FOOD IN HOSPITALS

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Published for the Nuffield Provincial Hospitals Trust
by the Oxford University Press 1963

Preface

> The consulting the hours when the patient can take food, the observation of the times, often varying, when he is most faint, the altering seasons of taking food, in order to prevent such times —all this, which requires observation, ingenuity, and perseverance (and these really constitute the good nurse), might save more lives than we wot of. . . .
>
> Remember however, that the extreme punctuality in well-ordered hospitals, the rule that nothing shall be done in the ward while the patients are having their meals, go far to counterbalance what unavoidable evil there is in having patients together. . . .
>
> Remember that sick cookery should half do the work of your poor patient's weak digestion. But if you further impair it with your bad articles, I know not what is to become of him or it.
>
> If the nurse is an intelligent being, and not a mere carrier of diets to and from the patient, let her exercise her intelligence in these things.
>
> Florence Nightingale,
> "Notes on Nursing," 1859.

Florence Nightingale was emphatic, that the proper feeding of patients was one of the most important of a nurse's duties, which required careful and unremitting attention to the patient's likes and dislikes. The good nurse was 'To watch for the opinions . . . which the patient's stomach gives . . . to take care to observe the effect of his food and report it to the doctor.' Since her day, the great developments in techniques and special skills required from nurses have made correspondingly great calls upon their working time and upon their attention to different aspects of the patient's needs.

The complexities of medical diagnosis and treatment have led to the development of a number of medical auxiliary professions and technicians whose duties would formerly have been considered to be some part of nursing. In the field of hospital feeding, the exacting demands made by requirements for special diets for particular diseases and conditions, and the time and attention required for this preparation, led to the introduction of the dietitian into the large teaching hospitals, during the period between the wars. However, the Nightingale tradition was still predominant, and, until the second world war, catering and housekeeping generally remained in the charge of the matron and her assistants in most English hospitals.

In 1943 the first of a series of memoranda on Hospital Diet was published by King Edward's Hospital Fund for London. This memorandum noted that hospitals had been accustomed to provide only one full meal a day, and had relied very considerably on provisions such as eggs, butter and fruit brought in by patients' relatives. Wartime rationing stopped this source, and a study by the late Sir Jack Drummond of the nutritive value of food supplied in three hospitals demonstrated serious inadequacies (King Edward's Hospital Fund 1943). The National Health Service, from its inception in 1946, undertook to make full dietary provision for hospital patients and the management of catering in larger hospitals passed to the catering officer, who managed the catering department. Dietitians, in the small minority of hospitals which have been able to obtain their services, provide special diets from a 'diet kitchen', which is usually administered by them separately from the catering officer's 'main kitchen', and advise their hospital committees on nutritional and dietetic matters generally. In small hospitals the Nightingale tradition remains intact, and all housekeeping and catering, together with all nursing, is managed by the matron and her nursing staff. As described in this report, whatever may be the organisation for catering in larger hospitals, the personal service of food to the patient in the wards has been retained by the nurses; but too often this service has become a mere vestige of the old tradition, and in a number of hospitals the nurse has become, indeed, 'a mere carrier of diets'.

This historical development accounts for conditions found in hospitals today. There is still some tendency for patients to rely upon their own provisions as a supplement to food provided by the hospitals. As the problems of feeding became more time-consuming and more complex the nurses lost some measure of control over the administration of catering, but they still have the last word; it is to the nurse that patients in the ward look for their food. They will probably never have any contact with the catering staff responsible for producing it, and only those who are 'put on a diet' in one of a minority of hospitals will have any direct contact with a dietitian.

So, in large hospitals a cumbersome tripartite organisation has developed of matron and nurses, catering officer and main kitchen, dietitian and diet kitchen. All of these work in different ways in different places, yet all share responsibility for serving the right sort of food, at the right time in the right place. Nobody, it may be

supposed, has deliberately planned these untidy and inefficient arrangements; they have been made from time to time to meet particular difficulties as they arose and came to notice. Old, unplanned and extremely inconvenient buildings are an aggravating factor in this inefficient organisation.

This report describes a random survey of 152 hospitals, in each of which the diet of one patient was sampled over a period of 24 hours, and evaluated. Observations were also made of catering organisations, waste of food in the wards, the quality of food, and the service of food to patients. These are recorded and tabulated in the body of the report. The conclusions and recommendations based on them are summarised in pages xi–xvi. Additional information is appended in the form of notes, collected in the course of the survey; these should be regarded merely as illustrations of some of the points made in the report.

The survey was made possible through the interest and assistance given to it by the Chief Medical Officer of the Ministry of Health. The procedure for the random selection of hospitals and patients described in Chapter 2 was arranged at a meeting of Senior Administrative Medical Officers of Regional Hospital Boards at the Ministry of Health, to which the organisers of the survey were invited by Sir George Godber. Visits to hospitals were made with the minimum of warning and the team sometimes arrived at inconvenient times when there were staff shortages or exceptional pressure of work. We wish to acknowledge the very great courtesy and kindness with which we were received by hospital staff and to thank everybody concerned who helped in the study.

Explanatory Note

In the text of this report each hospital is identified by a number. The type and size of the hospital can be obtained by reference to the index at the beginning of Part V and the index also shows which notes in Part V are relevant to the particular hospital.

Summary of Observations

The best food and the best service with the greatest attention to the patients' needs were given in the best small hospitals, mostly those with fewer than 50–60 beds. The larger the hospital the lower was the efficiency of administration and the quality of food as served. A number of hospitals for the chronic sick were generally unsatisfactory and the food was poor.

The waste of food from prepared meals sent to the wards was excessive. Only 55%–60% of the food sent was eaten by the patients; the bulk of the remainder went to swill. Most of the waste was from food leftover in serving dishes. About 10% of food served was left by the patients as plate waste. All waste was higher in large hospitals (with the exception of mental illness hospitals) than in small hospitals.

There were notable defects in the cleanliness and hygiene of food handling. These defects were particularly noticeable in ward kitchens where the contrast with the antiseptic and aseptic procedures of normal ward routine was sometimes remarkable. Most hospitals had no reliable system for washing up and cleaning catering equipment.

There was a tendency to overcook vegetables, and there were long delays in the service of meals. In half the largest hospitals, it took more than an hour and a half to cook and serve potatoes to patients. Occasionally the service of meals to patients was delayed by ward rounds or faulty administration. These defects in preparation and service damaged the food, causing nearly complete loss of vitamin C in potatoes and 75% loss in green vegetables.

Hospitals did not estimate the requirements for ordinary diets on the basis of the estimated nutritional needs of patients. This was one cause of excessive waste. Thus in the larger hospitals as much as 30 to 40% of the food issued to wards at mid-day and evening meals was wasted. The failure to take the structure of the diet as a whole into consideration tended to upset the balance of the diet. There was a tendency for patients with the highest requirements to take disproportionately large amounts of their own provisions—sweets, soft drinks, fruit, etc. provided by themselves or their visitors. The average contribution made in this way by patients needing recuperative diets was 14% of total caloric intake; in maintenance diets it was

8%; but younger patients with the largest appetites and greatest need contributed up to 20% of total caloric intake and occasionally 30% or more. About 65% of total calories were contributed by the three main meals. The meals made the largest contribution of protein; the ward issues, and particularly the patients' own provisions, tended to reduce the protein value of the diets. This effect was greatest for those in the greatest need.

There was a lack of variety and a poor quality of food in large acute hospitals, in which the meals contained only 18 mg. of vitamin C per patient/day; less than half of that in small acute hospitals. The quality of meals in longstay hospitals for the chronic sick was extremely poor. While their low caloric values were often due to the age and infirmity of the patients consuming them, the average intake of vitamin C in the 3 main meals was only 11–12 mg per patient/day and that of iron only 7/8 mg per patient/day.

Attempts to improve the protein value of food by increasing the quantity of protein-rich foods were sometimes misplaced. Generally the protein-values of the diets were restricted by the caloric intake; protein-values could only have been improved by increasing the caloric intake through persuading the patient to eat more food, if that were possible.

The standard of meal-service in large hospitals was indifferent and compared unfavourably with that in small hospitals; in 29% of larger hospitals it was described as bad, and in only 34% (compared to 52% in small hospitals) as good. The presentation of food generally left room for improvement.

These defects were due to the following causes:—

1 Old fashioned kitchens with inadequate space and old equipment.

2 The extremely difficult problems of communication and of distribution of meals imposed by badly planned and inconvenient old hospital buildings.

3 Faults in the organisation of catering, particularly in large hospitals, where there is a division of responsibility between catering officers who organise the cooking and preparation of meals in the kitchens, nursing staff who serve the meals and control ward-issues, and dietitians (where they exist) who prepare special diets in diet kitchens. Too much depends upon administrative routine and too little upon direct observation

of the patients to discover what they need, what they eat, and when they eat.

4 The concentration of attention by medical staff, and in the teaching of nursing staff, upon the special dietary requirements of particular diseases, and upon nutrition in its relationship to specific deficiency diseases, to the exclusion from due consideration of the general requirements of patients and the difficulties imposed by the restrictions of illness upon their satisfaction.

Summary of Recommendations

1 The nutrition of hospital patients whether or not they are in need of special therapeutic diets, is a matter for medical concern, and the nutritional needs of every patient should receive consideration.

2 The service of food to patients for the satisfaction of their nutritional needs and the observation of patients to anticipate their needs is a nursing duty, but the nurse, in many hospitals, requires assistance in the performance of this duty.

3 In every hospital, one person should be made responsible for all aspects of hospital catering and for the supervision and control of all staff concerned with the preparation, cooking and service of food to the patient. The assignment of this responsibility would depend upon the circumstances in each hospital, usually it would be given to the matron, catering officer, or dietitian.

4 At ward level the feeding of patients must be the responsibility of the ward Sister. In hospitals where a catering officer or dietitian is assigned duties in accordance with recommendation 3, there should be a new category of auxiliary—a ward caterer—who would be under the control of the ward sister and would co-operate with the nursing staff in the ward in the care and attention to feeding of patients. Where such auxiliaries are not appointed the nursing staff should continue to care for the patients' feeding.

5 An attempt should be made to formulate dietary scales which would meet the predicted nutritional requirements of different types of patient along the lines suggested in this report.

6 The status of catering officers should be raised. More catering staff should receive instruction in dietetics and should be encouraged to take part in the serving and distribution of food to the patients.

7 Dietitians should be less exclusively interested in the provision of special diets. They should be concerned with the everyday problems of hospital catering and with requirements of all patients in a hospital. Their attention should be directed to making weighed measurements in the wards of food eaten by

patients. These measurements should not be restricted to 'important' wards or 'interesting' patients. Advice to catering staff and hospital committees should be less in terms of general dietetic principles, but more on the basis of the practical problems in catering which face a particular hospital or hospital ward.

Contents

Part 1—The Survey

Chapter 1 Reasons for the Survey

In 1959 the West Cornwall Hospital Management Committee made a request to the Nuffield Provincial Hospitals Trust for a research project into the feeding arrangements of their hospitals in Cornwall. The object of the research was to establish an economical method of providing for patients in bed a diet adequate for physical needs which would be appetising and well served, involving, if possible, a series or choice of dishes. The Committee was particularly anxious that the project should be carried out with special reference to the therapeutic values of a good dietary, about which so little appeared to be known.

The Committee expressed their anxiety about hospital catering in terms which we have since heard repeated by many hospital officials in other parts of the country. While they were most concerned that food should be good, nourishing and well-served, for patients and staff, they found that in some hospitals the food budget was overspent and in others it was underspent. They desired to know whether overspending might be due to waste and extravagance, and on the other hand whether underspending might mean that feeding was not good enough. They were very concerned that within the funds which they were able to allocate for food, they were providing the best possible service, standard and quality of food. In short, were they getting good value for their money?

In response to this request, an *ad hoc* investigation of meals served in seven hospitals in West Cornwall was sponsored by the Nuffield Provincial Hospitals Trust and undertaken by Professor B. S. Platt, Mr. D. S. Miller and Dr. P. L. Pellett of the Human Nutrition Research Unit of the Medical Research Council. The report of this investigation showed that there appeared to be an excessive waste of food, that about half the meals did not attain a suggested average requirement for hospital patients of 500 Calories per meal and 11·25 NDpCal % (i.e. 14g. Net Dietary protein or 'reference protein'

(FAO 1957 a)). It appeared that a considerable proportion of the whole dietary might have been derived from 'extras'—ward issues of afternoon tea, beverages, and snacks, and biscuits, sweets, fruit, etc., provided by patients and their friends. 'Extras' often included large amounts of highly purified carbohydrate, notably sugar, and so might upset the balance of the diet, particularly in respect of protein and B-vitamins. Faults in the preparation, cooking and service of the food led in some hospitals to nearly total destruction of ascorbic acid (vitamin C) in cabbages and potatoes; this measurable loss of ascorbic acid was taken as an index of the culinary 'insults' to which the food was subjected.

These results were disquieting, and called for a more extensive survey of hospital food that could be taken as representative of the whole country. The Nuffield Provincial Hospitals Trust therefore made a grant of £27,500 (later increased to £29,350) to the London School of Hygiene and Tropical Medicine for the purposes of scientific investigation and studies of the nutritive value of food provided in hospitals in England and Wales, over a period of 3 years. The work was to be undertaken by a team based on the School, under the direction of Prof. B. S. Platt, C.M.G., Ph.D., Professor of Nutrition and Director of the Human Nutrition Department, with the advice of a committee. It is the resulting survey and study of hospital meals that is the subject of this report.

A return visit was made in 1961 to the seven hospitals in West Cornwall that had been studied originally in 1959, and the sampling techniques developed for the general survey were applied to a second survey in West Cornwall. The average findings of nutritive values of food, food quality, and food waste, closely approximated to the findings of the general survey. The efficiency of hospital catering was neither better nor worse than that found generally in hospitals elsewhere.

Chapter 2 Methods of Survey

Sampling

The types of hospitals included in the study, from which sample meals were taken, were:—

Ministry of Health Classification	*Survey Classification*
Acute	Acute
Mainly acute	
Partly acute	
Mainly longstay	Chronic
Long stay	
Chronic	
Mental illness	Mental

The sample covered hospitals in England and Wales; the country was divided into numbered areas each containing about 20 hospitals in the categories shown above. An area was selected by a random number from time to time by a person who was not taking part in the survey, and in each sampled area a random selection was made of half of the acute hospitals with less than 100 beds, half of all chronic hospitals, and all the larger acute hospitals and mental hospitals. About 15 hospitals were surveyed in each sample; the total number of hospitals surveyed was 152.

It was arranged that when a group of hospitals was drawn in a sample the Senior Administrative Officer concerned would be informed, and would be told when the survey would take place. Copies of an explanatory note describing the procedure and methods of the survey were sent at the same time for distribution to the hospitals concerned. This was the only information that hospitals received; though the hospital would know that they might be sampled, they did not know on what day the survey would take place.

At each hospital visited, one ward unit was selected by random number from a numbered list. The unit selected depended upon the hospital organisation; generally it was that served by one food-trolley, usually one ward, but in small hospitals where food-service was direct from the kitchen to patient, the whole hospital was treated as one unit. In each unit the ward sister or responsible

nursing officer was asked for a list of adult patients on a full normal diet, excluding beds specially designated to children, maternity, chests, E.N.T. and eyes. This list was then numbered, and one adult patient was selected by random number.

The total number of hospitals in the categories surveyed listed in Hospital Costing Returns for 1958–9 (Ministry of Health 1959) was 1185. It was planned to omit by random selection half the acute hospitals with less than 100 beds and half of all chronic hospitals drawn in the sample. The total number of hospitals from which the sample was drawn was about 800 as shown below.

	Acute	%	*Chronic*	%	*Mental*	%	*Total*	%
No. in Hospital Costing return	719		347		119		1185	
Less half acute under 100 beds and half chronic	213		173		0			
Total from which sample was drawn	506	63	174	22	119	15	799	100
No. in sample	100	65·8	30	19·7	22	14·5	152	100

The proportions of the different types of hospital in the sample approximate closely to the proportions in the total number of hospitals from which the sample was drawn. The total number of hospitals selected at random and studied was 152—approximately a 1 in 8 sample of the total 1185.

The method of random selection resulted in a fairly even distribution of visits at the various seasons of the year in different areas.

Information obtained

The sampling procedure meant that one patient in each hospital (designated in this report as the *sampled patient*) was selected for detailed dietary study including an evaluation of the 24 hour diet designated *sampled diet*) taken on the day of study; one ward unit was selected for a more general review of feeding and catering practices; some observations could be made of catering and cooking practices in the hospital kitchen; and finally something could be observed of the general problems facing each hospital.

The sampled patient

Brief clinical histories were taken for each *sampled patient*, from hospital clinical notes. Body weight was obtained where possible at

Table 1 *Age and Sex Distribution of Patients Sampled in 3 Types of Hospital Surveyed*

AGE	ACUTE			CHRONIC			MENTAL			TOTAL		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
16—	5	1	6							5	1	6
20—	2	3	5							2	3	5
30—	6	9	15				2	1	3	8	10	18
40—	8	10	18	0	1	1	0	2	2	8	13	21
50—	10	9	19	1	2	3	0	3	3	11	14	25
60—	9	11	20	2	7	9	4	2	6	15	20	35
70—	8	4	12	2	2	4	2	4	6	12	10	22
80—	1	3	4	1	11	12	0	2	2	2	16	18
90—	0	1	1	0	1	1	0	0	0	0	2	2
TOTAL	49	51	100	6	24	30	8	14	22	63	89	152
%			65·8			19·7				14·5		

the same time of sampling, but this could not be done with bedridden or helpless patients, and there were not always reliable records of body weight. Surprisingly, in some hospitals, the weighing of patients appeared to be an exceptional procedure, and the team was equipped with a portable balance for use where balances were not readily available. Height was even more difficult to obtain particularly with elderly, and often confused, patients; patients' own statements of their height were recorded, where no record was available, and these may serve as a check on body weight in obese or emaciated subjects.

