are comparatively small, and it might well prove necessary to combine the old workers from several firms in a separate workshop. This in turn would mean the severance of human contacts to which the old person is accustomed, as well as leading to probable difficulties in transport—and faced by all these factors, which in essence add up to learning a new job and starting life all over again, most old men would prefer to pack up and retire on their contributory pension.

A third difficulty arises from the number of men in modern life who exercise power in some degree over their fellows, from foremen up to high administrators. The retirement of these men at a fixed age robs the community of the services of its best men, who may be at the height of their powers, when they have still a long potential contribution in front of them. To retain them indefinitely, however, blocks the ladder of promotion to youth and has its own undesirable results; on the other hand, power being an exercise of the spirit that is usually surrendered with reluctance, it is almost impossible to ask such men to continue at work in a subordinate capacity.

Such are some of the difficulties which would face us if all old men wished to continue at work indefinitely. By no means all, however, have this desire. Some are neutral, and will go on working past their pensionable birthday only if there is sufficient financial inducement, as can be seen from the fact that investigations into the employment of old people show a positive correlation between the number of old men at work and the number with no additional source of income. The metaphor of the carrot and the donkey therefore becomes relevant, but it is a difficult carrot to design, since it must not be so big that it is economically unsound and yet be big enough to provide an incentive. The present scheme whereby when an old man continues at work past 65 he adds one shilling a week to his ultimate pension for every six months of work (up to a certain maximum) is an effort to meet this point; but time alone will show whether it is successful.

Some men, on the other hand, desire to give up work at the earliest possible moment, and they must surely be allowed to do so. Either they dislike their occupation, in which case they are not worth employing, or they are men with a consuming hobby to which they look forward to devoting their remaining years. These are the minor creative spirits of the time, and it would be wrong to confine them to their task past retiring age. Not only do they make definite contributions to the sum total of our civilization, but they possess the best recipe for old age—and in fact they usually live lives which are not only long but also healthy and happy. This very short review shows that the employment of old men presents us with a problem whose solution is as difficult as it is urgent.

Conclusion

To sum up: As the numbers of old people increase, so will it become more and more urgent that they should play as active a part in society as possible. To this end the difficulties that surround the continued employment of old men will need to be surmounted, and it will be necessary to provide a special medical service for old people whose main aim will be to preserve their independence for as long as possible. Such a service will require to bridge the gap between hospital and home and integrate medical care with social aid. As old people gradually become really aged and unable to maintain their own care, so will they have to continue to pass, as they mainly do at present, into the care of the family. If the family, however, is to sustain the burdens facing it in the future, assistance from the

community will undoubtedly be necessary. For this to achieve its object without destroying the sense of family responsibility much more knowledge of the many social factors involved is required than we at present possess. Unless we can make some sort of a solution of these problems, then the future has indeed a millstone it is ready to place round our necks.

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THE CARE OF THE CHRONIC SICK—III*

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Of the many complex administrative issues which arise in apparent consequence of recent health legislation, none is more challenging than the care of the chronic sick. In fact, the problem is neither new nor more urgent than it has been for many years under the administration of the Poor Law or local authorities, but it is more conspicuous because the new authorities which have taken over the hospitals have terms of reference very different from the old. Act of Parliament sharply limits their responsibility to hospital care. Faced with the unpleasant facts of long waiting-lists and insufficient beds, they cannot view with composure the possibility that their hospitals now contain many patients whose medical needs are occasional or transient but whose social circumstances determine their admission or prohibit their discharge.

The apparent intention of the National Health Service Act (Sections 25, 28, and 29) and of the National Assistance Act (Sections 21, 25, and 29) is to leave to local authorities the domiciliary and institutional care of persons who need not be admitted to hospitals. Much hangs on the interpretation of medical requirements which normally necessitate hospital admission, but in this matter the past history of the chronic sick is not instructive. The general practitioner who stated to the relieving officer that in his opinion a patient should be admitted to hospital was inevitably influenced by the inadequacy of facilities at home as well as by the urgency of the need for institutional treatment. It may therefore be objected that data derived from investigation of the present hospital population, though indicative of the shortcomings of past services, are unacceptable as a guide to future policy. None the less, a good deal can be learned from consideration of the patients now in hospital, and we suggest three questions which focus attention on the main issues.

