Mental Demands of Occupation*

Mental Demands	No. of Men	Percentage Unfit for Any Employment	Percentage Unfit for Original Employment
Severe ..	72	8.3	20.8
Moderate ..	215	13.0	20.9
Trivial ..	170	17.6	33.5

as a broad index of strain imposed by employment it could be accepted. The results are given in Tables XVII and XVIII for men aged 65–69. The proportions unfit increased with increasing physical demands of the original work, and decreased with increasing mental demands. Since these two influences are negatively correlated there is nothing unexpected about this result, and since both are related to other influences—such as social class—no particular significance can be attached to the observations.

Discussion

In Part I we examined the incidence of disease and disability in a group of representative men in the seventh decade, and in Part II we have attempted to assess the significance of these findings in relation to fitness for employment. Before discussing this matter further we may summarize the main conclusions as follows.

Fitness Related to Age.—The proportion of men unfit to work increased slowly after age 65. It did not rise sharply

TABLE XV.—*Fitness* of Employed and Retired Men*

Age (Years):	60	61	62	63	64	65	66	67	68	69	Total	60–64	65–69
Employed men:													
Fit ..	93.1	90.7	90.0	89.8	87.4	68.9	72.9	63.3	60.4	51.7	78.8	90.2	63.7
Unfit ..	1.7	2.9	2.3	0.9	0.9	1.0	2.1	1.3	1.1	—	1.5	1.8	1.1
Retired men:													
Fit and wish to work ..	—	—	0.8	0.9	2.7	3.9	1.0	8.8	5.5	3.4	2.4	0.8	4.4
" do not wish to work ..	0.9	2.9	3.1	0.9	4.5	17.5	17.7	11.4	20.9	21.3	9.1	2.5	17.9
Unfit ..	4.3	3.6	3.8	7.4	4.5	8.7	6.3	15.2	12.1	23.6	8.2	4.7	12.9
Total ..	100.0	100.1	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Fit for "original" or for other employment. The total is based on the same numbers of men as Table XIII.

until the last year of the decade, when the proportion unfit to do their original employment increased from 1 in 4 (in the penultimate year) to nearly 1 in 2, and the proportion unfit to do any full-time employment increased from about 1 in 10 to 1 in 4 (Table XIII). However, even in the last year 3 in 4 were capable of full-time work, and 1 in 2 was doing full-time work.

Fitness Related to Social Class.—Since numbers do not permit separate consideration of individual occupations, attention has been focused on social class, as assessed by grouping occupations. The proportion of men unfit to work was fairly sharply related to social class. In the age group 65–69 the proportion unfit to do their original employment was approximately 1 in 10 in classes I and II, and 2 in 5 in classes IV and V (Table XVI); the proportions considered unfit to do any full-time employment were about 1 in 10 and 1 in 5 respectively.

These findings have some bearing on the suggestions sometimes made that there may exist beyond retirement age a considerable reserve of labour, which might be exploited both for its contribution to production and services and as a means of reducing demands upon pension funds. This possibility was considered to be unlikely in the Phillips Report (1954), in which it was estimated that a major change in retirement policy would be needed to effect a relatively small increase in the labour force of Great Britain. Our results support this conclusion. An indication of the size of the reserve of labour, if it can be described as such, is given by the observation that, in the age group 65–69, 86% of men were considered fit for some employment (74.4% for their original employment) and 64.8% were actually employed (Tables VIII and XIII). But the reserve was chiefly among men in sedentary and skilled occupations. In class I 90.9% were fit for employment (their original or other work) and 54.5% were employed. In class V 82.6% were fit for some work (63.8% for their original employment) and 68.1% were employed. Very broadly we may say that in classes I and II approximately 1 in every 3 men aged 65–69 was retired and fit to undertake his original employment; in classes IV and V there were no retired men fit to do their original employment, and about 1 in 5 was retired but could do some full-time work. Clearly there was no substantial reserve of men over 65 who were both fit and willing to work. For, although 20% of men aged 65–69 had retired and were considered to be physically capable of undertaking full-time employment, most of them did not want to work, usually because they had been in relatively well-paid occupations, and the proportion fit and wishing to return was low (4.4%). It should of course be emphasized that these results were obtained at a time of full employment in an industrial area in which the range of possible occupations was very great, and there can be little doubt that elsewhere, and particularly in a period of unemployment, the findings might be very different.