The age and sex distribution of the sample in the different types of hospital is shown in Table 1. Half the *sampled patients* were over 60 years of age. As half the long stay and chronic hospitals were excluded the sample should show a bias in favour of youth, for only a few patients in these hospitals are under 60 years of age. The restriction of the sample to patients able to take a full normal diet possibly prevented the selection of a larger number of younger people. The turnover of patients with acute illness or injury is so rapid that recovery to the stage of ability to eat normally may often be an indication for discharge from the ward, but perhaps this applies less to middle-aged women, who have family responsibilities.

The sampled diet

Duplicates of the three main meals given to the *sampled patient* were weighed and sampled; plate-waste was weighed and taken for analysis if over 10% of wet weight. All food, including afternoon tea, given in addition to the three meals—extras and snacks—was recorded over the 24 hours. Separate records were kept for ward issues of those extra snacks which were supplied by the hospital (designated *hospital extras*) and any food—sweets, fruit, beverages, etc.—supplied for their personal use by *sampled patients* or their friends (designated *patients' extras*). The energy and nutrient content of these extras were calculated from food-tables.

The sampled ward

All dishes of food sent to the ward for patients' meals were weighed on arrival at the ward unit, or where service was made directly from the kitchen to the patient, the dishes were weighed in the kitchen.

The dishes were again weighed after the meal had been served, and a note was made of the disposal or use of the food leftover after service. All plate-waste from patients who had been served from the weighed dishes was weighed.

Records were kept of the time of arrival of cooked meals in the ward from the kitchen, and the time that meals were served. Notes were made of any incidents causing delay in service of the meal, of the attention paid to patients' personal needs or preferences and of liaison between the main kitchen and ward.

The kitchen

The times that vegetable cooking was started and completed were recorded with the total time elapsing before service in the ward. Notes were made, where possible, of timing and methods of vegetable preparation, with general observations of organisation, hygiene, and the design, layout, and adequacy of buildings.

General

Records were made of any recommended dietary scale that might be used in planning meals, of the general quality and appearance of food. Notes were made on staff meals, special diets, and of observations and information referring generally to the production of meals and their quality.

Details of analytical methods employed are given in Appendix I.

Part 2—Survey Results

(*A*) *CATERING AND FOOD SERVICE*

Chapter 3 Waste

The Unit's observations under this head were restricted to the waste of food from prepared meals sent to the ward. This was measured as plate-waste and as food leftover in serving dishes in excess of requirements, not all of which was eventually wasted.

Plate Waste

Plate waste from all patients in *sampled wards* is shown in Tables 2 and 3, and Waste from the *sampled patients* in Table 4. Table 2 shows that 10% of the weight of food served to all patients in the *sampled wards* at the 3 main meals was left on the plate by patients in the wards. There was significantly less plate waste in small hospitals with less than 100 beds than in larger ones with more than 100 beds. In all hospitals there was much less plate waste at breakfast (6·8%) than at mid-day and evening meals (13·4% and 10·3%). Table 3 shows that at morning and evening meals the plate waste in small hospitals was only about two-thirds of that in large hospitals.

In Table 4 the average plate waste from the *sampled patients* was 6·4%, little more than half that found for the whole sampled wards, but as the *sampled patient's* plate had to be specially collected and the waste weighed after each course this extra attention to the patient could have influenced the amount of plate waste found. Plate waste from the rest of the ward was collected in the usual manner, the only difference from routine being that it was collected in our own weighed receptacle; the whole ward waste was therefore less liable to bias. An alternative explanation might be that each *sampled patient* was selected from those said to be upon a full normal diet; patients on special or light diets were excluded. The *sampled patients* would be expected therefore to be fitter and have better appetites than some

Table 2 *Plate Waste in Whole Wards at all Meals*

Hospitals	Percentage weight of all food served, left on the plate at all meals sampled 0–	10–	20+	TOTAL
Acute & Chronic				
0–100	41	15	2	58
	Mean = 8·5% ± 0·7 (SE)			
101–	28	16	5	49
	Mean = 10·0% ± 0·8 (SE)			
301+	9	13	1	23
	Mean = 11·9% ± 1·1 (SE)			
Mental	11	11	0	22
	Mean = 10·7% ± 0·8 (SE)			
TOTAL	89	55	8	152
	Mean = 10·0% ± 0·4 (SE)			

There was significantly less waste in the small hospitals than in the larger acute and chronic hospitals with more than 100 beds.

Table 3 *Plate Waste in Whole Wards at Morning and Evening Meals*

Hospital Size (Beds)	Plate waste at morning and evening meals. Percentage weight of food served 0–	5–	10–	15–	20+	TOTAL
0–100	12	22	15	6	3	58
	Mean = 9·7% ± 0·6 (SE)					
101+	5	24	32	21	12	94
	Mean = 13·5% ± 0·6 (SE)					
TOTAL	17	46	47	27	15	152
	$\chi^2 = 15{\cdot}19$		n = 4	P = <·005		

There was much less waste at all hospitals at breakfast (Mean 6·8%) than at midday (13·4%) or evening (10·3%), and the differences between small and large hospitals were greater at morning and evening meals.

others in the ward, and many patients selected were recovering from illness. But in mental hospitals, where comparatively few patients in the *sampled wards* were unable to eat a normal diet, the *sampled patients'* plate waste (6·5% ± 1·4) and the whole ward plate waste (10·7% ± 0·8) were the same as those for all hospitals. It seems

therefore that bias caused by the extra attention to the *sampled patient* may be the more likely explanation of the observed differences.

Table 4 *Plate Waste of Sampled Patients. Percentage Weight of Total Food Served at 3 Sampled Meals*

Hospitals	Nil	1–	10–	20+	TOTAL
Acute & Chronic					
0–50	11	17	7	0	35
	Mean = 4·71 ± 1 (SE)				
51–	10	6	5	2	23
	Mean = 6·4 ± 1·9 (SE)				
101–	13	20	11	5	49
	Mean = 8·27 ± 1·47 (SE)				
301–	8	12	2	1	23
	Mean = 4·67 ± 1·17 (SE)				
Mental	7	8	7	0	22
	Mean = 6·48 ± 1·37 (SE)				
TOTAL	49	63	32	8	152

Amounts of food leftover in serving dishes

About a quarter of all food sent from the kitchen for a meal was leftover in small hospitals, considerably less than the 30%–35% leftover in larger general hospitals with more than 100 or 300 beds. As with plate waste, there was considerably more economy at breakfast than at the other two main meals in acute and chronic hospitals, but mental hospitals showed much less waste of all kinds at all meals—approximately half that found in all general hospitals. Conditions in mental hospitals were different; patients were usually served at tables either in their wards or in a dining-room. They could help themselves and could take part in the service of the meals; there was a more leisurely atmosphere, patients having time and opportunity to ask for, or take, more. But mental hospitals had generally to work upon a much more restricted budget for catering, and this could discourage over-estimates of requirements.

Details of the amounts leftover are given in Table 5 and 6, and the proportions of different types of dishes leftover in Figure 1 (for morning and evening meals) and Figure 2 (for breakfast). The num-

bers given at the heads of the columns in these figures show the total number of servings of the dishes to which they refer.

That, as shown in Figure 1, more than two-thirds of the gravy and sauces sent from kitchens are leftover (and mostly thrown straight to swill) in the larger hospitals, may not at first sight seem to be of great importance; certainly it appears to be of less importance than the overestimates of meat, fish and vegetables. However, it means that if the gravy or sauce is made from the meat-drippings or extractives

Table 5 *Percentage Weight Leftover in Serving Dishes of All Food Sent for Service at Sampled Meals*

Hospital	0–	10–	20–	30–	40–	50+	TOTAL
Acute & Chronic							
0—100	3	18	22	13	2	0	58
	Mean = 24·1 ± 1·2 (SE)						
101—	0	7	18	13	8	3	49
	Mean = 30·6 ± 1·6 (SE)						
301+	0	1	6	10	2	4	23
	Mean = 35·8 ± 2·5 (SE)						
Mental	4	10	6	2	0	0	22
	Mean = 17·3 ± 1·9 (SE)						
TOTAL	7	36	52	38	12	7	152

In the 130 acute and chronic hospitals, the proportion of food leftover increased with size of the hospitals ($\chi^2 = 28{\cdot}44$ n = 10 P = $< 0{\cdot}005$).

as it should be, it is made in excessive quantity, by dilution with the addition of a proprietary preparation; the natural flavours and some soluble vitamins and minerals extracted into the sauce or gravy are lost because of the dilution. This sort of wasteful cooking accounts for the peculiarly tasteless artificial quality of many meat dishes served in institutions.

The high wastage of vegetables shown at breakfast in Figure 2 is mainly due to the use of canned tomatoes. As served in many hospitals this wet, sloppy, discoloured fruit is distasteful in appearance, and judging both from these amounts leftover and from plate waste is quite unappetising. Dietitians often advise that cheap foods may be just as nutritious as those which are more expensive. This is

Table 6 *Percentage Weights of Food Leftover after Meal Service in Excess of Requirements at Breakfast; and at Midday and Evening Meals*

Acute & Chronic	*% Leftover at midday & evening meals* 0—10—20—30—40—50+	*Total*	*% Leftover at breakfast* 0—10—20—30—40—50+	*Total*
1—100	2 21 19 8 7 1 Mean = 25·3 ± 1·43	58	16 15 14 8 4 0 Mean = 19·4 ± 1·7	57
101—	2 5 16 16 6 4 Mean = 31·2 ± 1·83	49	7 12 13 7 6 3 Mean = 25·8 ± 2·3	48
301+	0 1 5 9 5 3 Mean = 37·7 ± 2·62	23	3 2 7 3 5 3 Mean = 31·5 ± 3·5	23
Mental	4 11 7 0 0 0 Mean = 16·6 ± 1·56 (SE)	22	7 7 4 3 0 1 Mean = 17·3 ± 2·9 (SE)	22
	TOTAL	152	TOTAL	150

As with plate waste, there was considerably more economy at breakfast (mean leftover = 23·0 ± 1·2) than at the other two meals (midday = 28·3% ± 1·2; evening = 27·8%±1·3). There were no significant differences between findings for the midday and evening meals in each class of hospital and these two meals were combined for comparison with breakfast.

The mental hospitals showed no difference in the amounts leftover at the different meals. At breakfast there were no significant differences in the means of amounts leftover in the different classes of hospital, though the trend towards greater waste with size in acute hospitals was still shown. For morning and evening meals in the 130 acute and chronic hospitals, the differences were significant $\chi^2 = 26{\cdot}39$ n = 10 P = < 0·005).

often good advice, but if accepted blindly without attention to acceptability it may lead to false economy.

A notable example of this was seen in one mental hospital (Hospital No. 83) where the medical superintendent had noticed a considerable amount of food in swill bins; this was sausage meat and he had been told by the catering staff that sausage meat was being ordered in bulk and was being cooked instead of sausages, as without the skins the sausage meat was cheaper and the food value the same: but the stuff had been cooked in bulk so that it was practically raw and was quite uneatable. He had reported this incident to his committee as an example of false economy, but the only result had been that the committee repeatedly referred to this as an example of waste which was the cause of the high catering costs which should be reduced, his point about inefficient bad cooking was forgotten, and

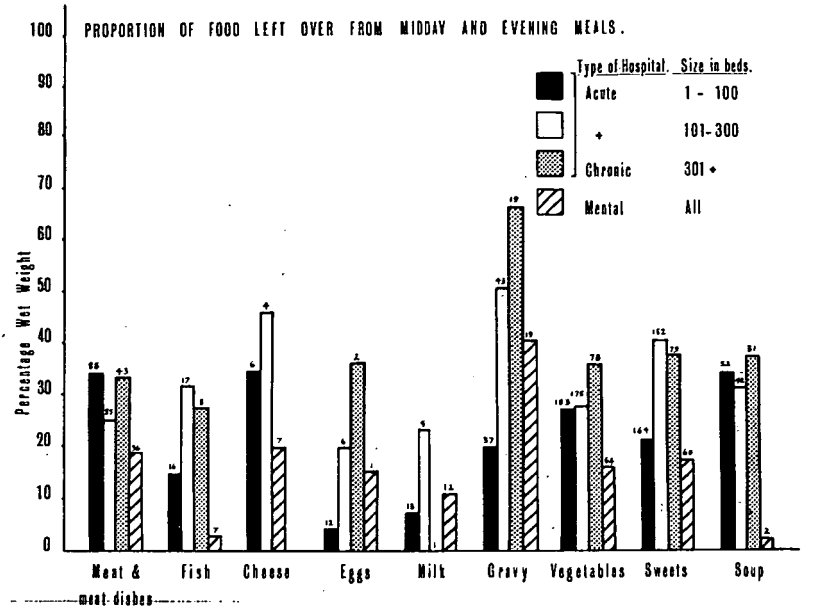

Figure 1.

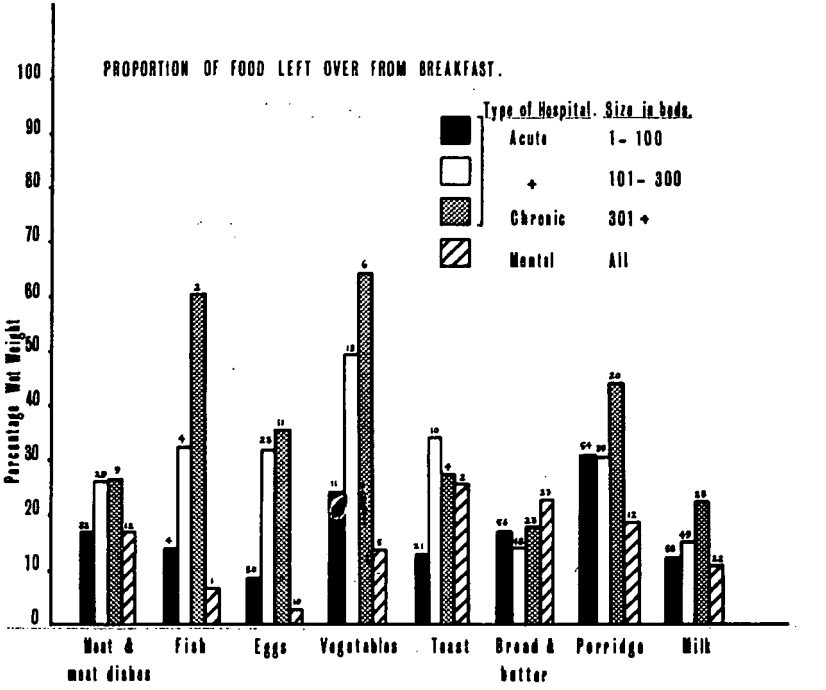

Figure 2.

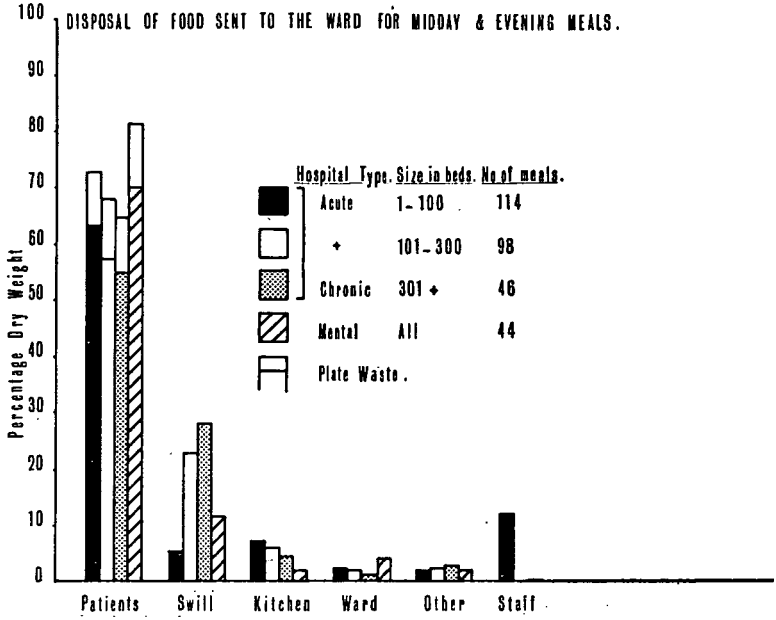

Figure 3.

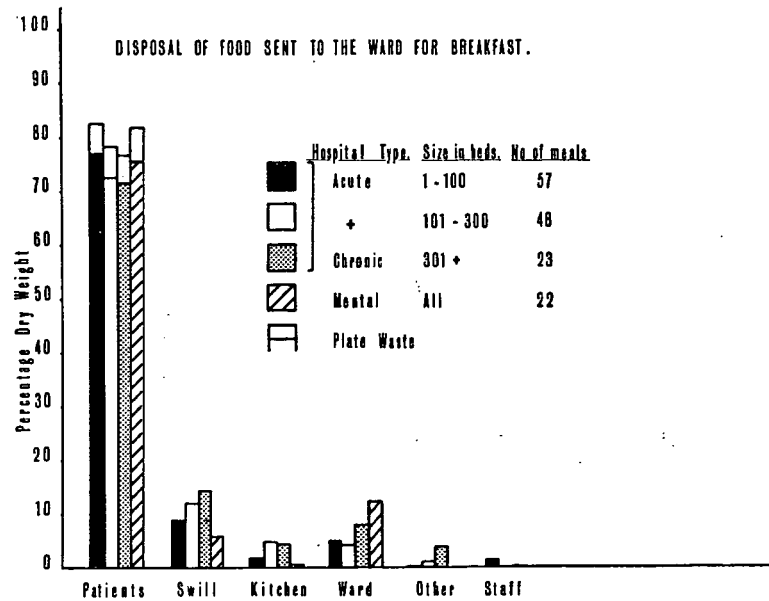

Figure 4.

he was under continual pressure from the committee to reduce costs.

The differences in value of the various items of food have been allowed for by estimating their dry weight by taking average proportions for moisture-content from the whole weights of dishes served. The manner of disposal of leftover food, after this correction made on a basis of dry weight, is shown in Figures 3 and 4.