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1. How many hospital beds are occupied by the chronic sick ?
2. On the basis of their medical and nursing requirements how should responsibility for these patients be divided between regional hospital boards and local authorities under the provisions of the National Health Service and National Assistance Acts ?

3. To what extent will improved services in the acute and recovery phases of illness reduce the numbers of patients requiring prolonged medical or nursing attention ?

On the first two of these questions we have already reported in full the results of investigations to which we here refer briefly (Lowe and McKeown, 1949, 1950). An answer to the third question is no less important, but although some suggestive data are examined below it is not possible at this time to measure the effect of improved services or to give precise figures for the accommodation which would meet the responsibilities of local authorities and regional hospital boards.

In what follows we refer mainly to material collected in a survey of patients in the largest hospital for the chronic sick in Birmingham. Western Road Infirmary contained 1,005 patients who were investigated by social workers and doctors in the period October, 1948, to March, 1949. The data and the conclusions based on them will be discussed more fully in the appropriate sections.

Hospital Beds Occupied by the Chronic Sick : Age Specific Rates

The number of patients in hospitals for the chronic sick in England and Wales was given as 70,000 by the report of the Ministry of Health for the year ended March 31,

1947. The hospital surveys completed during the war years gave regional estimates of future bed requirements (Ministry of Health, 1945-6), which varied between 1.25 (London) and 2.5 (South-western Region) per 1,000 of the population. In some cases these figures have been adjusted to allow for possible age changes, but since the methods of calculation are not uniform they can be accepted only as rough assessments of regional requirements. It was on the strength of these estimates that the chronic sick were stated to require between 2 and 2.5 beds per 1,000 of the general population.

The striking differences in bed requirements draw attention to the unsatisfactory nature of rates expressed per 1,000 of the population at all ages. In the two hospitals which accommodate the chronic sick in Birmingham, 81% of patients were 65 and over, and the few data available from other sources (Ministry of Health, 1945; Affleck, 1947; Greenwood, 1949) suggest that the high proportion is not peculiar to this city. We therefore need age specific rates which can be applied with regard for regional differences and secular changes in the age composition of the population. The data given for Birmingham in Table I (see also Fig. 1) show that of persons 65 and over approximately 12 per 1,000 are in one of the two city hospitals which care for the chronic sick.

Disposal of Chronic Sick now in Hospital

Agreement about disposal of hospital patients presupposes an assessment of their medical, nursing, and domestic requirements, and an acceptance of certain defined needs as reasonable criteria for hospital admission.

TABLE I.—Patients in Birmingham Hospitals for the Chronic Sick: Age Specific Rates (see also Fig. 1)

Age Groups (Years):	0-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85 and Over	All Ages	65 and Over
Civilian population*	252,229	128,786	183,979	175,671	140,095	105,419	70,420	25,939	3,462	1,086,000	99,821
Patients in hospital†	—	3	14	36	72	161	449	576	204	1,515	1,229
Rates per 1,000 population	0	0.02	0.08	0.20	0.51	1.53	6.38	22.21	58.93	1.40	12.31

* Registrar-General's estimates for December 31, 1947.

† Birmingham hospitals, December 31, 1948.

FIG. 1.—Age distribution of patients in Birmingham hospitals for the chronic sick and the age specific rates per 1,000 of the Birmingham population (see Table I).

TABLE II.—Medical Attention and Skilled Nursing Required by Patients in Western Road Infirmary*

	Daily	More than Once a Week	Weekly	Fort-nightly	Monthly or Less	None	Total
Medical attention	1.6% (16)	5.8% (58)	10.2% (103)	8.5% (85)	70.9% (713)	3.0% (30)	100% (1,005)
Skilled nursing	11.9% (120)	3.8% (38)	0.3% (3)	0.3% (3)	—	83.7% (841)	100% (1,005)

* All subsequent tables are based on the investigation of 1,005 patients in Western Road Infirmary. Figures in parentheses represent actual number of cases.