But, while an increase in retirement age could be expected to have little effect on the size of the labour force, there are other grounds on which it might be considered. At 65 it evidently bears little relation either to the association between fitness and age or to the actual frequency of employment of men over 65, at least in a period of full employment. This conclusion is not inconsistent with the observation that there is only a small reserve of labour beyond retirement age; for the reserve is small only because most men go on working after they have reached the age limit. The question which must be asked is whether it is realistic to maintain pension age at 65 when at least 3 in every 4 men work beyond it if given the opportunity and a financial incentive, and 9 out of 10 are physically capable of doing so. Certainly, and this is the main point of the present inquiry, if an advancement of age of retirement were considered desirable for other reasons, there appear to be no medical grounds which would prohibit it. And the main grounds for advancing retirement age are evidently not that it would add substantially to the labour force, but that it would rationalize a set of circumstances which already exist.

That these circumstances differ in different occupations and at different levels of employment are other and complex questions which we shall not attempt to discuss.

SUMMARY

Eleven Birmingham general practitioners examined 1,062 out of 1,243 men on their lists who were aged 60–69, and Part I records the incidence of disease and disability in the decade. For this purpose we have attempted to include only diseases which would be regarded clinically as significant, and we have considered a disease to be disabling only if it interfered in an appreciable degree with the life of the individual. The proportion of men with disease was approximately 4 in 5 in the whole decade; in nearly half the cases the diseases were causing no disability. The incidence of disease and disability increased with age. The frequency of "severe" disability, defined as one which might restrict or prohibit employment, rose from 1 in 10 at 60–61 to 1 in 5 at 68–69. A considerable part of the age increment was due to bronchitis, defective hearing, hypertension, and defective vision.

The incidence of disease and of disability was related sharply to social class, defined according to occupation. The proportion of men with disease increased regularly from 2 in 3 in class I (professional, etc., occupations) to 6 in 7 in class V (unskilled occupations), and the proportion with disability from 1 in 7 to 2 in 3. The proportion of men with disease who were in some degree disabled was 1 in 4 in class I and 3 in 4 in class V.

The incidence of six of the eight commonest diseases—bronchitis, coronary disease, hypertension, peptic ulcer, defective hearing, and defective vision—was related to social class. Except in the case of coronary disease, where the association is different for patients with myocardial infarction and for those with other manifestations of the disease, incidence increased as social circumstances became progressively less favourable—that is, from class I to class V. It is shown that in chronic bronchitis this relationship was manifested only among smokers.

In Part II an attempt has been made to assess the fitness for full-time employment of 1,062 men in the seventh decade, of whom 458 were above retirement age (65). In the 66th year 3 in every 4 men were still doing full-time work, and in the 70th year 1 in 2. Financial need was the predominant reason given (in 78.5% of cases) for remaining at work.

The proportion of men considered unfit for employment was approximately 1 in 10 in the whole decade, 1 in 7 above retirement age (65–69), and 1 in 4 in the last year (69). Three diseases—chronic bronchitis (chiefly), hypertension, and coronary artery disease—accounted for about half of the examples of unfitness. Among men over retirement age the proportion unfit was related sharply to social class (defined according to occupation); it was about 1 in 10 in classes I and II (professional and related occupations) and 1 in 5 in classes IV and V (semi-skilled and unskilled occupations). The class difference was even more marked when fitness was assessed in respect of the work on which the individual had been engaged before retirement.

It is concluded that, if an advancement of retirement age were considered advisable for other reasons, there appear to be no medical grounds which would prohibit it.

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A CASE OF HYPERTENSION DUE TO RENAL ARTERY OCCLUSION

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The cause of severe hypertension in man is not commonly ascertainable, still less commonly can it be demonstrated to be due to a renal mechanism of the type discovered by Goldblatt (1934). Unilateral renal disease causing hypertension is both interesting theoretically and important therapeutically. Since relatively few cases have been reported, it is thought worth while recording a case in which malignant hypertension was caused by a thrombosed aneurysm of the renal artery and was cured by nephrectomy.