The proportion of food sent from the kitchen that was actually served to the patients is shown in the first columns, entitled 'Patients'. On these columns a subtraction has been made of the proportionate weight of plate waste of the whole weight of food served. The scale of waste which these figures indicate is surprising. In large general (non-mental) hospitals little more than half the prepared meals sent from the kitchens is eaten by the patients, and in the small general hospitals only two-thirds. It is clear that in nearly all hospitals the amount of food issued from the kitchen to the wards as prepared meals is excessive. Many dishes are 30 to 40, sometimes 50% or more, in excess of requirements.

In many of the larger hospitals the greater part of this leftover food is put straight into the swill can, and the amounts of swill shown in the second column of Figures 3 and 4 are very large. Note that the amount of swill shown in the figures is only that contributed by leftover food thrown away from serving dishes in the wards; swill from the plate waste is additional. This means that in the larger hospital some 35–40% of food sent to the wards at the mid-day and evening meals, and about 25% at breakfast, went to swill in the ward immediately after the meal was served and eaten.

In some small hospitals, food leftover was either retained in the kitchen where it had been cooked and served or was sent back to the kitchen. In Hospital No. 35 no unserved food was thrown away because all meals for both patients and staff were served from the kitchen from the same containers. In Hospital No. 47 all food leftover from the mid-day meal was offered as an alternative to the supper dish or was used as an ingredient to make up a supper dish, in Hospital No. 13 and 30 it was noted that food was returned to the kitchen for use again later. Particularly in cottage hospitals, where serving dishes never left the kitchen, this use of food again—perhaps as a hash or pie just as would be done in ordinary household cookery —would be a natural, relatively unobjectionable procedure.

In some larger hospitals leftover food was sent back to the main kitchen but this was not the usual practice. Usually food returned in

this way appeared to be unfit for further use, and it was understood in some hospitals that it was done so that catering staff could check quantities and wastage. In one large hospital that has been visited (not included in the random survey) there was a ruling that all leftover food should be returned to the main kitchen, and this was done after distribution to widely scattered and distant wards when food had been in dishes and trolleys for an hour or two; a good deal of the leftover food was kept for use again—leftover meat was taken from a pie for mincing—but such a practice clearly increases the risks of food-infections. In some hospitals there was some doubt about the usual practice where there were said to be rules about the disposal of food. All food was supposed to be returned to the main kitchen in Hospital No. 127 but the maid had to be stopped by a nurse from emptying a container to swill. In Hospital No. 50 after being left in the ward overnight it was thrown away next day; in another—Hospital No. 129—the rule was disregarded. Generally speaking, it appeared that most leftover food, shown in the third columns of Figures 3 and 4 as disposed of to the kitchen, was wasted in the larger hospitals.

Some leftover food was kept in the ward kitchen, sometimes in the refrigerator, sometimes not. This is shown in column four of Figures 3 and 4. It is an obvious and reasonable procedure for ward issues of such items as bread, milk, breakfast cereals or cake, but there was often a tendency to keep dishes of sweets, milk puddings, or cold meat. Ward kitchens are not designed for the storage of food of this kind, and the practice is objectionable. In Hospital No. 102 gravy leftover from the mid-day meal was added to the soup before serving at the evening meal, an addition made by the ward staff without the knowledge of the catering staff, and sweets leftover from special diets at mid-day were saved and served in the evening. In Hospital No. 5, lettuce, tomato, bacon and eggs were saved and kept in the ward refrigerator. These occurrences are probably due to the desire of ward staff to have something available in the ward, to have something ready to meet unforeseen circumstances, or to provide alternatives to the set menus not otherwise available.

Leftover food was sometimes eaten by staff, particularly at breakfast, and this is referred to below in the comments about staff meals. In one hospital that was visited (not included in this random survey), in which food was sampled over a period of a week, a considerable amount of leftover food was eaten in the ward, or in the ward

kitchen, by ward staff. It was noticed that this did not occur during the first few days of sampling, but as the staff became accustomed to the sampler weighing food they asked her if she had any objection to them taking the food after she had weighed it. They then ate freely of food that was leftover. It seems possible that the very large amounts of leftover food, in this survey put straight into swill on the ward, might in normal times, when there was no survey, have been taken at least in part by the hospital staff. If this is so, our findings for swill in the ward may be higher than is normally shown in hospital returns. Over the whole survey the consumption of leftover food by staff on duty in the wards in this way was small and is included with various other methods of disposal in the fifth column of Figures 3 and 4.

In the smaller hospitals, the bulk of the food left over at mid-day and evening meals is passed on to the staff meal that follows the ward meal. This method of disposal is shown in column six of Figures 3 and 4. Only very exceptionally did this occur in larger hospitals. Though there is probably no alternative to this practice (which is referred to below in comments on staff meals) in small hospitals with small kitchens and limited space it is open to many obvious objections; the quality of the meal must certainly deteriorate with keeping; the prolonged keeping of warmed, prepared food is known to be a cause of increased risk of food poisoning; and it means that staff have to eat later the same meal which they have been serving during the previous hour or half-hour.

Figures 3 and 4, showing the fate of food that is sent to wards at mealtimes, form an illuminating summary of the whole of this report on hospital catering at the present time, and are illustrative of the comparative inefficiency of a system based on self-contained catering establishments for each hospital, preparing food for each mealtime as a separate operation. It is emphasised again that the findings for waste do not include primary kitchen wastes of foodstuffs during preparation and cooking. They refer only to food that had been prepared, cooked, and dished up for service at mealtimes, and the wastes were measured when the meal was served in the wards. The waste of food, including the inevitable losses in preparation, must be extremely high.

Chapter 4 Kitchens and Hygiene

Hospital kitchens have remained essentially domestic in planning and organisation, and are set in a tradition that goes back to their beginning, as comparatively small households for the accommodation of the sick. A cross-section shows a progression, from the simple unpretentious arrangements in hospitals catering for about two dozen people, where everything is managed by a matron who acts as the housekeeper, to the large hospital where housekeeping is split up into administrative compartments, with a separate catering department under the charge of a catering officer, and perhaps with a dietitian to advise. This has been the history of the development of catering in many of the larger hospitals. Superficially, the catering department, with its catering officer, its kitchen filled with modern industrial equipment for cooking food in bulk, its apparatus for distributing the cooked meals and its arrangements for the supply and storage of food, may seem much more elaborate and more highly organised than the simple organisation of the cottage hospital; essentially it remains the same. The same organisational pattern has become blown up to an unwieldy size, with increasing administrative problems requiring increasingly specialized administrative staff, who can only manage the problem with decreasing success.

In practically all hospitals there is one central kitchen. In this main kitchen, food is cooked for set meals which are served at set times; at the meal time the meal must be cooked, served and ready for the patient. This pattern of work, in which food is prepared in one complete batch for each meal, the whole meal being served at one mealtime, is, in essentials, the same that is followed by any ordinary housewife cooking for her family; but as the numbers increase, the problems of the timing of cooking and of service to patients become ever more unwieldy and difficult.

Because most patients in general hospitals are in bed, or confined to wards, the distribution and service of meals after they have been cooked presented considerable problems in all but the smallest hospitals.

In small hospitals, with not more than 50–60 beds, nurses often served the meals from the kitchen carrying them direct to the bedside, so the kitchen staff were directly associated with activities in the

ward, and had a personal interest in the patients. Standards were largely dependent on the presence or absence of a good cook; not all good nurses are good cooks or very appreciative of good cooking, and good domestic cooks or good domestic staff are in many places practically unobtainable. At their best, with good kitchen staff and an interested matron, food was good, well cooked and expeditiously served; at their worst they were horrible. Kitchens were often well equipped, well organised and well run, on a comparatively small domestic scale.

Hospital No. 57 the smallest hospital visited had only ten beds. Built originally by a local benefactor it had been designed as a complete unit by a good architect. One elderly sister in charge managed the place with very little help, and on the day of survey she had to help with the cooking, for it was the cook's day off. The kitchen was a pleasant place, and well cared for; cooking was done in a separate room from the main room used for preparation and serving.

Hospital No. 146 had been designed and built as one unit on ground given for the purpose. The main kitchen was spacious, very well organised and run under the charge of the matron. Intelligent planning had been used in renovations, cookers being placed in an archway of a former dividing wall to form a platform between two halves of the kitchen, but a good deal of the equipment was old, with an old boiler and old iron cooking pots. The kitchen was exceptionally clean and spotless.

Though small hospitals such as these, in some of which the pressure of urgent work is not very great, are run like a well managed household, other kitchens in small hospitals were seen which were unsatisfactory, squalid, and unhygienic. There may have been many reasons for this—inconvenience of old buildings, poor equipment, lack of staff, but one was left with the impression that some were neglected backwaters, with old incurable patients with degenerative diseases, who were clinically uninteresting.

Hospital No. 47 was mostly for geriatric and chronic sick—built in 1890 and extended in 1935. The kitchen was very cramped. Preparation, cooking and some washing up were all done in one room which was visibly dirty. A potato peeler and electric mincer, both old and dirty, were roughly bolted to wooden benching and wired up with rubber flex to an ordinary wall plug adjacent to a stainless steel sink. The whole place looked down at heels and dirty.

Hospital No. 117, for chronic sick with 40 beds, was a gloomy old building about 100 years old, an old nursing home which had started from a charitable bequest. Originally on the outskirts of the town it is now surrounded by buildings on a main road. The kitchen and cloakroom were evil-smelling. The whole place smelt, and there were a lot of houseflies, and Hospital No. 39, a very old poor law institution with 70 beds, was very dirty from top to bottom—it stank of urine and the toilets were disgraceful. The kitchen was on the second floor in what was previously the nurses' home. Bedrooms had been altered to stores, washing up rooms and rooms for cleaning vegetables, and for boilers and friers. The old bathroom was used for peeling potatoes. All was very makeshift. The actual kitchen for the whole hospital was only about 15′ × 12′. This hospital has since been adversely reported in a report to the Regional Hospital Board.

The larger hospitals included old poor law local authority buildings and former voluntary hospitals. Among them were some of the best and most efficient district hospitals in the country, approved for the complete training of nurses and with nurses' training schools. Many were the principal hospitals of a group, containing the administrative headquarters; often the group catering officer would be on the spot, in direct charge of the hospital kitchen. In others his supervision was less direct. Generally, wards and clinical units were of a high standard; many old buildings have been modernised and well decorated. The kitchens varied; often they were well laid out with good equipment, but sometimes they had inadequate space, old equipment, bad ventilation and bad, unorganised working conditions.

Conditions and practices in some kitchens seen, might well lead to prosecution by the local health authority if they were found in commercial catering premises.

Some hospitals—typically old poor law institutions—though their amenities and internal appearance have improved beyond recognition, have remained structurally unchanged since they were first built a hundred or more years ago; with their centrally placed kitchens there is a more or less difficult problem in the distribution of meals. Many of the acute general hospitals have expanded in accordance with demand (and as finance has permitted from time to time) from an original block, to a number of wings, clinics and new blocks. Only exceptionally have these expansions been made to fit any preconceived plan; they have most complicated, sprawling, and inconvenient lay-outs. The kitchens are often found in their original

buildings, left behind by succeeding developments, inconveniently sited, too small for increased demands made on them, and with enormously increased problems of meal-distribution. Increased catering commitments, without adequate room to expand, have led to makeshift and unsatisfactory arrangements for storage and services.

In Hospital No. 145, an old infirmary and dispensary, the kitchen was at one end of the ground floor at the extreme end of the main block, above the furnace and boiler room. The cold room and stores were underneath, in cellars adjacent to the boiler room. They were approached from the kitchen by steep, dangerous, worn cellar-stairs. The boiler was coke-fired, and the whole place consequently dusty. The stores were ordinary whitewashed brick cellar-rooms, but they had not been whitewashed for some time. Staff have to go up and down these steep stairs to obtain stores for the kitchen. Boiler room dust was seen on a fruit trifle waiting in the cold room for service at the evening meal. The kitchen was cramped and not well organised. The potato peeler did not work very well because the waste outlet had been fitted with a right angled bend; it therefore tended to become choked. Boilers were 20 years old. The kitchen superintendent said that he did not believe in '*time and motion* which was meant for lazy people.' Shelves for equipment had been replaced by large cumbersome trolleys in the washing up scullery. Food-trolleys cluttered up the working space, and people were in each other's way.

Hospital No. 26 was built in 1938, and there was a very high standard of efficiency in good modern buildings, but the outbreak of war prevented the completion of the building programme, so there was no kitchen. Ordinary full diets were cooked in the kitchen of a neighbouring geriatric hospital on the same site; this kitchen was about 500 yards away from the new buildings. There was no covered way between them. The kitchen layout was bad, and it looked very untidy at the peak of the day's work; staff were in each other's way when filling the food trolleys. This one kitchen supplied food to four hospitals in the same group, and had even cooked for a small hospital some miles away (Hospital No. 140) where the kitchen was being renovated.

Hospital No. 2 was an old religious foundation about 100 years old, and the buildings still retained some of this atmosphere. There was a new out-patient block—a model of its kind. The wards were spacious and were being improved. The kitchen was dark with

antiquated equipment and long plank benches with large grooves between the planks. There were many houseflies. It was very poorly ventilated with inadequate extraction plant. The matron said it was due to be 'up-graded'. The ward-kitchens were very poor with wooden-topped tables, and houseflies. An old marble slab, from a disused wash-basin stand, was fixed to one wooden table to provide a working surface.

Hospital No. 150 was an old nineteenth century building with kitchen and stores in the ground floor and basement. Equipment was poor. Refrigerators were very indifferent—too few and too old. Stores were cramped, in poorly lit basement rooms, and there was an inadequate day-larder with almost no reserves for use in an emergency. The kitchen was due to be redecorated and equipped in 1961.

Hospital No. 8 was originally barracks but is now a mental illness hospital with 250 beds. Four blocks surrounded a quadrangle with arcades, presenting a fine appearance with good lawns and flower beds, but the whole place was very institutional, with drab, depressing rooms and wards. The kitchen was to be rebuilt and replaced by a new catering unit with a central dining room, but this plan had just been cancelled or postponed, owing to the uncertain future of this and other mental hospitals. The kitchen was not very clean, having uncleanable corners to floor and walls, with old tiles on the walls and quarries on the floor. The whole place was poor and inadequate with very few recent improvements; it had a new mincer and new boilers. The space for preparation and service of 244 meals was cramped. It was sited at one corner of the quadrangle—the sampled ward was at the opposite side.

Practically all of the largest hospitals, those with over 300 beds, had catering officers in direct charge; but catering problems increase more than proportionately with the size of the hospitals. There are increases in the numbers of meals served in the single main kitchens, and in the areas, heights of floors and distances, over which the cooked food must be distributed. Thus, as demands on the kitchen space and the quantity of work become more pressing, the efficiency of preparation and cooking of meals may become reduced, while the patients are removed progressively further away. These trends towards increasing complexity with size reach their peak in the large mental hospitals with over 1,000 beds, where they are offset, in some, by the ability of many patients to help themselves and go to a central

restaurant or dining room for meals, and by the less discriminating appetites of those who are physically fit and in active employment.

These large hospitals are all old. In Hospital No. 58 the main kitchen was the original building built in 1833; it was being improved. Two other kitchens had been modernised and the modernisation of another was planned within the next two years.

The only kitchen in Hospital No. 138 was 100 years old, and served both patients and staff. The whole of the kitchen premises were so cramped and inadequate that general dirt and faults in hygiene were unavoidable. Arrangements for washing up were bad and unhygienic, in close proximity to food preparation. The wards served were up to three quarters of a mile or more away from the kitchen, and the cooked meals were delivered to them by a motor delivery van in insulated unheated containers. An old building (formerly a second kitchen, but closed by the County Council for economy before the National Health Service) was being converted to a modern kitchen for 700 patients. This was to be equipped with electrically heated trolleys for the 700 and was to be ready in 1961; after that it was hoped to improve the present kitchen. There was no room for electrically heated trolleys in the present kitchen. We were informed that there was considerable argument before this new building was undertaken as to whether two kitchens would be required or whether the widely scattered patients could be served from one.

The depressing external appearance of these huge old hospitals for mental illness usually concealed notable improvements in accommodation. Many of them proved to be most pleasant hospitals to work in, and their size and specialized function meant that they often formed the only hospitals in their groups receiving the undivided attention of their staffs and management committees.

The problem of eccentric siting of the kitchen is not confined to old hospitals; it is inherent in many modern hospital plans, and it does not even apply exclusively to large hospitals. Hospital No. 89, which serves a large area and holiday resort, was newly built on a vacant plot of ground, designed by one architect as a complete unit, and opened in 1939 (the ground plan was seen in the secretary's office and he kindly gave it to us). The kitchen is sited in a service block, readily accessible from the public street for tradesmen and stores, entirely separate from clinical units, and at the opposite end of the hospital to the ward-block. Cooked meals must be taken

along passages through the whole length of the hospital to reach the patients. Some new ward accommodation is already being considered. Although this particular hospital is unlikely to expand to any great extent the limits of the ground available would compel the siting of new wards still further away from the kitchen, beyond or above the old wards.

Some hospitals, nearly all of them long stay or chronic sick hospitals, were wholly insanitary, and for lack of staff, inadequacy of buildings or inadequate provision of funds, showed an obvious failure to provide proper medical care for patients who were mostly helpless. Hospital No. 105 was an old Georgian country house. Old people were in cots in rooms which had been roughly adapted as wards. The kitchen had been improved and was well kept, but there was a musty odour all over this depressing building, placed in beautiful surroundings. The patients were badly fed.

Hospital No. 75, scheduled to be closed within five years, was down at heels, not very clean and mouse-infested. It was an old fever hospital in an isolated place some distance from the nearest village. A dead mouse was seen outside the wards (on two successive days) following a clean up by the sister in charge. Sister herself had been attempting to clean the wards with little help, and her hands were visibly dirty when we interrupted her in this task. The place smelt, was dirty and insanitary with very helpless vegetating patients.

All or most of these places are to be closed in the future and the surviving patients transferred to new hospitals. The worst of them were small hospitals often in somewhat isolated places, and the problem of staffing must be nearly insuperable, though many small hospitals for the infirm and dying were well run, with kind, considerate and skilful treatment for these very difficult patients.