The nature and frequency of attention required by all patients at Western Road Infirmary were therefore assessed in relation to four types of service, with the following results: (a) medical attention (7% more often than once a week, Table II); (b) skilled nursing* (16%, Table II); simple nursing† (93%); and domestic service (all patients).

On the basis of the attention required the disposal of each patient was next considered in relation to one of the following possibilities.

(a) Hospital. Patients needing skilled nursing and/or medical attention once a week or more frequently.

(b) Institution (other than hospital) or own home. Patients not requiring skilled nursing or weekly medical attention.

*Skilled nursing: injections, dressings, administration of dangerous drugs, care of acutely ill people, etc.

†Simple nursing: washing, dressing, lifting, feeding, etc.

(c) Mental Institution. Patients who, irrespective of other medical or nursing requirements, need personal supervision because of their abnormal mental state.

Table III (see also Fig. 2) shows that roughly one-fifth, three-fifths, and one-fifth of the population at Western Road Infirmary were placed in (a), (b), and (c) respectively.

FIG. 2.—Suggested disposal of patients in Western Road Infirmary (See Table III).

TABLE III.—Suggested Disposal of Patients (see also Fig. 2)

Patients Without Gross Mental Change			Patients With Gross Mental Change	Total
(a) Hospital*	(b) Institution or Own Home		(c) Mental Institution†	
	With Simple Nursing	Without Simple Nursing		
18.8% (189)	54.6% (549)	7.0% (70)	19.6% (197)	100% (1,005)

* Includes all patients requiring skilled nursing and/or medical attention weekly or more often.

† Includes all patients requiring supervision because of their abnormal mental state.

The table also distinguishes under (b) between those who need simple nursing (over one-half) and those who do not (less than one-tenth). For a fuller discussion of this classification we refer the reader to the earlier paper (Lowe and McKeown, 1949).

Adequacy of Medical Services Received by the Chronic Sick

We have so far been concerned with patients now in hospital, and with their possible disposal against the background of the administrative changes introduced by the 1946 National Health Service Act. More important in relation to future plans are patients for whom admission to hospital is now sought, whose medical condition and social circumstances are more representative of the contemporary problem. Until information of this kind is available to correct estimates based on the present population in hospital, we may usefully consider evidence of the incompleteness of earlier services. In this matter we are concerned not so much to expose past deficiencies, of which most people are by now aware, as to give reasons for believing that satisfactory services in the acute and recovery phases of illness will make a considerable contribution to the reduction of the dimensions of the problem.

Admission through general hospitals has of course been valued as a guarantee of adequate investigation before an illness is accepted as chronic. Three-quarters of the patients in Western Road Infirmary had been admitted from their homes; 14% from the wards of general hos-

pitals; and 5% from the out-patient departments of general hospitals (Table IV). Approximately two-thirds of all patients had not had laboratory or out-patient investigations before their admission.

TABLE IV.—Source of Patients in Western Road Infirmary (i.e., whence admitted)

General Hospital		Other Hospitals or Nursing Homes	Direct from Home	Unknown	Total
In-patient	Out-patient				
14.0% (141)	5.1% (51)	3.0% (30)	75.7% (761)	2.2% (22)	100% (1,005)

We attempted also to assess the adequacy of treatment received by each patient. It is often impossible to do this after an interval of years, and we therefore confine comment to three problems which more than any others determine the strain on hospital resources. These problems are continence, mobility, and mental state.

Continence

Table V records the proportion of patients incontinent of urine (8%), of faeces (1%), and of both urine and faeces (26%); the proportion incontinent is considerably higher for women than for men. Once again it is often

TABLE V.—Incidence of Incontinence

	Continent	Incontinent			Total
		Urine Only	Faeces Only	Urine and Faeces	
Males ..	73.6% (327)	5.2% (23)	2.7% (12)	18.5% (82)	100% (444)*
Females ..	58.5% (321)	9.4% (52)	—	32.1% (176)	100% (549)†
All patients ..	65.2% (648)	7.6% (75)	1.2% (12)	26.0% (258)	100% (993)

* 11 males excluded: 4 colostomy for carcinoma and 7 suprapubic cystostomies.