Case Report

A man aged 48 was admitted to hospital on June 27, 1954, complaining of sudden pain in his left loin. He had a low fever and was tender in the left loin and iliac fossa; the blood pressure was 140/90 and the urine was free of albumin. He quickly improved and was discharged home.

On November 1, four months later, he was readmitted complaining of severe headache of two weeks' duration. The blood pressure was now 220/140 and the fundi showed early papilloedema with recent haemorrhages and exudates.

Investigations.—The urine contained albumin and a slight excess of red cells. The blood count was normal; W.R. negative; blood urea, 34 mg./100 ml.; urea clearance (maximum) 53% of normal. Intravenous pyelography showed a normal right pyelogram and poor excretion from a small left kidney. Retrograde pyelography confirmed the latter, and urine from the left ureter contained albumin and red cells, but was sterile on culture.

Hexamethonium tartrate by mouth had little effect on the blood pressure, and he was discharged on December 4. A month later he was admitted again as the blood pressure was still very high and the retinopathy unimproved; operation was decided on.

Left nephrectomy was performed on January 14, 1955. A small, grossly scarred kidney was removed along with an aneurysm of the renal artery occluded by thrombus.

Thirty-six hours after operation the blood pressure fell to 90/60, at which level it remained for 48 hours until a noradrenaline drip was begun; oliguria occurred, the urine output being 100 to 500 ml. per 24 hours from the third to the fourteenth post-operative day. The urine was of low specific gravity and the blood urea rose to 417 mg./100 ml.; it was thought that the sudden fall of blood pressure had caused a tubular lesion in the remaining kidney. A month later, at the time of discharge, the blood pressure was 150/100, there was no albuminuria, and the blood urea was normal. By October, 1955, the fundi had returned to normal, and in September, 1956, he remained symptom-free with a blood pressure of 120/80. By January, 1958, the blood pressure had risen to 160/100, but he was well and the fundi were normal.

Pathology.—The kidney was coarsely scarred and showed fibrosis and loss of pattern. Microscopically there were numerous old and recent infarcts with a few small areas of normal renal tissue between. The renal artery showed fibrosis of the media and well-marked lymphocytic infiltration of the vasa vasorum. Where the artery was dilated to form the aneurysm, the histological picture resembled that of syphilitic arteritis, although there was no other evidence of this disease and no positive serology. Obstruction of the blood supply appeared to have taken place in stages, but the remnants of functioning renal tissue were probably supplied by capsular vessels.

Discussion

It seems probable that the episode of pain in June, 1954, was due to a major infarction of the left kidney. The blood pressure was certainly normal then, but had risen to malignant levels four months later. Nephrectomy produced a rapid and sustained fall of blood pressure with a marked hypotensive overswing. Similar hypotension often occurs after removal of a pheochromocytoma and, after removal of an ischaemic kidney, has been commented on by Hunter and McElmoyle (1956), but does not occur in all such cases. There was no evidence of bleeding in the present case, and the hypotensive overswing might have been due to long-standing inhibition of a normal pressor mechanism or possibly to a circulating depressor substance.

Although pyelonephritis is the most frequent unilateral kidney disease to produce hypertension, obstruction of the main renal artery is more closely comparable with the Goldblatt method of producing high blood pressure in experimental animals. It is in such cases that one might most expect to isolate a pressor substance from the peripheral or renal vein blood, although the evidence that such exists is not very convincing in spite of the claim of Margolin *et al.* (1957). Poutasse (1956) lists 21 cases of renal arterial occlusion with hypertension which came to necropsy, and 19 whose hypertension was relieved by nephrectomy; other cases are reported by Perera and Haelig (1952), Hunter and McElmoyle (1956), Stone *et al.* (1957), Haller *et al.* (1957), and Connor *et al.* (1957). Hypertension due to renal embolism is described by Bourne (1954) and by Prinzmetal *et al.* (1942), and due to an aneurysm of the renal artery by Howard *et al.* (1940).

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