Everything was scrupulously clean and tidy in Hospital No. 116, with 24 beds for chronic sick patients, and the place was run like a large family house. Hospital No. 77 was a well kept geriatric hospital with many helpless patients. It was very clean and the patients were well cared for, with flowers for wards and bedside tables. An old fever hospital with wards in separate pavilions, it was free from the musty smell found in some other chronic hospitals.

Hospital No. 134 was a final stay hospital for incurable patients. It was an old country house in a well kept garden and grounds, formerly belonging to a well known local family. Furniture and amenities had been maintained as they were when it was a private house. The

patients were cared for perfectly. There was no sign of the neglect, inadequate staffing or sour smell that had been observed in some other chronic hospitals.

Ward kitchens, or ward pantries, are used for the service of meals, for washing up where there is no central washing up plant, for the preparation of milk drinks and beverages light snacks and the storage of such foods as breakfast cereals, milk, jam, eggs, etc. The handbook *Hospital Catering* (Ministry of Health, 1962) advises that they should be equipped with:—

1 a hot closet, large enough to accommodate all the plates at one meal;
2 a boiling ring and toaster, or grill;
3 a water boiler;
4 a refrigerator to hold the daily supply of butter and milk;
5 a food cupboard for bread, jam, cereals, etc.;
6 a crockery and cutlery store;
7 a washing up unit—either two sinks, one of which should be a sterilising sink with a heating unit, or one sink with a dish-washing machine. With both of these installations there must be adequate benching;
8 a wash hand basin.

Few, if any, of the ward-kitchens seen complied fully with these recommendations, arrangements for washing up and sterilising of crockery and cutlery being particularly defective. Separate wash hand basins were noticeable for their absence. A great deal of the ordinary work in ward-kitchens is left to cleaners, ward servants and orderlies without much supervision, and the lack of skilled and trained staff to attend to details of cleaning, sterilisation and general food hygiene often left much to be desired. In only one large hospital—Hospital No. 74—did there appear to be a combination of well equipped ward kitchens with a central washing up plant, and a properly planned, controlled and supervised scheme for hygienic service of food and cleaning of dishes and utensils.

In some hospitals, ward-kitchens had recently been stripped and re-equipped with good stainless steel double sinks, hot closets for drying plates, refrigerators, boiling rings, etc., good quality, modern kitchen benches and lockers, with impervious plastic surfaces on tables and working surfaces. Others had a few items of more modern equipment—perhaps a single stainless steel sink or a new refrigerator

—but would be left with old kitchen tables, old dressers, and uncleanable floors and corners. Several were seen in which conditions would disgrace a cheap boarding house. Practices and appearances in ward-kitchens often presented so striking a contrast with the rest of the wards of which they were a part that clearly the importance of food handling and food hygiene had not been appreciated by a number of nursing and medical staff. For example, at Hospital No. 102, the casual use of gravy left over from one meal which was tipped into the soup at the next meal displayed an obvious lack of knowledge of hygiene. Cheek by jowl with masked and gowned asepsis, second rate cleanliness was to be found in ward-kitchens and sometimes plain dirt.

In Hospital No. 67, the duty room served three wards—for males, females and children. It was the serving room for food; it contained: case-history sheets, and the staff nurse stood at the bench of a sort of kitchen dresser on which they were hung to write up notes; poison cupboard; sink (in which water-bottles and glasses were washed and refilled); toys; oxygen; books and comics; baby-weighing scales with a doll in the weighing basket; flour; assorted groceries; glass-shelved instrument cupboard with usual diagnostic instruments, proctoscope, syringes etc.; odd soft drinks; X-ray inspection screen; soiled dressing bins, removed by a porter with a trolley; fruit; nurses' collars and cuffs. Everything for the whole ward was done here, and food was served from one small square formica-topped table. Children in the children's ward kept looking in at this scene of fascinating activity through the open door of the ward. The cots in this ward seemed to be overcrowded; one was in a cubicle and the rest in the open ward. They were mostly surgical cases, squints and tonsils and adenoids. One staff nurse did most of the work for these three wards from this one duty-room. She appeared to be considerably overworked; we met her at 10.0 a.m. and she was on duty in the evening when we left at 8.0 p.m. *The sampled patient* had had a radical mastectomy 7 days before; her temperature was rising throughout the day. Washing up was done in the ward-kitchen which seemed to be fairly well equipped but was inconveniently placed for most food activity. It had a single stainless steel sink.

The ward-kitchen in the *sampled ward* of Hospital No. 87 was spacious. There was one large wooden table in the centre with a scrubbed surface but otherwise unprotected wood planks. It was equipped with a dish-washing machine but this was not used. It

did not appear possible to put all the crockery from the wards served into this machine as it was much too small. The cleaner who did the washing up said that it did not do large plates and cups satisfactorily, adherent food was not washed off by the machine so that cups felt gritty after washing. She washed up in the ward kitchen using one dishcloth for all crockery and for the interior and exterior of the food trolley and its containers. The trolley when wiped 'clean' with the dishcloth was visibly smeared with an emulsion of food and fat. Little soap was used. All the crockery was 'dried' with one towel. The food trolley smelt of stale food.

The *sampled ward* in Hospital No. 29 was a 'temporary ward', one of a group of huts put up after the war over ten years ago. It was most inadequate and was not designed as a ward as far as could be seen. It was more like a barrack hut. The ward-kitchen was very unsatisfactory—very cramped, not well cared for, and dirty. Enamelled aluminium trays were in use, but the enamel had worn off. They were not properly stowed away but propped on top of the hot water pipe above the skirting. The floor was dirty, the trolley was dirty, there was a domestic-type vacuum cleaner in a dirty cardboard carton under the kitchen table. The refrigerator was dirty outside, the enamel had worn off, the exposed steel was rusty and unpolished. At the evening meal grape fruit was seen in bowls covered with a saucer on the table, not in the refrigerator, waiting for breakfast the following day. A nurse's wrist watch was lying on top of the saucers. Three cheap towel rails were screwed up roughly to a roof beam. In this unsavoury accommodation the flex from the hot food trolley, which was a small square type on castors, trailed over the kitchen table used for food service. It was not possible for two people to pass each other owing to congestion and lack of space. Washing up was done by a cleaner who also helped with food service. These conditions contrasted with appearances in the rest of the ward which was very well kept. Indeed, a nurse was seen swabbing down the walls and cistern of the toilet with disinfectant with such devotion to duty that she had to climb on to a chair to reach parts otherwise inaccessible.

Washing up of crockery, of serving dishes and of the food trolley, was generally done in the ward kitchen, but even where there was proper equipment for draining and air-drying it was usually done unhygienically by an unsupervised cleaner or ward servant, and, indeed, sometimes washing up and the service of meals were mixed

up, as they were in the ward kitchen of Hospital No. 29 which is described above, where the washing up was hurriedly done by the cleaner at an inadequate single sink with a wooden draining board. She started to do this before food service was completed and stopped to serve a diabetic diet that had been overlooked. All crockery and cutlery was wiped with the usual damp dishcloth which was used also for wiping out the food containers on the trolley.

In many main kitchens also hygiene left much to be desired. Usually it was satisfactory in hospitals when catering was under the supervision of a competent matron, or in the larger hospitals under the direct supervision of a catering officer, but the general run of kitchen superintendents and head cooks, who were found virtually in charge of many hospital kitchens, had little knowledge of the essentials of food hygiene. In small hospitals the risks from food poisoning are obviously more limited than in larger institutions, but though only 11 patients were at risk in Hospital No. 127, the sister in charge said that this hospital was becoming less a general acute hospital, but predominantly a maternity hospital, most beds now being occupied by normal maternity cases. The *sampled patient* was a youth with petrol burns of the leg; another patient in the hospital had face burns, and had been tube fed. The sister in charge said they admitted a good many patients with burns. The hospital serves an extensive but sparsely populated area, so that emergencies of this kind are to be expected. The danger of cross infection with mixed casualties and maternity does not seem negligible, and in the kitchen it was found that the scullery was being used, in addition to vegetable preparation and washing up, for washing nappies and baby clothing. The kitchen itself was being used for airing. Ceiling pulleys and airing rods were fixed over the solid fuel cooker.

Hospital No. 4 did not appear to be well cared for. Men were seen with urinals on their bed-tables, together with their meals. In Hospital No. 79 the catering officer kept her pet dog in a dog-bed in her office, adjacent to the kitchen. There was a very dirty kitchen in Hospital No. 50 with everything piled on top of the ovens, meat all over the table; apple boiling over the pans; dirty, musty steam boilers. The hospital was old and dirty with a nauseating smell around the wards.

In Hospital No. 109 the large kitchen was divided into two sections for patients and staff, with a kitchen superintendent in charge of each. Both sections shared the same wash-up area and vegetable

preparation rooms. There was an extremely low standard of cleanliness. There were no lifts at this hospital.

In many kitchens, buildings and equipment are so inadequate that the most conscientious officer would be unable to maintain desirable standards; he can only wait, and hope for rebuilding.

Chapter 5 Staff

Many people concerned with the administration of the hospitals that were visited, hospital secretaries, hospital superintendents, matrons and catering officers referred to the difficulties in obtaining and maintaining adequate staff for feeding patients. In most hospitals no full meal can be served to the patients after supper, which is usually given at 6.30 or 7.0 p.m. The amount of food that can be eaten by the average patient at a set meal is limited; it might be an advantage to have a less rigid pattern of hospital meals with a number of smaller meals and snacks spread over a longer period of time. The restriction of catering staff to a normal 'working day' not only imposes a rigid pattern on the hospital patients' dietary, but can lead to difficulties in providing good meals for staff on night duty. In Hospital No. 23 the cook prepared the evening meal in readiness for the night staff to finish, but did not actually cook it. The night staff of Hospital No. 82 cooked their own meals; they were not reheated dishes, they had to take time to cook them properly. A night watchman was said to heat up meals in another hospital.

There sometimes appeared to be inadequate reserves of trained staff to provide meals when cooks were off duty, and at weekends, particularly in small hospitals. At Hospital No. 57 only one cook was employed; on the day of our visit she had a weekend off and her place was taken by a part-time cleaner. The head cook and deputy cook of Hospital No. 55 were both off-duty, and the kitchen was in the charge of the senior kitchen maid during the day we visited. It was noticed in a number of hospitals that a cooked breakfast was not served on Sundays or that meals were less good than on weekdays and sometimes, apparently, cooked breakfasts were never served.

A number of small hospitals produced better meals more efficiently than larger hospitals. The best of these small hospitals very often depended upon one or two excellent cooks, often local women, who had served the hospital for many years. Many of these women were reaching the end of their working life and we frequently heard matrons complain of the loss of some irreplaceable servant of this kind, or express anxiety about the impending retirement of a good cook. One Deputy Group Secretary informed us that the problem of catering

and kitchen staff was very serious, and in his group there were many cases of dependence upon one cook with long service who was about to retire, with no possibility of adequate replacement; the staffing of small isolated hospitals was very difficult as staff do not want to serve in these places and local village recruitment is no longer a possibility. In Hospital No. 152, a large long stay hospital, one woman and her assistant had cooked for many years; the tradition of homely household cooking was so strong that visiting advisers concerned with hygiene had been unable to make effective an order to remove an old kitchen dresser decorated with ornamental plates, because the cook had always had it so. The cook and her assistant were about to retire, and the matron, who had also been on the staff for many years, anticipated an inevitable decline in the quality of cooking, and could not see (and nor could we) that the kitchen dresser was of comparable importance.

In a large county hospital the catering officer said it was very difficult to get good kitchen staff as a large local food factory, with an international reputation, would give much more money for easier work in better conditions. It would certainly not be difficult for the factory to provide better working conditions than the hospital, with its cramped Victorian basement kitchen with badly lit stores, preparation rooms, bakeries etc., in basement rooms along a dark passage way opposite the kitchen.

The matron at this hospital regretted the loss of an experienced woman kitchen superintendent; her replacement was young and less experienced and things had not been the same since. In his turn, the new catering officer might seek a better job when he had gained experience.

Chapter 6 Distribution and Service of Meals

Liaison between kitchen and ward (Notes 121–151)

The problems of distribution of meals, from kitchen to patients in the ward, vary from the small cottage hospitals with service direct from the kitchen to the patient to the large mental hospital where meals have to be taken over acres of land in a motor van.

Even small hospitals have their difficulties. Hospital No. 135 was a small cottage hospital built in 1923 as a war memorial. It was situated in an isolated country lane but was about to be surrounded by a large housing estate. Across the road and about 200 yards down the lane was an old isolation hospital. In 1949 it was decided that there was no need for a separate isolation hospital, and both hospitals were now run as one unit. The cottage hospital was a surgical unit, and the isolation hospital was the medical and geriatric unit of this general practitioners' hospital. The main kitchen was in the old isolation hospital and the cottage hospital kitchen was used as a ward-kitchen or servery. Food was cooked in the main kitchen; it had to be wheeled in a trolley along an open road to the other hospital. Matron described this small, light trolley being wheeled on a windy day by nurse with one hand on the trolley, one hand on her cap. The disused kitchen was spacious and reasonably well equipped, with ample space for food, cold storage and preparation.

In Hospital No. 34, food was cooked in the kitchen of the residence—a separate house containing the matron's quarters. It had to be carried on trays in covered dishes through the open yard and garden.

The difficulties increase with the size of hospitals. A number of old Emergency Medical Service and other wartime hospitals were seen, with wards dispersed in single storeyed pavilions, so that there were long distances between wards. In the largest one of this type seen—Hospital No. 95—the communicating passageways between the wards, which covered an extensive area, were open and exposed and there were very long distances between the ward and kitchen.

The difficulties imposed by the lack of planning and inconvenience of old buildings were sometimes bizarre. The kitchen of Hospital No. 122 was in the basement close to the main entrance. It was con-

veniently near to the service entrance for stores, etc., but as it was placed at one corner of the site some wards were a long way from the kitchen in remote blocks and some storeys above it. Dining rooms for resident and other staff were on the same level as, and adjacent to, the kitchen. The consultants' dining room was on a more lofty level and their food had to be carried upstairs, because the lift that was formerly used also served the theatre, in which there had been an outbreak of theatre-tetanus. To reach the *sampled ward* from the main building and the kitchen of Hospital No. 96 required a walk through a very long passage and an open yard; the lift to the upper floors opened on to the yard—a very inconvenient arrangement for staff and food-service. In Hospital No. 149 the kitchen was far away from the *sampled ward*; food sent to the ward had to pass along a very long corridor, up a lift in an adjacent block, and over an open bridge between the two blocks. This journey took several minutes. The *sampled ward* in Hospital No. 66 was in a group of war-time huts 200–300 yards away from the main block and kitchen. It was approached from the kitchen by an open road up a hill. For these huts the ordinary trolleys could not be used because of the hill, so electrically heated boxes were stacked on a small milk-round type of van. The food trolleys were seen going downhill in the rain. It seemed a hazardous procedure—one porter with two trolleys was just able to hold them and was getting wet. The 'milk float' for the boxes was seen in the rain, unprotected. It was managed by one porter in dungarees getting wet in pouring rain. Nurses also had to walk in the open between these wards and the main block. Equipment and layout of the ward kitchen were very poor. The wards smelt dirty, and there were many houseflies.

Very large hospitals have to use automobiles to distribute meals from their kitchens. Hospital No. 151 was a very large old fever hospital covering an extensive area. The food from one central kitchen was carried in electrically heated food trolleys which were driven from block to block in small electric trucks. In Hospital No. 138 the wards served were up to three quarters of a mile or more away from the kitchen, and the cooked meals were delivered to them by a motor delivery van in insulated unheated containers. In another large teaching hospital (not included in the random survey) trains of 12–15 food trolleys were hauled through hospital corridors by electric locomotives.

An article on Food Delivery at Claypenny Hospital (Hospital

Engineer 1961) describes the distribution of meals in a mental deficiency hospital with over 300 beds. Up to 4 food trolleys at a time are carried from the central hospital to ward buildings dispersed throughout the grounds in a low trailer hauled by a battery operated electric tractor. Loads of up to six tons can be hauled over quite severe gradients at speeds up to 8 m.p.h.; this is described as a successful method of distribution.

In addition to the physical difficulties of transporting hot cooked food through hospital buildings and grounds increasing size leads to increasing difficulties of communication and liaison between ward and kitchen. In the smallest hospitals there is no problem, ward staff and kitchen staff work together under the direction of the matron or her deputy. In larger hospitals satisfactory liaison can only be maintained by first rate organisation, and administrative competence in both ward and kitchen; even with this the physical difficulties may be too great for efficiency.

Usually the ward sister sends a requisition for the number of ordinary and special diets that she expects to require for the day. Conditions in the general wards of acute hospitals are so variable that she cannot always make an exact estimate of the precise amount of food which will be required—appetites may be small or large, patients come and go, and they may be very ill or convalescent. The quantity of food sent is based on a supposed average of the amounts eaten by different classes of patient at different meals. This is based, not so much upon calculation of the nutritional needs of different patients, as upon experience of what has been adequate in the past. If by mischance or miscalculation too little is sent to the ward, and dishes are empty before the meal has been served, or if Oliver Twist asks for more when the whole dish has been used up, adequately staffed and very efficient hospitals can send to the kitchen for more, and may be able to accept this as a normal incident; but in the conditions in many hospitals this would mean that somebody has to carry the extra food, perhaps from a basement to the fourth or fifth floor, perhaps to another block of buildings, through long corridors and up and down more than one lift. This causes unavoidable delay, the service of food to the whole ward is disorganised, and there is friction between ward and kitchen.

If this were to occur in several wards at a time, and on several occasions, there might be complete disorganisation and serious interference with the work of the hospital. Both ward and kitchen are

Table 7 *Time Elapsed after Completion of Cooking Before the Service of Vegetables to Patients in* 130 *Hospitals*

Size of Hospital (Beds)	Time in minutes									
	0–		7–		25–		55+		*Total*	
	No.	%	No.	%	No.	%	No.	%	No.	%
0–	9	19	29	60·5	10	21	1	2	49	100
101+	0	0	29	35·8	34	42·0	18	22·2	81	100
TOTAL	9		58		44		19		130	100

$\chi^3 = 31{\cdot}38$ n $= 3{\cdot}0$ P $= <0{\cdot}001$

Only in the smallest hospitals did the elapse of time before the service of meals take less than 7 minutes. In most of the larger hospitals there was over 25 minutes delay in serving the meal after cooking, and in from one-fifth to one-quarter it was an hour or more. The differences are statistically highly significant.