† 1 female excluded: colostomy for carcinoma.

not possible to pass a reliable judgment on the cause, but we can at least identify those illnesses in which incontinence is a usual and sometimes an inevitable complication. Table VI gives information about 137 patients for whom,

TABLE VI.—Cases in Which the Diagnosis is Accepted as an Explanation of the Incontinence (137 patients)

Diagnosis	Males	Females	Total
1. Cerebral thrombosis with hemiplegia ..	49	57	106
2. Other disease of the central nervous system (disseminated sclerosis, tabes, post-encephalitic dementia, etc.) ..	11	5	16
3. Carcinoma (cervix, rectum, bladder, etc.) ..	4	5	9
4. Other diagnoses (prostatic hypertrophy, proctiditis, ischio-rectal abscess, etc.) ..	3	3	6
Total ..	67	70	137

in the absence of any more reliable guide, we have accepted the diagnosis as the explanation of the incontinence. The most common diagnosis was cerebral thrombosis with hemiplegia, but the difficulty in accepting this without question as a sufficient reason for incontinence is underlined by the fact that 77 other cases of the same type were continent.

If we overlook this difficulty and accept the diagnosis as the cause of the incontinence of 137 patients, a further 208 cases are unexplained. Table VII (see also Fig. 3) shows that the diagnosis could not be regarded as the cause of incontinence for 43% of men and 69% of women. The time of onset was also recorded: about one-quarter of the men and two-fifths of the women who were incontinent had become so since their admission to hospital.

FIG. 3.—Time of onset of incontinence (See Table VII).

TABLE VII.—Time of Onset of Incontinence (345 patients) (see also Fig. 3)

	Males				Females			
	Before Admission	Since Admission	Unknown	Total	Before Admission	Since Admission	Unknown	Total
Cause known	47.9% (56)	9.4% (11)	—	57.3% (67)	25.4% (58)	5.3% (12)	—	30.7% (70)
Cause unknown	16.2% (19)	18.8% (22)	7.7% (9)	42.7% (50)	23.7% (54)	36.0% (82)	9.6% (22)	69.3% (158)
Total ..	64.1% (75)	28.2% (33)	7.7% (9)	100% (117)	49.1% (112)	41.3% (94)	9.6% (22)	100% (228)

We are not, of course, entitled to conclude that in the absence of an appropriate diagnosis incontinence was preventable and may fairly be attributed to neglect. Table VIII, which gives information about the mental state

TABLE VIII.—Mental State of the 208 Patients with Unexplained Incontinence

	Normal	Abnormal		Unknown	Total
		Need Supervision	Need No Supervision		
Males ..	34.0% (17)	48.0% (24)	10.0% (5)	8.0% (4)	100% (50)
Females ..	31.7% (50)	37.3% (59)	25.9% (41)	5.1% (8)	100% (158)
Total ..	32.2% (67)	39.9% (83)	22.1% (46)	5.8% (12)	100% (208)

of the 208 patients with unexplained incontinence, corrects this impression. It shows that 129 cases were abnormal mentally, 83 to such a degree that they required personal supervision. Even so, we are left with a considerable number of patients, mainly women, for whom neither the physical diagnosis nor the mental state explains the incontinence. It has been reported that some bedfast patients become continent when they are encouraged to get up, and this observation has been confirmed by our colleague, Professor A. P. Thomson (1949).

Mobility

Table IX shows that 58% of patients were bedfast, and that a further 17% could be moved to a chair at the side of the bed. After examining the diagnosis of the 588 bedfast patients we decided not to include it, since it often

TABLE IX.—Mobility of Patients

	Bedfast		Sitting Out of Bed		Ambulant			Total
	Lying	Sitting	With Help	Without Help	No Stairs	Stairs	Out of Doors	
Males ..	23.3% (106)	29.7% (135)	9.9% (45)	6.8% (31)	16.3% (74)	1.7% (8)	12.3% (56)	100% (455)
Females	33.3% (183)	29.8% (164)	14.2% (78)	3.1% (17)	14.7% (81)	2.4% (13)	2.5% (14)	100% (550)
Total	28.8% (289)	29.7% (299)	12.2% (123)	4.8% (48)	15.4% (155)	2.1% (21)	7.0% (70)	100% (1,005)

provides no satisfactory explanation of immobility. Doubtfully we have included a judgment on their future mobility (Table X), and according to this estimate 15% could get up with treatment and 3% without it.

TABLE X.—Estimate of Future Mobility of 588 Bedfast Patients

	Could Not Get Up	Could Get Up		Future Mobility Doubtful	Total
		With Treatment	Without Treatment		
Males ..	53.5% (129)	17.9% (43)	3.7% (9)	24.9% (60)	100% (241)
Females ..	57.6% (200)	12.7% (44)	2.6% (9)	27.1% (94)	100% (347)
Total ..	56.0% (329)	14.8% (87)	3.1% (18)	26.1% (154)	100% (588)

Although in many cases it is quite impossible to give reasons for the immobility of patients who have been confined to bed for a considerable period, experience has shown that with adequate attention in the acute and recovery phases of illness the proportion of patients who remain bedfast can be considerably reduced (Amulree and Sturdee, 1946 ; Warren, 1948 ; Cosin, 1948 ; Howell, 1948 ; Greenwood, 1949).

Mental State

In this inquiry the mental state was considered only in its relation to the supervision required. About one-third of all patients were judged to be abnormal mentally, but only one-fifth to a degree necessitating constant personal supervision (Table XI). We have given elsewhere detailed

TABLE XI.—Mental State of Patients

	Normal	Abnormal		Unknown	Total
		Need Supervision	Need No Supervision		
Males ..	68.1% (310)	19.4% (88)	10.1% (46)	2.4% (11)	100% (455)
Females	60.5% (333)	19.8% (109)	17.3% (95)	2.4% (13)	100% (550)
Total	64.0% (643)	19.6% (197)	14.0% (141)	2.4% (24)	100% (1,005)

information about patients who need to be supervised (Lowe and McKeown, 1949); what concerns us here is that there is little in the data to suggest that the number of patients in this category will be reduced by improved services.

Discussion

To avoid misunderstanding we must state explicitly the conclusions which we consider may legitimately be drawn from the data at our disposal. First, and notwithstanding the achievements of the handful of enthusiasts who have interested themselves to good purpose in selected cases, it is only realistic to recognize that there can be little hope of freeing large numbers of hospital beds by disposing of the patients who now occupy them. There are several

reasons for this view, apart from the lack of alternative facilities, and they may be summarized in the statement that some patients have no home, many have no wish to leave, and all in greater or less degree show the mark of the inadequate resources to which they have had access. These facts do not reflect on the hospitals themselves, for too many patients, too few staff, and hopelessly inadequate facilities were not problems which could be solved at the level of the individual hospital. For these reasons we must plan chiefly for future admissions.

Without attempting to give precise figures, we may safely conclude that a considerable proportion of patients of the type now cared for in hospital could in future be accommodated elsewhere if the necessary services were available, and it is evidently the intention of recent Acts of Parliament that this shall be the responsibility of local authorities. To what extent it can be met by complementary home services cannot be known without an examination of the circumstances of patients waiting for admission to hospital, followed by a period of experience in the organization and accountancy of such services. It is at least fairly certain that for some time to come institutions will be needed which add simple nursing and occasional medical attention to the usual resources of the municipal home for the aged.