Table 8 *Length of Time from Start of Cooking to Meal Service in the Wards of Potatoes in* 127 *Hospitals*

Size of Hospital (Beds)	Time in minutes									
	30–		60–		75–		90+		*Total*	
	No.	%	No.	%	No.	%	No.	%	No.	%
0–	20	41	11	22·5	6	12·5	12	24·5	49	100
101+	12	14	14	18	17	22	35	45	78	100
TOTAL	32		25		23		47		100	

$\chi^3 = 12{\cdot}93$ n $= 3{\cdot}0$ P $<0{\cdot}005$

Nearly half the smallest hospitals could cook potatoes and serve them within one hour, but in half the largest hospitals, cooking and serving took more than an hour and a half.

concerned that this should not happen; therefore the average estimat of the size of the portions per head tends to be large—the amount that has been shown by experience in the kitchen to avoid these difficulties—and ward staff may resort to various devices in requisitioning to ensure that there is sufficient quantity and some variety of choice. (This is referred to below under special diets.) The hospital service as a whole is faced with the paradox that in

small hospitals the problem of catering is comparatively simple, whilst the catering organisation is resilient and adaptable, but with hospitals of increasing size the catering problem becomes more complex with increasingly rigid and inflexible organisation. Allocations and requisitions, with many beautifully drafted forms, make a system that is complete in itself, and when duly presented for their study satisfies the requirements of committees, accountants, and auditors; but the findings of food wasted (Figs. 3 and 4), of the delays in service (Tables 7 and 8) and of the nutrient values of the diets shown in Tables 14, 16 and 18 suggest that the system has little influence on the way in which food is actually used, and is not sufficiently adaptable to provide for the varying nutritional needs of patients.

The use and abuse of food trolleys, and delays in the service of food (Notes 152–194)

The difficulties involved in the service of freshly prepared, freshly cooked, and hot meals to warded patients had been met, in nearly all but the smallest hospitals, by the use of electrically heated food trolleys or food boxes. Some large hospitals had not been equipped with them, but anticipated their provision in the near future. Occasionally the lack of lifts was a difficulty in old institutions, but often it was said that lifts were to be installed followed by provision of heated food trolleys. The trolleys were usually spoken of highly by hospital staff, and when recently acquired they were demonstrated with pride. They do at least make it possible to serve a hot meal hot, in very difficult circumstances; but they have defects and should not be considered the final answer to the problem of distribution.

In the conditions described in large hospitals, where cooked meals have to be hauled around the hospital grounds by motor transport, it is quite impossible to suppose that there can be any very efficient liaison between kitchen and ward; there cannot be a lively response in the kitchen to the varying needs of different patients in the wards.

In recommendations for the design of new kitchens *Hospital Building Notes* No. 10, *Kitchens* (Ministry of Health, 1961) makes provision for a washroom for food trolleys and food containers, with washing and sterilising sinks for food containers. At present the cleanliness of these trolleys and their containers is often open to grave

suspicion. In most places it seemed that they were given a wipe down by the cleaner who did the washing up in the ward kitchen, with the same dishcloth and 'drying' cloth used for crockery and cutlery. A smear of washing up emulsion could often be seen on the surface of utensils and trolley after this cleaning. Soap and detergents were not used effectively, and there appeared to be insufficient use of sterilising detergents. Frequently trolleys were visibly dirty with grease and food-detritus on casual inspection, and after a period of use many had a sickening smell. That the food trolley is not always regarded as a desirable or cleanly vehicle was demonstrated in one hospital where it was regarded as too septic a contrivance to be allowed into the ward for food service, and in Hospital No. 123 it could not go into a lift used by theatre patients, for fear of tetanus; but the food off the trolley comes into potentially much more dangerous infective contact with patients than much else that receives close attention.

Another disadvantage is the tendency for their use to remove from staff all sense of urgency in the service of food. Without them speed in service is recognized as essential, even though speed alone cannot overcome the difficulties in a hospital of any size. With them nobody is worried once the food is in the trolley. On more than one occasion the service of a meal was delayed owing to the arrival of a doctor, or a matron to visit a particular patient, or to do a ward round that had been delayed and postponed owing to other commitments.

On eight occasions the service of meals was delayed by rounds, or visits of medical staff. The delay often amounted to as much as 20–30 minutes; on two occasions meal service was delayed while a matron or her deputy visited. However in some hospitals routine occurrences of this sort were not permitted to delay the mealtime. Delays were also caused by what appeared to be administrative inefficiency. In Hospital No. 88 the service of the midday meal was stopped for about 20 minutes for the nurses to go and collect their pay, and most of the service was done by orderlies; and in others service would be delayed by nurses leaving for their own lunch before they could be relieved. Possibly many of these delays were due to understaffing.

In kitchens the heated trolleys had the administrative convenience that cooked food could be got out of the way as soon as it was ready, and could be ready and waiting in the ward in time for the meal to be served, so avoiding interdepartmental friction. This was particularly convenient in kitchens that were too small and not well organised

or equipped for the work they had to do, and it was not infrequently noted that meals stayed in or on the trolley for periods of one hour or more before they were served in the ward. On some occasions the power was not switched on so that the food got cold. In Hospital No. 54 the trolley was kept in the ward for 35 minutes, and a large tray of fried fish was kept on top of it making the ward smell of fish during the whole period of waiting. In Hospital No. 139 breakfast arrived at 7.15 a.m. for service at 7.45 a.m. There were long delays between service in the kitchen and service to the patient in the ward. Supper was sent to the ward one hour before mealtime and was put into the ward kitchen oven to keep hot. There was a lot of plate waste at supper.

In many of the conditions that have been described it is difficult to suggest how the work could be done without making use of these mobile hot ovens, where cooked food can be kept waiting away from working space in outside rooms and passage-ways. Tables 7 and 8 show the effect these conditions have upon the time elapsing between completion of cooking and service of food in the ward. Only in the smallest hospitals was the elapse of time before the service of meals less than 7 minutes. In most of the larger hospitals there was over 25 minutes delay in serving the meal after cooking, and in from one-fifth to one-quarter it was an hour or more. Nearly half the smallest hospitals could cook potatoes and serve them within one hour, but in half the largest hospitals cooking and serving took more than an hour and half. Part of this time was occupied in many hospitals, by the need to complete cooking of some dishes early in order to have the meal ready in time.

The effect of excessive cooking times and delays in service upon the content of ascorbic acid is referred to later in the description of cooking and service of vegetables (Chapter 7).

Rapport between server and patient (Notes 195–272)

The service of the meal to the patient is the final stage to which all the activities of a catering department should be directed. At this point administration and organisation stops, and the result is presented for the acceptance or rejection, voluntary or involuntary, of the patient; it is submitted to no simple judgment, but to a complex of food habits and prejudices, sickness, emotion, and medical require-

ments, which vary from bed to bed. The preparation of the meal may have been well or badly done, but the best cooked meal will not be fully acceptable if the final service is sloppy.

In those smaller hospitals where the matron or her deputy was not only in charge of all catering, but was interested in the meals and proud of the cooking, this was realised. Nurses who have been at pains to cook a good meal will not willingly see their efforts wasted. A number of small chronic hospitals were so inadequately staffed that meal service—together with catering generally—left everything to be desired. In larger hospitals the standard of service generally reflected the training and quality of the nursing staff, but even good nurses have difficulty in presenting food that is of poor quality or badly prepared. There seemed in some hospitals to be little interest in food sent from a kitchen that was part of a separately administered department. This was perhaps seen at its clearest in Hospital No. 54 where catering was done by an outside firm, and food originally well cooked was ruined by careless service. In Hospital No. 74 the meals sent up from the kitchen had an attractive appearance, in particular the special diets were made to look most appetising, served in small round dishes, and oranges were served surrounded by paper lace. These efforts accounted for nothing in the *sampled ward*, as the nursing staff appeared to be indifferent. At the evening meal service was poor with little attention to patients' requirements. Baked apples, which were sent up from the kitchen attractively presented in small dishes, were turned out on to ordinary plates.

The tendency to over-estimate the amount of food required in the ward appeared to lead to a general lack of regard for the value of food. What was wasted on so considerable a scale could only receive scant respect; this was shown in more than one hospital where special diets—specially ordered and made up—were completely overlooked and were not served to the patients for whom they were intended, and also where complete dishes were forgotten and not served.

In most hospitals visited food was served from the food trolley to the patients in the wards by nursing staff, with more or less assistance from ward servants and orderlies. In a few hospitals the meals were served mainly by servants and orderlies, apparently because there were too few nursing staff, and they were too heavily engaged in other duties to be able to pay much attention to the service of food. The nursing staff had to fit in the duty of serving food with their many other nursing duties. Because their duty was primarily nursing the

sick, any medical or nursing attention that might be required over a mealtime had to take priority over the duty of serving food. This was always liable to interfere with the service of meals in busy wards, and because there was always more than enough to do, there was sometimes a tendency to hurry with the serving of the meal to get it over quickly and get on with the job. The use of heated food trolleys was convenient in that a cooked meal was ready waiting at hand when the staff was ready to serve it. If, at the appointed hour, service proved to be inconvenient it could be postponed for a period of ten minutes or more. This may add greatly to the convenience of running a busy ward but may not always result in fresh and appetising food being served to the patients.

Table 9 *Rapport between server and patient at midday meals*

Size of Hospital	Bad No. Hospitals	%	Fair No. Hospitals	%	Good No. Hospitals	%	Total	No. Report
1—	7	12·1	21	36·2	30	51·7	58	1
101+	26	29·2	33	37·1	30	33·7	89	4
TOTAL	33	22·5	54	36·7	60	40·8	147	5

For the difference between small hospitals and those with over 100 beds,
$\chi^2 = 7{\cdot}38$ $P < {\cdot}05$

Notes on the 'rapport between server and patient' were made in all but a few hospitals. The points observed were the consideration given by the servers at mealtimes to the appetites, personal needs and tastes of different patients. A common fault was to give equal portions of each dish to every patient without reference to their wants or clinical condition. This was particularly noticeable when the staff were rushed, or perhaps had little time to find out the needs of particular patients, but many ward sisters and staff nurses gave careful consideration to each portion that they served. Hospitals have been classified from the notes made into three groups, and the results are shown in Table 9. The small hospitals of 100 beds or less had a significantly better record than those with more than 100 beds ($P < {\cdot}05$).

Presentation of food

Notes were also made on 'presentation of food', in which consideration was given to the quality of cutlery and crockery, the manner in which food trays were set up, the appearance of food on the plate, and care in service. Thirty-four hospitals were classified as 'bad', ninety-eight as 'fair', nineteen as 'good', and of one there was no record. No significant differences were noticed between hospital sizes or classes. In our judgment the way that food is presented to the patient in hospitals leaves room for improvement.

In a number of large chronic and long stay hospitals and mental hospitals it is still customary to mix tea, sugar and milk in large teapots or tea urns. This means that patients have no choice, and cannot suit their personal tastes for milk or sugar. Most people dislike tea made in this way for it usually has a distinctive flavour.

Times of service of meals

Meals were served at the times shown in Table 10. A full evening meal is never served after 7 p.m., and some hospitals serve neither an evening drink nor early morning tea. This may mean that there is a lapse of twelve hours without any food provided by the hospital, and always means that there is twelve hours or more between two set meals. In a number of hospitals patients are still awakened early. Although an early meal or morning drink may be welcome after a fast of twelve hours it was noted that some patients were too sleepy after sedation to eat breakfast served early in the morning. Some early breakfasts appeared to be served more for the benefit of ward routine than for that of the patients. The time that breakfast was supposed to be served did not always correspond to the time that it was served. In one hospital early morning tea was served at 4.30 a.m.

Only in the largest hospitals was there any attempt to stagger meal times. Where this was done it was usually because kitchens were not big enough to cater satisfactorily for all the meals they were required to produce, and it would not have been possible for staff to distribute all the meals at one serving. In Hospital No. 138, because over 2,000 people had to be fed from the century old kitchen, meals were cooked in batches and served in batches over a period of one and a half hours. Though the catering officer said food must be cooked in

Table 10 *Times of Service of Meals*

Hospital Type & Size	Early morning tea a.m. nil	5	6	7+	Breakfast a.m. 6	7	8	9+	Mid-morning tea, coffee or milk a.m. nil	9	10	11+	Midday Meal a.m. 11	12	p.m. 1	2+	Afternoon tea p.m. nil	2	3	4+	Evening meal p.m. 4	5	6	7	8+	Evening milk drink p.m. nil	7	8	9	10+
Acute																													
1–100	3	6	34	1	1	18	25	0	6	7	30	1	3	41	0	0	1	0	43	0	1	0	34	9	0	8	0	8	28	0
101–300	3	6	25	2	3	9	24	0	10	4	21	1	2	34	0	0	1	0	34	1	0	1	28	7	0	2	2	9	23	0
300+	6	0	13	1	2	12	6	0	5	0	15	0	6	14	0	0	1	0	17	2	0	2	18	0	0	4	0	4	12	0
Total, acute	12	12	72	4	6	39	55	0	21	11	66	2	11	89	0	0	3	0	94	3	1	3	80	16	0	14	2	21	63	0
Chronic All Sizes	7	5	16	2	0	12	18	0	8	3	19	0	9	21	0	0	6	4	16	4	3	5	19	3	0	15	3	4	8	0
Mental All Sizes	17	0	5	0	0	9	13	0	4	4	13	1	5	15	2	0	12	1	4	5	8	5	6	3	0	12	9	0	1	0
TOTAL	36	17	93	6	6	60	86	0	33	18	98	3	25	125	2	0	21	5	114	12	12	13	105	22	0	41	14	25	72	0

batches for these different servings it seemed doubtful whether this could be accomplished. A visit to the kitchen on a Saturday afternoon disclosed food and vegetables being prepared for Sunday lunch because of staff shortage on Sunday morning, and it was noted that cooking of vegetables started at 10.0 a.m. for lunch at 12.0 noon. Meals were served in 3 batches at half hour intervals in Hospital No. 110 which also had more than 2,000 patients.

In some areas—it was noticed particularly in Nottinghamshire but could apply to many other counties—it appeared that patients preferred a high tea at about 4 or 5 o'clock in the afternoon, to be followed by some lighter snack much later in the evening. Many long stay and chronic sick hospitals do serve a substantial high tea in place of the customary hospital supper, but no provision is made for anything much more substantial than a milk drink later at night. In Hospital No. 14 the patients themselves supplemented the afternoon tea with their own extras, and not much was taken at supper. Another hospital provided jelly and egg custard at afternoon tea, with cake. The staff said that the patients preferred this afternoon tea to the supper meal, and there was considerable waste at supper. At many hospitals in country districts patients provided their own eggs for tea.

At Hospital No. 10 considerable adjustments had been made to the customary times of feeding. The morning 11 o'clock snack had been abolished; instead the patients had an early lunch, followed later by a high tea. At night they had only a light supper. This had worked well and the revised routine had greatly reduced the plate waste.

One difficulty in serving an earlier high tea appeared to be the difficulty in serving a much later light supper after day staff had gone off duty. Perhaps the customary time of 6 p.m. for supper has become established because it is the latest possible time that a main meal can be served before day staff in the ward and catering staff go off duty. This could only be altered by having a much more flexible catering organisation. A later meal than is usually given now is probably desirable, in order to interrupt the present twelve hours' fast. If high tea were to be given earlier a later light meal would clearly be an even greater need.

Chapter 7 The Food

Preparation and cooking of meals

Though it was not possible to make a detailed investigation of cooking, notes were made of anything of interest that was observed, and particular attention was paid to the time taken in the preparation, cooking and service of vegetables. There was a tendency to prepare fresh vegetables well in advance of cooking. It was noticed in nine hospitals that potatoes were peeled the day before they were cooked and were left soaking overnight, and a number of notes illustrate a lack of expeditious preparation and service. These were casual notes made of incidents that happened to be observed on visits to kitchens. Delays in preparation and long cooking are known to cause losses of ascorbic acid (vitamin C), and calculations based upon assays of ascorbic acid in vegetables as served in hospitals indicate that potatoes make only a small contribution to patients' requirements for this vitamin. The ascorbic acid may be reduced by half, through overnight soaking of peeled potatoes. The losses of ascorbic acid—a particularly unstable nutrient—during preparation, cooking and service can be measured, and this is a useful objective index of the 'insults' to which food was subjected. Gastronomic qualities which are related to taste, odour, and colour depend, as do nutritional values, on the presence in the food of chemical substances. Chemical substances may be lost or destroyed during preparation and cooking. Ascorbic acid losses in potatoes and cabbage were found to be as high as 90–95% in a number of hospitals. This represents not only a serious loss of an essential nutrient, but parallel losses of the more delicate flavours would tend to make the food, as served, unpalatable and unattractive.

Detailed observations were made in a few hospitals, and samples were taken at various stages of preparation for analysis of ascorbic acid content. Records of observations in three hospitals, which are representative of those made in most others, illustrate what is meant by 'insults' to which food is subjected.