If relieved in this way of all cases which need never enter hospital, and if permitted to discharge their patients at the earliest moment after completion of treatment, regional hospital boards can re-examine more realistically the proposal that they should in time care for the chronic sick in wards of general hospitals. Alarming as this suggestion is if 2-2.5 beds are needed for every thousand of the population—that is, about one-third of the beds in general hospitals—the situation is quite different if, as our investigation suggests, not more than one-tenth of the total accommodation would suffice. (Separate arrangements would of course be needed for the considerable number of patients who require supervision because of their abnormal mental state.) The advantages to the elderly patient of being received in the acute ward, where modern resources in treatment are available, have always been obvious; the advantages to hospital authorities in easing the most thorny of their staffing problems are hardly less important.

Summary

In Birmingham approximately twelve persons in every thousand aged 65 and over are in hospitals for the chronic sick.

On the assumptions that only patients in need of frequent medical attention or skilled nursing should be in general hospitals, and that patients in need of supervision because of their mental state should be in some form of mental institution, disposal indicated by current requirements of 1,005 patients in Western Road Infirmary, a hospital for the chronic sick, is as follows:—Under regional hospital boards: (a) one-fifth in general hospitals, (b) one-fifth in some form of mental institution; under local authorities: (c) three-fifths divided between (i) their own homes, and (ii) other institutions offering domestic services, simple nursing, and occasional medical attention.

The adequacy of the services received by patients in Western Road Infirmary was assessed in relation to the question of admission, investigation, continence, mobility, and mental state: (a) three-quarters of the patients were admitted direct from their homes, and two-thirds had not been investigated before admission; (b) about one-third of the patients were incontinent—in many cases the incontinence was not explained by the diagnosis or the mental state of the patient; (c) 58% of patients were bedfast, and a further 17% could be moved to a chair at the side of the bed; (d) about one-third of all patients were abnormal mentally, but only about one-fifth to a degree necessitating constant personal supervision.

Improved services will no doubt reduce the number of patients incontinent or immobile, but will be unlikely to alter substantially the proportion requiring supervision because of their mental state.

We have pleasure in acknowledging our indebtedness to Professor A. P. Thomson, who has contributed to this survey in many ways. The medical records were completed by Dr. Charmian Elkes, Dr. S. E. Hallissy, and Dr. P. M. Meynell, and the social records by Mrs. L. Leaver and Mrs. H. Pringle. The inquiry owes much to their work and to the generous co-operation of Dr. L. Nagley and his staff at Western Road Infirmary. We are also indebted to Miss Frew and to those members of the Almoner's Department of the Birmingham United Hospitals who assisted in a preliminary pilot survey. Miss Catherine Wall prepared the diagrams in this paper.

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THE SIMULATION OF HEART DISEASE*

BY

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"The heart is deceitful above all things . . . who can know it?"—Jeremiah xvii. 9

The manifestations of organic heart disease are numerous and widespread. When symptoms are confusing and diagnosis is difficult we must not too readily assume that ankle oedema is necessarily of cardiac origin or purpuric spots embolic, any more than that a precordial pain is necessarily of coronary origin or a systolic murmur the product of endocarditis. Symptoms and signs, including radiological and cardiographic, may each in turn mislead.

Ability in differential diagnosis depends on a sound working knowledge and a familiarity with related possibilities, not merely gained in the seclusion of the hospital ward and academic library but reinforced with advantage by personal endeavour and responsibility won in the hard school of private practice. The course of events, if followed with accuracy even for a short space of time, will often provide a diagnostic clue denied to the isolated observations of a single opportunity. Time, in other words, simplifies the problem while it lasts.

Our subject requires to be defined and discussion limited to certain aspects of differential diagnosis. A simulation being a pretence of what is not, consideration must therefore be restricted to those conditions which mimic or are confused with organic heart disease when, in fact, the heart is healthy. There are many conditions which fulfil these requirements. A dissimulation, according to the dictionary, is a concealment of what is. However tempting it may be to include this aspect of diagnosis—namely, the concealment of organic heart disease by symptoms or signs arising elsewhere, as, for instance, left ventricular failure in the

*Read in opening a discussion in the Section of Cardiology at the Annual Meeting of the British Medical Association, Harrogate, 1949.