Cabbage prepared in an acute hospital diet kitchen (720 beds)

Time		Ascorbic Acid mg/100 gm
9.0 a.m.	Cabbage chopped up and left in sink with hot tap running slightly	
9.5 a.m.	Raw Cabbage	96·7
10.50 a.m.	Cabbage put into boiling water and stirred occasionally	
10.55 a.m.	Lid shut on boiler	
11.15 a.m.	Part of cabbage strained and left in bowl ready for mincing	
	Cooked chopped cabbage	38·7
11.30 a.m.	Rest strained and put into the hot trolley	
	Sample from boiler	32·7
11.45 a.m.	Minced cooked cabbage from mincer	30·4
11.48 a.m.	Ward delivery started	
11.55 a.m.	Sample of minced cabbage from trolley	31·0
	Sample of cooked un-minced chopped cabbage from trolley	26·6
	Some was also put on one of the heated plates and placed in a ward trolley. All full trolleys waited in kitchen for some time before being taken to the wards	
12.7 p.m.	Trolley left kitchen and took about 4 minutes to reach the ward stopping en route for ice-cream and jelly	
12.15 p.m.	Trays were off loaded on to an ordinary trolley. An orderly started distributing the trays after putting cutlery, etc. on them	
12.20 p.m.	Cabbage from plate sampled. (It was not very hot by this time.) Meanwhile many patients had not yet received their trays which were waiting in the corridor on ordinary unheated trolleys	19·0
	A small amount of cooked cabbage was homogenised for special patients and left on the cooker gently boiling. It is doubtful if much vitamin C was left	

Peas—diet kitchen acute hospital (400 beds)

Time		Ascorbic Acid mg/100 gm
9.45 a.m.	Frozen peas sampled from deep freeze	20·5
	Frozen peas put into boiling unsalted water	
9.50 a.m.	Sample taken	15·0
10.20 a.m.	Water began to boil	
10.35 a.m.	Peas strained and divided into (*a*) unsalted (*b*) salted and left on top of the hot plate	
	Sample	8·1
11.10 a.m.	Sample cooked peas from hot plate	3·7
12.10 p.m.	Peas sampled at time of service to patients	1·1
	The diet kitchen served 85–100 patients and was staffed by 5 dietitians and 7 cooks. Service of the meal took 40 minutes. A tray prepared with 2 aluminium dishes and the patient's menu card was passed down to 3 dietitians who dished up the food. The tins were covered and the trays put into heated trolleys—checked by chief dietitian. The food containers were sitting on top of the hot plate during service	

Potatoes—Main Kitchen—partly acute hospital (280 beds)

Time		% Water	Ascorbic Acid mg/100 gm
	Potatoes peeled from 7.0 a.m. onwards		
8.05 a.m.	Sample raw potato	81·1	11·36
8.0 a.m. to 8.30 a.m.	Potatoes cooked for 'roasting' later. Left uncovered all morning on a trolley		
9.10 a.m.	The rest of the potatoes were put into the steam oven		
10.0 a.m.	Sample raw from oven		13·40
	Steam switched on to oven		
10.30 a.m.	Cooking finished. Sample cooked potato	81·1	7·21
	Potatoes mashed milk and butter added		
10.45 a.m.	Sample mashed potato	78·5	4·5
11.30 a.m.	Trolley left kitchen—arrived in ward 11.40 a.m. Service commenced 11.50. Sample mashed potato from trolley	80·6 8·7% fat	2·06
11.55 a.m.	Sample roast potato from trolley in kitchen	71·0	2·31
	'Roast' potatoes were cooked potatoes put into hot fat at 10.30 a.m.	13·2% fat	

The cooking times of vegetables were often excessive, and larger hospitals tended to overcook more than the smaller ones. In about half the hospitals potatoes were cooked for an hour or more. While over 80% of small hospitals cooked green vegetables for half an hour or less, half of the larger hospitals (with more than 100 beds) cooked them for more than 35 minutes. Details are shown in Tables 11 and 12.

Table 11 *Vegetable Cooking Times for Midday Meals*

	Time in minutes							No. record	Total
	15–	25–	35–	55–	85–	95–	115+		
A. Potatoes No. of Hospitals	7	25	37	41	2	2	1	25	152
B. Green Vegetables No. of Hospitals	17	18	12	3	2			98	152

Table 12 *Cooking Times of Green Fresh Vegetables in Different Sizes of Hospitals*

Size of Hospital (Beds)	*Less than 35 minutes No. of Hospitals*	%	*35 minutes or over No. of Hospitals*	%	*Total*
0–	19	82·6	4	17·4	23
101+	16	51·5	15	48·5	31
TOTAL	35		19		54

$\chi^2 = 5{\cdot}84 \quad n = 1{\cdot}0 \quad P < {\cdot}025$

Because green vegetables were cooked for shorter times than potatoes, records of times for these could be observed with greater accuracy. In the 54 hospitals where records were made of cabbage, cauliflower and sprouts, the cooking times were significantly less in smaller hospitals and tended to become progressively longer in the larger hospitals.

Menus and choice of menus (notes 341–352)

Table 13 shows the approximate weight (calculated as shown in Appendix II) of serving in a meal of average caloric value for the type of patient and hospital. The use made of these dishes is shown in Figures 1 and 2.

There was considerably more variety in the menus of acute hospitals; this was particularly noticeable in the greater variety of vegetables and meat dishes which were offered. The least variety was

Table 13 *Weights of Dishes Served at Meals per Patient/Day*

	Acute			*Chronic*		*Mental*
Weight of food in grams	1–	101–	301+	1–	101+	
MIDDAY						
Soup	10	29	53	13	15	10
Meat—cold	3·8	1·2	7·9	5·9	4·8	0·8
roast	11·5	25·1	5·8	14·2	7·4	18·9
boiled	1·4	—	4·0	—	—	1·9
braised	2·0	—	9·2	2·1	1·3	—
stewed	20·3	3·4	8·4	13·0	6·3	9·2
minced	—	1·1	0·1	12·2	10·8	15·9
bacon	—	6·2	3·2	—	—	0·7
liver	1·6	5·5	6·6	—	—	1·5
tripe	—	—	—	5·1	—	—
chops	—	—	—	—	4·0	—
ham	—	—	—	—	—	3·7
toad-in-the-hole	—	—	—	—	—	4·0
meat & potato pie	6·0	—	—	—	4·0	14·5
meat pie	3·0	5·0	1·3	22·7	6·7	—
hot-pot	—	2·0	—	—	—	—
Fish	14·0	20·0	8·0	3·0	6·0	3·0
Potatoes—chips	8·0	29·0	6·0	—	7·0	20·0
boiled	75·0	77·0	91·0	63·0	6·0	91·0
Cabbage	3·0	19·0	2·0	13·0	16·0	30·0
Peas (and Broad Beans)	2·0	19·0	11·0	2·0	7·0	15·0
Swede and Marrow	4·0	9·0	9·0	—	—	—
Butter Beans	—	—	—	—	2·0	6·0
French Beans	—	3·0	—	—	5·0	—
Cauliflower	64·0	5·0	3·0	7·0	12·0	—
Onions	1·0	2·0	—	—	—	—
Beetroot	—	—	3·0	1·0	—	—
Carrots	1·0	5·0	3·0	4·0	4·0	18·0
Gravy	22·0	25·0	15·0	—	7·0	36·0
Yorkshire pudding	2·0	2·0	1·0	6·0	—	10·0
Lettuce	3·0	—	5·0	—	—	—
Tomatoes	—	—	5·0	—	—	—
Bread	1·0	9·0	1·0	—	—	9·0
Butter	0·2	—	—	—	—	—
Puddings—milk	37·0	34·0	24·0	33·0	57·0	41·0
fruit tart & pies	42·0	29·0	21·0	—	5·0	36·0
Baked	6·0	14·0	13·0	51·0	19·0	9·0
fruit, stewed or canned	15·0	13·0	25·0	—	17·0	20·0
egg custard	2·0	3·0	—	—	—	—
jellies	7·0	3·0	1·0	—	15·0	—
custard sauce	30·0	20·0	51·0	25·0	8·0	39·0
ice cream	—	6·0	3·0	—	—	8·0
Apple or white sauce	—	11·0	—	—	—	—

Table 13 (*contd.*) *Weights of Dishes Served at Meals Per Patient/Day*

	Acute			*Chronic*		*Mental*
Weight of food in grams.	1–	101–	301+	1–	101+	
EVENING						
Soup	69·0	96·0	75·0	5·0	21·0	—
Meat—minced	3·9	1·6	0·4	0·9	2·2	—
liver	2·0	3·1	3·3	—	—	0·5
boiled	—	—	1·3	—	4·1	—
cold	6·9	14·1	4·0	3·6	11·0	9·5
stewed	—	4·1	6·8	2·9	3·2	1·2
chops	—	3·8	—	—	—	—
kidneys	—	—	8·7	—	—	—
ham	—	—	—	—	—	1·1
ham omelette	2·3	—	—	—	—	—
bacon	1·0	—	—	1·2	—	—
bacon rarebit	0·4	—	—	—	—	—
braised oxtail	—	2·3	—	—	—	—
sausages	8·2	7·4	12·3	—	—	0·5
meat & potato pie	16·0	0·3	11·0	2·0	13·0	—
meat pie	3·0	10·5	2·5	2·6	—	10·9
gravy	2·0	1·0	3 ·0	2·0	—	—
Fish	7·0	6·0	9·0	6·0	6·0	12·0
Potatoes—chips	—	—	—	4·0	—	—
boiled	53·0	86·0	56·0	8·0	8·0	4·0
Carrots	8·0	1·0	—	—	2·0	—
Beetroot	—	—	—	4·0	—	6·0
Peas	4·0	1·0	—	—	2·0	—
Baked beans	—	4·0	4·0	—	—	3·0
Tomatoes	4·0	1·0	4·0	—	0·4	3·0
Lettuce	8·0	5·0	5·0	—	—	4·0
Cheese	2·0	5·0	—	7·0	—	12·0
Macaroni cheese	—	—	—	—	—	5·0
Spaghetti	—	—	—	—	—	1·0
Milk	14·0	—	—	25·0	31·0	38·0
Eggs	12·0	7·0	3·0	6·0	11·0	1·4
Puddings—milk	38·0	32·0	25·0	16·0	15·0	—
jelly	—	—	—	—	—	3·4
jam tart	—	—	—	8·0	—	0·2
custard sauce	—	2·0	17·0	—	—	6·0
ice cream	—	—	9·0	8·0	8·0	1·0
Cake	—	—	—	3·0	11·0	9·0
Bread	20·0	13·0	18·0	35·0	32·0	57·0
Butter	5·0	3·0	4·0	9·0	8·0	14·0

Table 13 (*contd.*) *Weights of Dishes Served at Meals Per Patient/Day*

	Acute			*Chronic*		*Mental*
Weight of food in grams.	1–	101–	301+	1–	101+	
BREAKFAST						
Porridge	71·0	93·0	80·0	69·0	85·0	46·0
Cornflakes	9·0	7·0	6·0	5·0	2·0	6·0
Bread	40·0	40·0	42·0	41·0	55·0	52·0
Butter	9·0	9·0	11·0	11·0	12·0	13·0
Other fat	0·2	0·3	0·1	—	—	0·1
Eggs	33·0	24·0	29·0	12·0	2·0	30·0
Fish	6·0	7·0	3·0	3·0	—	1·0
Bacon (or Ham)	10·0	13·0	7·0	12·0	10·0	14·0
Sausage	3·0	1·0	5·0	6·0	5·0	13·0
Baked beans	3·0	2·0	2·0	—	—	1·0
Spaghetti	—	—	2·0	—	—	3·0
Tomato	7·0	10·0	4·0	6·0	—	11·0
Potato	—	1·0	0·2	0·7	—	—
Toast	—	4·0	4·0	5·0	—	—
Orange juice	—	—	—	2·0	—	—
Milk	194·0	137·0	123·0	69·0	84·0	102·0

given in mental hospitals, where there was a greater consumption of bread, potatoes, and cabbage with cheese and cheese dishes in place of meat. Translated into nutritional values this had no immediately apparent effect, but it meant that the meals were more monotonous and less appetising than those in other hospitals.

Certain dishes, particularly those classified as meat and potato pie—usually shepherd's pie—and minced meat dishes, were usually made up from food left over from previous meals. The considerable amount of meat and potato pie served at evening meals at small acute hospitals is an example of this, and may be related to the greater economy found in the use of food by small hospitals. The reheating of food in this way can add to the risks of food infections and reduces the quality of the food. In the conditions observed in a number of hospitals twice cooked food would be liable to infection and bacterial growth.

At breakfast the general rule, particularly in larger hospitals, was to serve bacon or fish or an egg; to serve an egg with bacon is exceptional. Porridge was served at the majority of breakfasts, but

breakfast cereals were usually an alternative; 30%–40% of the porridge was wasted except in mental hospitals where waste was much less.

Special diets (Notes 353–368)

Special diets were not included in the survey, but a number of observations of them were made during the routine study of normal diets. There is a shortage of dietitians; though most general hospitals have to provide prescribed special diets in only one or two hospitals were they prepared and given under the personal supervision of dietitians. Many hospitals without dietitians or special diet kitchens serve special diets. Sometimes it was found that these special diets would be forgotten during service. At other times they were ordered for people who were so sick that they could not eat them. It appeared that in many wards the ward sister will requisition for a number of special diets which may or may not be eaten by the patients for whom they are prescribed, and this gives the ward a supply of alternative foods. Sometimes issues of food in the ward appeared to be made without regard to the requirements of a particular special diet. In many hospitals it seemed doubtful if therapeutic diets, as they were prepared and served, were making the planned contribution to a scheme of treatment which the physician would expect.

Extras (Notes 385–406)

Particularly in reference to *patients' extras*, 'extra' is a word that aptly describes the general conception in hospital of the contribution made by this provision in the whole diet—as something additional to the normal food, something which gives pleasure to the patient, but except perhaps for vitamins in fruit, not generally to be considered as an important contribution to nutrition. The amounts of food which patients keep in their bedside lockers and eat at odd times throughout the day are often viewed with disfavour; it is considered that these additions of nourishment between meals may reduce appetite and so be prejudicial to the consumption of the 'good food' supplied at mealtimes. For a patient upon a properly calculated therapeutic diet—say a diabetic or a reducing diet—uncontrolled additions of this kind are, of course, prejudicial to the whole scheme

of treatment, but this is not necessarily true for a recovering patient upon a full normal hospital diet. In the section of this report in which we discuss our findings in relation to the nutritional requirements of patients we show that the three main meals per day provided by the hospitals only supply the energy needs of basal metabolism; some 25% of all caloric needs are supplied by *hospital extras*, including afternoon tea, and an average of about 14% for recuperative patients and 6% for maintenance patients is provided by *patients' extras*. On the average, the higher the dietary requirements of patients the more of their own extras did they take, and without these contributions the whole dietary would have been inadequate.

In some hospitals it appeared that the staff relied upon provisions brought in by patients to help out with the diet; and it was occasionally noticed that eggs supplied by patients made a considerable contribution to the hospital dietary. In Hospital No. 27, though the Matron said that patients were not allowed to bring their own eggs, at 7.0 a.m. the sampler saw eggs being collected from patients by the night nurse who was going round the wards. This led to difficulty when the sampler asked for a hospital egg to match for her sample.

A supply of bacon was issued to the wards weekly in Hospital No. 47, and this was served daily for breakfast until it ran out. The bacon was supplemented by eggs provided by the patients. Occasionally hospital eggs were provided in the morning if the bacon had run out before Sunday, when a new supply of bacon would arrive. A cooked breakfast was never supplied on Sunday, and the main dish for supper on Sundays was chicken broth.

Many patients in Hospital No. 76 were fairly well off; they provided many home comforts for themselves. Several had their own personal stocks of butter and other food items. The hospital did not appear to provide any food between the evening meal served at 4.45–5.0 p.m. until breakfast at 8.30 a.m. but a number of these long-stay patients were able to care for themselves, to move about and prepare food for themselves from their own supplies.

In some other hospitals patients resorted to their own provisions as alternatives to hospital food which they did not like. In Hospital No. 50 the *sampled patient* provided a duck egg of her own to provide an egg sandwich for her tea. A milk pudding that was served looked nasty and sticky and the patient did not eat it, preferring her own bread and butter and a banana, which had been sent to her from her home.

Similarly in Hospital No. 39 the patient refused the shepherd's pie which was offered him at the evening meal, and took his own cheese sandwiches with two onions, which had been brought in by his friends. Food appeared to be in rather short supply, and hardly anything was put on to the last three plates at the midday meal. There appeared to be no question of asking for more from the kitchen. There was considerable plate waste.

Urgent need and hunger drove more than one to eat very considerable amounts of their own food. Only early morning and afternoon tea were provided in Hospital No. 56 in addition to the three main meals. No other drinks or extras of any kind were offered to the patients by the hospital. The *sampled patient*, a young man, had a rising temperature fourteen days after a compound fracture of the tibia. From his own personal provisions he provided 1376 calories in sweets, biscuits and Lucozade. His dietary requirements were obviously very high and this high consumption of sweet foods should be compared with the provision of a large portion of 784 calories at the main meal, of which he could only eat two-thirds. His temperature had been rising since the previous evening.

This considerable personal provision of food by patients and their visitors is a regular occurrence in many hospitals, and one or two of our *sampled patients* who had been admitted to hospital urgently and who had not been visited by friends had food provided for them by other patients in the ward; it was clearly regarded as an unhappy state of affairs for a patient to be in hospital with no food of his own. The long interval between supper and breakfast accounts for some of this filling in by patients, but there seemed sometimes to be a curious resistance to, even at times resentment of, manifestations of appetite, and sometimes of obvious hunger by patients, as though it were a nursing heresy that one of a patient's primary instincts could ever provide a clue to his own medical needs.

The ward sister in Hospital No. 121, talking of orthopaedic patients, mentioned how much they ate, particularly one boy who would eat seven slices of bread and butter. She said that she had to stop him as he was eating too much. A resident medical officer who heard this conversation said that it was wrong to say the boy was eating too much as he probably needed it, but the ward sister said this consumption was putting up her bread bill beyond the limits that she could afford.

In Hospital No. 143 the matron did not agree that patients tended

to receive a decreasing amount of personal extras following the early days of admission. Old people were like children with regard to the stuffing of sweets and cakes, and relatives brought many extras. A patient on a strict reducing diet, or a diabetic diet, would often join in a box of chocolates, etc., with other patients. Patients made very considerable use of the travelling shop service. The general impression both here and at Hospital No. 153, which is in the same Group, is that old patients tend to eat too much.

Staff meals (Notes 407–449)

Staff meals were outside the scope of this survey, but it was noticeable in many hospitals that nursing staff would often say that it was time that attention was paid to staff meals. In small hospitals staff meals and patients' meals were usually the same and were cooked together, the size of the hospital and the size and number of staff available in the kitchen allowing for no other alternative. This often meant that the staff meal was served after the patients' meal, sometimes as much as an hour afterwards; usually the food had been ready and waiting for the whole of that time. Also in small hospitals unused food that was left over when the patients' meal had been served was sent on for service to the staff, after the patients' meal had finished. This may have led to more economical catering, but it must mean that staff rarely got their food freshly cooked and prepared.

In a number of hospitals a good deal of food seemed to be eaten on the wards by the staff on duty and, in some, food from the patients' meals would be saved for staff who had not yet arrived on duty. A good deal of this eating on the wards appeared to be due to the regulation that a part-time nurse working four days per week or less is entitled to food provided by the hospital as part of her emoluments, but if she works for more than four days she becomes full-time and the cost of meals must be deducted from pay. It was found in some hospitals that non-resident staff would arrive early in the morning to serve breakfast, and it is probable that they had had no food before arriving on duty. Reference is made above to difficulties experienced in some hospitals in providing satisfactory cooked meals for staff on night duty.

Resident nursing staff depend upon food provided by the hospital

for the whole of their dietary requirements over long periods of time. Particularly in hospitals with nursing training schools there are large numbers of very active young people; their dietary requirements are high and their appetites correspondingly large. It is not clear from this survey to what extent the hospital provision of food is designed to meet the requirements of the nursing staff or to what extent the meals are supplemented by the staff's own provisions; but there is a need for a further detailed study of food provided for resident-staff.

(B) NUTRITIONAL VALUES

Chapter 8 Nutritional Values

Technical paper

A technical paper (Eddy and Pellett), discusses in detail the factors affecting the protein-calorie values of the sampled meals and of the sampled patients' dietaries as a whole; it describes methods used for the determination of the protein values of human diets and makes recommendations for protein-calorie values to meet the requirements of different classes of hospital patient. Accordingly, the protein and calorie values and recommendations in this report are based upon the methods described in the technical paper, which contains additional information concerning the *sampled patients* and the *sampled diets.*

Catering and food service have been considered in relation to the types and sizes of sampled hospitals. For an assessment of nutritive value of hospital food it has been more convenient to classify the sampled diets as 'Recuperative', 'Maintenance' or 'Mental Diseases' diets according to the presumed need of the *sampled patient.*

The classification for recuperation and maintenance has been based principally upon the history of length of stay in hospital:—all patients admitted for over 6 months, those in chronic sick and long-stay hospitals, and a few others with a history of long hospitalisation for a chronic complaint, or of long-standing chronic disease. Admission for recent incidents occurring in degenerative diseases, recent cardiac infarction for example, have been classified as recuperative. Mental illness patients form a separate group as many, but not all, of these patients were fully active and helped with the hospital work.

Structure of the hospital dietary

The regimen of hospital dietaries for patients upon full normal diets is nearly always based upon the provision of three main meals: breakfast, midday dinner and evening supper or high tea. In addition to the three set meals, a variety of snacks (O.E.D. 'slight meals') or

'extras' are given between meals. Ward issues of extras made by the hospital generally include early morning tea; mid-morning drink, sometimes with something to eat; mid-afternoon tea—usually with bread and cake; and a final milk drink or beverage at night. The times and frequencies of service of these official ward issues in *Hospital extras* are shown in Table 10.

Basically this regimen is a desirable one for the hospital patient, in that it provides opportunities for offering small meals at frequent intervals. With intelligent manipulation the food provided for such a dietary might be prepared so as to conform with the requirements for 'full', 'light' and 'soft' diets, and also serve for many special diets—for example—high protein, low salt, or low fat diets.

The third component of the dietary, additional to the three main meals and the *hospital extras* given between meals, is the provision made by the patients themselves or by their relatives and friends—*patients' extras* to which reference is made in Chapter 7. *Patients' extras* often make a substantial contribution to the total calorific value of the diet; their calorific value in *sampled diets* ranged from nil to over 1000 Calories per day.

Tables 14, 16, and 18 show the contribution made by these different components to the whole dietary in these different classes of diet.

Recuperative diets

On the average (as may be seen from Table 14) the *hospital extras* contributed as much as, or more than, any one meal. Snacks between meals both *hospital extras* and *patients' extras* together, contributed over 35% of total Calories, for both sexes in the different age-groups shown (with the exception of women over 70 years of age). The *extras* were the most variable contribution to the diet, and of the two types of extra, *patients' extras* were much more variable than *hospital extras*; the total caloric contribution made by the three main meals did not vary greatly between the different age groups in each sex.

Maintenance diets

Patients requiring maintenance took less food than recuperating patients. As in recuperative diets, the average energy contributed by

Table 14 *Mean Daily Caloric Intakes, 3 Main Meals, Extras and Totals and Percentages of Total Intake. Analysis by Sex, Age and Class of Diet*

Diet	*Age*	*No.*	*Midday*	*Evening*	*Breakfast*	*Total Meals*	*Hospital Extras*	*Patients' Extras*	*Total*
Recuperative (Women)	15–	4	383 17·7%	458 21·1%	557 25·7%	1398 64·6%	537 24·8%	231 10·6%	2166
	30–	17	521 27·3%	379 19·8%	341 17·8%	1241 65·0%	274 14·4%	392 20·6%	1907
	50–	16	466 23·9%	361 18·5%	407 20·9%	1234 63·3%	481 24·6%	236 12·2%	1951
	70+	3	447 27·2%	347 21·1%	392 23·9%	1186 72·2%	318 19·3%	139 8·5%	1643
	TOTAL	40	480±22 24·9%	377±22 19·5%	393±23·3 20·3%	1250±40·5 64·7%	386±34·5 19·9%	295±36·8 15·3%	1931±65 (SE)
(Men)	15–	7	650 25·5%	363 14·2%	568 27·3%	1581 62·0%	521 20·4%	448 17·6%	2550 100%
	30–	14	641 22·9%	544 19·5%	550 19·7%	1735 62·1%	651 23·4%	406 14·6%	2792
	50–	17	590 24·2%	499 20·5%	468 19·2%	1557 63·9%	600 24·6%	278 11·4%	2435
	70+	7	522 22·3%	478 20·4%	522 22·3%	1522 65·0%	677 28·9%	144 6·1%	2343
	TOTAL	45	605±26·9 23·7%	489±25·7 19·2%	517±22·4 20·2%	1611±43·5 63·2%	616±34·7 24·1%	323±41·6 12·7%	2550±69·6(SE)

Table 14 (*cont.*)

Diet	*Age*	*No.*	*Midday*	*Evening*	*Breakfast*	*Total Meals*	*Hospital Extras*	*Patients' Extras*	*Total*
Maintenance (Women)	30—	3	310 21·9%	377 26·7%	364 25·7%	1051 74·3%	193 13·7%	170 12·0%	1414
	50—	13	480 30·0%	289 18·1%	366 22·9%	1135 71·1%	313 20·9%	149 9·3%	1597
	70+	18	346 20·9%	356 21·5%	346 20·9%	1048 63·3%	530 31·9%	81 4·9%	1659
	TOTAL	34	394±30·2 24·4%	332±29·2 20·5%	355±24·4 22·0%	1081±49 67·0%	417±29·5 25·8%	115±29·6 7·1%	1613±67 (SE)
(Men)	50—	1	520 22·0%	0 0	652 27·6%	1172 49·5%	548 23·2%	646 27·3%	2366
	60—	4	516 26·8%	323 16·8%	408 21·2%	1247 64·7%	549 28·5%	129 6·7%	1925
	70+	5	567 31·4%	297 16·5%	465 25·8%	1329 73·6%	477 26·4%	0 0	1806
	TOTAL	10	542±50 28·4%	278±74·5 14·6%	461±74·0 24·1%	1281±114 67·1%	512±61·5 26·8%	116±71 6·1%	1909±150 (SE)
Mental	TOTAL Women	14	627±52 28·8%	443±29·1 20·4%	464±43·5 21·4%	1534±70·5 70·6%	512±53 23·6%	127±53 5·8%	2173±115 (SE)
	TOTAL Men	8	856±74·5 31·7%	656±54·9 24·3%	550±34·8 20·4%	2062±99 76·4%	387±55·8 14·3%	250±76·5 9·3%	2699±137 (SE)

hospital extras was equivalent to that of any single meal—about 20–25% of total Calories. The contribution made by *patients' extras* tended again to be greater in the younger age-groups; the oldest patients seen provided nothing for themselves. One male patient, shown in the table as aged between 50 and 60, ate his own bread and cheese instead of the hospital supper. As in recuperative diets the meals are the least variable components and the *extras*, particularly the *patients' extras* the most variable.

Activity

The observed differences in caloric intake between the groups for maintenance and recuperative diets did not appear, as far as could be demonstrated, to be due to differences in activity. The activity of each *sampled patient* was classified into four classes:—

Bedfast; confined to bed with use of bedpan:
Sedentary; able to sit out of bed for short periods, as for bed-making:
Ambulant; able to go to the toilet or bathroom; or use sitting-room or day-room:
Fully active; fully dressed, usually taking part in the work of the hospital or ward.

Expressed as a percentage of their estimated basal metabolism the energy intakes of these different classes of patient are shown in Table 15.

Table 15 *Mean Energy Intakes % Estimated Basal Metabolism*

Diet	*Activity*							
	Bedfast		*Sedentary*		*Ambulant*		*Fully Active*	
	No.	%	*No.*	%	*No.*	%	*No.*	%
Recuperative	27	165	10	170	47	167	—	—
Maintenance	10	134	14	141	14	135	3	132

Differences in energy intake of warded patients were related more to length of stay in hospital and recovery from illness than to their physical activity. Not much difference in energy requirements in

respect of activity would be expected between patients confined to a hospital ward.

Protein content of dietary components

Table 16 shows that the highest amounts of protein in the highest concentrations were contributed by the three main meals—midday, evening, and breakfast, in that order. The extras contributed less protein, and generally at a lower concentration, the *patients' extras* providing very little. Many *patients' extras* contributed no protein at all, as they consisted wholly of sugar.

The mean 24 hour intakes of dietary protein per Kg. bodyweight were 1·3±0·3 (SD) gm/Kg. for 66 recuperating patients and 1·0± p·75 gm/Kg. for 27 maintenance patients. The mean concentration of protein expressed as Calories in all the meals was 14·1 %±2·8 (SD).

However, the determining factor in the protein value of most of the diets, was not the weight of protein present in the food, or the grammes per kilogramme bodyweight, but the calorific value of the diet. Energy is needed for the utilisation of dietary protein, and the level of caloric intake is the most important factor in the diet itself affecting the protein value for a given consumer, for it must always be sufficient to balance energy needs with expenditure so that the protein present is available for normal physiological purposes. In about three quarters of the diets of the *sampled patients* the protein value was governed by caloric restriction. By caloric restriction we mean that the weight of dietary protein was greater than could be fully utilised for the growth, repair, or replacement of tissues. This does not necessarily mean that such diets were deficient either in protein or calories—on the average the protein value of the *sampled diets* was greater than the requirement for maintenance—but it does mean that the protein value of a diet should not be considered exclusively in terms of weight of protein, as it often is, but in terms of the quantity and balance of the whole diet. Put simply, it is much more important to ensure that good quality food that is nutritionally well balanced is fed in adequate quantity than to concentrate attention exclusively upon the weight of protein consumed, or upon the intake of particular vitamins or minerals.

How this may be done is suggested below in Chapter 11 and is fully discussed in the *Technical Paper*. From calculations based upon

Table 16 *Mean gms. Protein per Day with Standard Errors and Protein Calories percent in Main Meals, Extras and Total Intakes.*

Diet		*No.*	*Midday*	*Evening*	*Breakfast*	*Total Meals*	*Hospital Extras*	*Patients' Extras*	*Total*
Recuperative	Women	40	22·9±1·19 19·1%	16·3±1·18 16·9%	15·1±1·03 15·5%	54·3±2·0 17·3%	14·3±1·12 12·2%	3·11±0·57 4·1%	71·7±2·3 13·2%
	Men	45	26·0±1·01 17·2%	21·5±1·15 16·8%	18·7±0·68 14·6%	66·2±1·7 16·2%	15·7±0·96 10·2%	4·2±0·96 5·2%	86·1±2·0 13·2%
Maintenance	Women	34	17·9±1·14 18·4%	12·3±0·99 14·5%	12·8±0·87 14·1%	43·1±1·7 15·9%	10·8±0·91 12·1%	2·3±0·72 7·9%	56·1±2·1 14·5%
	Men	10	22·2±3·72 16·3%	11·4±3·62 16·3%	17·5±3·04 15·0%	51·1±6·0 15·8%	13·3±3·06 10·4%	2·6±2·22 9·3%	67·0±6·9 14%
Mental	Women	14	24·3±2·70 15·5%	13·0±1·36 12·1%	14·9±1·07 12·8%	52·2±3·2 13·6%	11·7±1·07 9·2%	2·4±1·52 7·6%	66·3±3·7 12·2%
	Men	8	32·9±4·5 15·4%	20·4±1·7 12·4%	19·4±2·3 14·1%	72·7±5·3 14·1%	10·7±1·9 11·2%	3·1±1·7 5·0%	86·5±5·9 12·8%

experimental evidence described in the *Technical paper* it is concluded that the mean protein value of sampled patients whom we classified for 'maintenance diets' was slightly below the minimum requirement for maintenance, because of caloric restriction.

Expressed in terms of the utilisation of 'reference protein' (FAO 1957b)* by a person with the physical characteristics of a 'reference man' or 'reference woman' (FAO 1957a) it was estimated that the diets of *sampled patients* (who were not overweight) provided the effective weight of 'reference protein' per day shown in Table 17.

Table 17 *Effective Weight of Reference Protein or Net Dietary Protein Per Patient/Day*

	MEN		*WOMEN*	
	gm	*gm/kg bodyweight*	*gm*	*gm/kg bodyweight*
Maintenance	25·5	0·39	21·5	0·39
Recuperative	45	0·69	38	0·69
Mental	52	0·80	44	0·80

The average minimum requirement of adults, suggested by the FAO Committee on Protein requirements (FAO 1957b), was 0·35 gm/kg bodyweight per day, but for a 'safe practical allowance' the Committee recommended an addition of 50% to the minimum requirement, i.e. 0·52 gm/kg, or 34 gms. reference protein/day for a 'reference man' and 29 gms/day for a 'reference woman'.

Fat

The mean percentage of fat expressed as calories for all sampled diets was 34±10·8% (SD). Statistical analysis of the sampled diets for different classes of patient, hospital, season of collection, or region showed no significant differences in fat content, measured as fat calories per cent total calories.

The fat content observed in these samples was considerably lower than the average found in the national survey of Domestic Food Consumption and Expenditure, 1960 (Ministry of Agriculture, Fisheries and Food 1960). The National Food Survey has noticed

* 'Reference protein' can be defined as a protein which theoretically contains 16% nitrogen and is fully utilised by the body.

Table 18 *Mean gms. Fat per Day with Standard Errors, and Fat Calories per cent. in 3 Main Meals, Extras, and Total Intakes*

Diet		*No.*	*Midday*	*Evening*	*Breakfast*	*Total Meals*	*Hospital Extras*	*Patients' Extras*	*Total*
Recuperative	Women	40	18·7±1·42 35·1%	16·9±1·46 39·5%	15·2±1·26 35·0%	50·8±2·4 36·4%	17·4±1·39 33·4%	5·5±1·13 16·4%	73·7±3·0 32·7%
	Men	45	24·0±1·71 35·6%	22·1±1·74 38·8%	21·4±1·50 37·5%	67·5±2·9 37·2%	20·4±1·88 29·8%	7·3±1·48 21·1%	95·2±3·7 33·5%
Maintenance	Women	34	15·4±2·08 35·3%	14·6±2·13 41·9%	15·6+1·59 39·3%	45·6±3·4 37·8%	13·5±1·29 33·8%	3·9±1·30 31·1%	63·0±3·8 36·4%
	Men	10	19·8±2·76 32·7%	12·0±3·87 38·6%	21·7±4·72 42·0%	53·5±6·7 37·3%	17·5±3·08 30·9%	2·5±2·30 20·1%	73·5±7·7 34·6%
Mental	Women	14	23·5±3·08 33·7%	18·8±2·08 38·2%	15·9±1·25 30·8%	58·2±3·9 34·1%	17·6±2·3 31·1%	4·4±1·97 31·2%	80·2±4·9 33·2%
	Men	8	29·0±5·55 30·5%	24·3±3·85 33·3%	15·6±1·52 25·5%	68·9±6·9 30·0%	15·8±3·62 36·7%	8·2±4·1 29·5%	92·9±8·8 31·0%

increasing amounts of fat in the national diet in the years following the war, with differences between social classes and in different regions. In 1960 the mean for all households was 38·9% fat calories; for the lowest social class D1 it was 37·1% and for the highest A1 42·7%. (The National Food Survey's definition of social classes is based on the gross weekly income of the head of the household.)

The reason for the difference between the fat content of hospital diets and those found in the national survey of Domestic Food Consumption is probably that the national survey makes 'no allowance for wastage of any edible food, and it is possible that fat is wasted to a greater extent than protein or carbohydrate' (op. cit. § 41). In the hospital survey, the values are for food as eaten, sampled when served and corrected for plate-waste.

Riboflavin

Riboflavin was the only vitamin to be determined in all meals. This was done by a microbiological assay of *sampled meals* (see Appendix

Table 19 *Riboflavin content of patients' diets*

Type of Patient		*No. of Patient days*	*Mean value mg/24 hours*	*mg/1000 Calories*
RECUPERATIVE	Meals	87	1·20±0·07 (SE)	0·80±0·04 (SE)
	Hospital extras	87	0·55±0·02 (SE)	1·20±0·10 (SE)
	Patients' extras	87	0·07±0·01 (SE)	0·12±0·02 (SE)
	TOTAL	87	1·82±0·08 (SE)	0·82±0·03 (SE)
MAINTENANCE	Meals	43	0·95±0·15 (SE)	0·79±0·07 (SE)
	Hospital extras	43	0·43±0·03 (SE)	1·33±0·12 (SE)
	Patients' extras	43	0·02±0·01 (SE)	0·09±0·02 (SE)
	TOTAL	43	1·40±0·16 (SE)	0·84±0·06 (SE)
MENTAL	Meals	22	1·00±0·10 (SE)	0·58±0·04 (SE)
	Hospital extras	22	0·45±0·04 (SE)	0·15±0·11 (SE)
	Patients' extras	22	0·07±0·03 (SE)	0·20±0·05 (SE)
	TOTAL	22	1·52±0·12 (SE)	0·66±0·04 (SE)

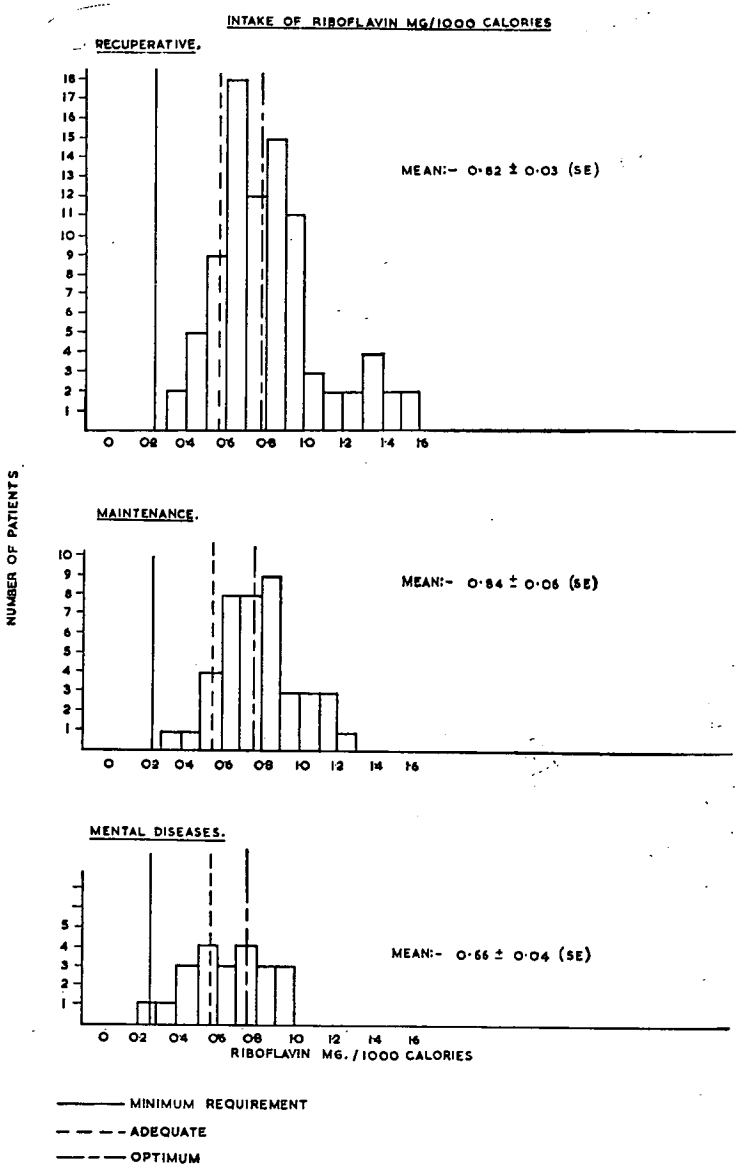
INTAKE OF RIBOFLAVIN MG/1000 CALORIES
RECUPERATIVE.
MEAN:- 0·82 ± 0·03 (SE)
MAINTENANCE.
MEAN:- 0·84 ± 0·06 (SE)
MENTAL DISEASES.
MEAN:- 0·66 ± 0·04 (SE)
NUMBER OF PATIENTS
0 02 04 06 08 10 12 14 16
RIBOFLAVIN MG./1000 CALORIES
MINIMUM REQUIREMENT
ADEQUATE
OPTIMUM

Figure 5

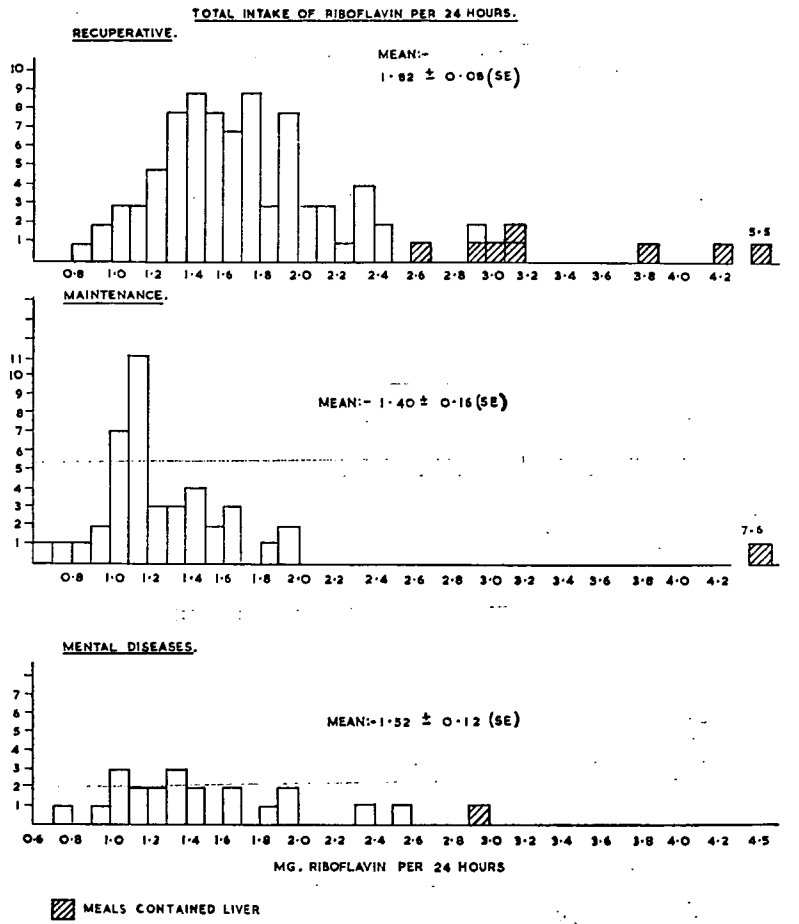

Figure 6.

l). The values determined for *sampled meals* were corrected for the *sampled patients'* plate waste, and the total intake obtained by adding values for *patients' extras* and *hospital extras* which were calculated from food tables. The results are shown in Table 19 and in Figures 5 and 6.

The human requirement for riboflavin is usually considered to be between 1 and 2 milligrams. Bro-rasmussen (1958) in a review of riboflavin concludes that provided the diet contains sufficient protein, riboflavin requirements should be related to energy expendi-

ture and expressed as milligrammes per 1000 Calories, and related to one of three levels of requirement:—minimum = 0·25 mg/1000 Cals. (below this symptoms of vitamin deficiency would be expected); normal = 0·5 mg/1000 Cals.; optimum = 0·75mg/1000 Cals.

The sampled diets were all above Bro-rasmussen's minimum requirement and on the average were above his normal requirement; in general acute and chronic hospitals optimum intakes were achieved.

Further reference to the riboflavin content of the meals is made in Appendix II, in which a comparison is made between the values determined by laboratory assay and those calculated from food tables using the estimated average weights of food served during 24 hours in different types of hospital.

Ascorbic acid (Vitamin C)

In Chapter 8 reference is made to occasional analyses of ascorbic acid in vegetables and the progressive loss of this vitamin with the elapse of time between the start of cooking and service to the patient; detailed records of three different vegetables are given, as they were cooked and served in three different hospitals. Similar records were obtained from 15 meals for potatoes, and 39 meals for green vegetables.

Particularly at the midday meal potatoes were often served boiled and mashed; it was exceptional for boiled potatoes not to be mashed; on Fridays chips would be served with fish, and roast potatoes were often served with roast meat. The results of assays expressed as mg/100 gm wet weight were:—

	Mean
Potatoes boiled and mashed	
11 samples as served on patients' plates	1·7 mg/100 gm
Potatoes boiled but not mashed	
2 samples, as served	3·0 mg/100 gm
Potatoes—baked	
2 samples as served	7·1 mg/100 gm
Raw, sampled after peeling and shortly before cooking. 15 samples.	10·1 mg/100 gm

Of the raw potatoes, only three samples had more than 10 mg/100 gm before cooking started:—10·8, 12·0, and one sample of new potatoes

with 17·3 mg/100 gm. It has already been noted in Chapter 7 that potatoes were often peeled early in the day, or on the previous day to be soaked overnight, particularly in larger hospitals. Two samples taken in two hospitals where peeled potatoes soaked overnight showed losses of 45–60%; i.e. 10·8–4·3 mg/100 gm and 10·0–5·6 mg; in a smaller acute hospital where cooking was very strictly supervised by the matron, and which was popularly known as 'the best hotel in the district', the loss due to preparation before cooking was only 16%, 12·5–10·5 mg/100 gm.

The losses of ascorbic acid caused by cooking, mashing and standing before service were not unexpected; these effects have been repeatedly observed, and are well known. But the substantial losses during peeling, washing and steeping in cold water, were not expected, since, according to Olliver (1953), significant quantities of the ascorbic acid are not normally leached out during these treatments if the plant tissue is not unduly broken. It appeared to be possible that mechanical peeling of potatoes might damage the tissue and lead to undue loss, and the results of a few tests made are shown in Table 20.

Table 20 *The Loss of Ascorbic Acid from Potatoes Due to Hand and Mechanical Peeling and Soaking*

	No. of samples	*Mean loss of ascorbic acid* %
Hand peeled	4	5 (0–11)*
Hand peeled (soaked 14 hours)	2	9 (4–14)
Machine peeled (1 min.)	4	15 (7–24)
Machine peeled (1 min.—soaked 14 hr.)	2	18 (20–37)
Machine peeled (3 min.)	2	25 (22–28)
Machine peeled (3 min.—soaked 14 hr.)	1	46

* Figures in brackets are for maximum and minimum losses.

These results show that there was little loss after hand peeling, even after 14 hours' soaking. Somewhat larger losses occurred if the potato was in the machine for 1 minute and a further loss followed soaking for 24 hours. If the potato was left in the machine for 3 minutes a loss of about 25 per cent ascorbic acid occurred and this loss was greater if the potato was then soaked for 14 hours. Ascorbic

acid is uniformly distributed throughout the tuber, but after mechanical peeling and soaking it was found that almost all the ascorbic acid was lost from the outer half, whilst the content of the inner half remained practically unchanged.

Excessive losses of the order of 50% or more due to faulty preparation, added to the cooking and service loss of 70–80%, could lead to total losses amounting to 90% of the original content. Potatoes as served in most hospitals do not make a substantial contribution to the provision of ascorbic acid; in estimating this contribution a value of 2 mg/100 gm has been given for boiled or sauté potatoes and of 7 mg/100 gm for roast and fried potatoes.

Mean values found in other vegetables in hospital meals are shown in Table 21.

Table 21 *Mean Values of Ascorbic Acid in Green Vegetables*

VEGETABLES	*No. Sampled*	*Ascorbic Acid mg/100 gm*		*% loss*
		Raw as prepared for cooking	*As served*	
Cabbage	29	84	26	69%
Brussels Sprouts	5	88	32	64%
Cauliflower	4	61	38	36%

Reference has already been made in Chapter 7 and Tables 8 and 9 to the longer time taken both in the cooking and service of green vegetables in larger hospitals; the times were shorter in small hospitals. In the 38 samples shown in Table 21 there was less than 50% loss (mean loss = 40%) on service to the patient in 7 out of 10 of the samples in which the time elapsing between the start of cooking and service of the vegetable to the patient was less than 1 hour; but there was more than 50% loss (mean loss = 75%) in all but one of the remaining 28 samples in which cooking and service time exceeded one hour. The average loss of ascorbic acid in the 34 samples of cabbage and sprouts was 68%; in the four samples of cauliflower it was only 36% but in only one of these was the combined cooking and service time more than 1 hour. Cauliflower cannot be subjected to the bad treatment that is often given to cabbage and sprouts without suffering such obvious and visible damage as to render it quite unacceptable; overcooking or long standing in hot trolleys dis-

colours it, and its more delicate structure renders it less resistant to rough handling in bulk. Table 13 shows that much more cauliflower than cabbage was served in small acute hospitals but it made a much smaller contribution to meals in large hospitals; this is consistent with the observation that the cooking and service time of green vegetables was comparatively short in small hospitals.

In estimating the contribution of ascorbic acid made by these vegetables an allowance has been made for these differences in losses caused by cooking and delay in service, by giving a value of 20 mg/100 gm for hospitals with more than 100 beds and 30 mg/100 gm for hospitals with less.

Other values for ascorbic acid obtained by analysis of raw foodstuffs gave values approximating to those given for raw foods in food tables (McCance and Widdowson 1960), but low values were obtained for the food as served—1·5 mg/100 gm for one sample each of peas, runner beans, and carrot. The menus included considerable proportions of processed peas and broad beans, which are negligible sources of ascorbic acid, and low values of 2 mg/100 gm have been allotted to all legumes. Values for other foods have been taken from the food tables of McCance and Widdowson.

By applying these values to Table 13 estimates can be made of the average intake per day provided by the three main meals in different types and sizes of hospital. These are as shown in Table 22.

Table 22 *Mean Values of Ascorbic Acid in Three Main Meals*

	ACUTE			*CHRONIC*		*MENTAL*
	1—	101—	301+	1—	101+	
Midday	29	15	12	10	9	16
Evening	7	5	5	1	1·3	3
Breakfast	1·5	2	1	1·4	0·5	2
TOTAL MEALS	38	22	18	12	11	21

The superior ascorbic content of the meals in the small acute hospitals was attributable not only to the superiority of cooking and service but also to the more liberal provision of fresh green leafy vegetables, particularly cauliflower. Other hospitals provided more potato and more peas and beans. Small acute hospitals also provided

more fruit, though the bulk of fruit provided was cooked and the fruits were often not very good sources of ascorbic acid. To ensure an adequate provision in hospitals other than small acute hospitals at least 10 mg of ascorbic acid, additional to the amount estimated to have been given in the main meals, would be required from *hospital extras* and *patients' extras*. Hospital extras provided on the average not more than 5–6 mg from milk, and this figure makes no allowance for loss from heating or boiling to make milk drinks. There was very little—usually none—from fresh fruit; with few exceptions the proprietary fruit drinks that might be used provided little or none; an average minimum allowance of 20 mg per day could be attained by the consumption of an ounce of fresh or canned orange juice or grapefruit juice, ½ oz. of fresh strawberries, or a small orange. The average provision by *patients' extras* or *hospital extras* was far short of this; the voluntary consumption of fresh fruit was extremely variable; to some extent it was seasonal and not infrequently, as regards fruits which contain substantial amounts of ascorbic acid, negligible. But the real meaning of these results is that the food lacked variety and tended to be of a sort that could be more readily prepared in bulk; it is much more important that the level of vitamin C in the diet should be raised to a satisfactory level by the provision of a greater variety of freshly prepared food than by giving a patient doses of orange juice or tablets of synthetic vitamin.

Calcium

Values for calcium given by McCance and Widdowson (1960) have been applied to the average weights of food supplied per day given in Table 13. The main sources of calcium in *hospital extras* and *patients' extras* were milk, bread, cake and biscuits. An estimate of the calcium content of extras has been made by applying a value of 35 mg Calcium per gram of protein; this is the ratio of calcium to protein in milk, and is approximately equal to the ratio in bread and confectionery. The results are shown in Table 23.

These average intakes are higher than the allowance for adults recommended by the British Medical Association's Committee on Nutrition; and more than twice as high as the suggested practical allowance for adults recommended by the FAO/WHO report on Calcium Requirements (FAO 1962).

Table 23 *Estimated Mean Intake of Calcium G/24 Hours*

	ACUTE			*CHRONIC*		*MENTAL*
No. of Hospitals	1— 44	101— 36	301+ 20	1— 14	101+ 16	22
Midday	0·151	0·183	1·179	0·124	0·166	0·199
Evening	0·149	0·151	0·124	0·168	0·130	0·202
Breakfast	0·279	0·230	0·216	0·144	0·154	0·171
Total meals	0·579	0·564	0·519	0·436	0·450	0·572
Hospital extras	0·525	0·525	0·525	0·400	0·400	0·400
Patients' extras	0·140	0·140	0·140	0·084	0·084	0·100
TOTAL	1·2	1·2	1·2	0·9	0·9	1·1

Iron

The daily intake of iron at the three main meals has been estimated in the same way as calcium. The contribution of iron made by *extras* was comparatively small, the chief source being cereal foods—bread, cake and biscuits. One mg. has been added to the estimated total daily intake at meals for the extras. The results are shown in Table 24.

Table 24 *Estimated Mean Intake of Iron, MG/24 Hours*

	ACUTE			*CHRONIC*		*MENTAL*
No. of Hospitals	1— 44	101— 36	301+ 20	1— 14	101+ 16	22
Midday	4	5	5	4	3	5
Evening	4	5	5	2	2	3
Breakfast	3	2	3	2	2	3
Total meals	11	12	13	8	7	11
Extras	1	1	1	1	1	1
TOTAL	12	13	14	9	8	12
mg/1000 Cals. in meals	8·0	9·0	9·0	6·5	6·5	7·5

The daily allowance recommended by the British Medical Association's Committee on Nutrition is 12 mg. So many factors affect the requirements for iron that no recommended allowance of this kind can be accepted as satisfactory, but the B.M.A. recommended

allowance would be insufficient if there were a loss of blood from chronic bleeding or even, perhaps, from normal menstruation. The intakes of ascorbic acid are not high, and in chronic hospitals are well below recommended allowances. The absorption of iron is facilitated by high intakes of ascorbic acid; these average intakes must be considered, therefore, as at the best possibly just adequate and at the worst, in chronic hospitals, inadequate and liable to cause anaemia.

Though the lower consumption of food by old people in chronic hospitals, as compared to the greater average consumption in acute and mental hospitals, partly accounts for the low provision of iron in them it does not wholly account for it. The meals in chronic hospitals have a lower iron content per 1000 Calories than have the meals in other hospitals (over 2 mg/1000 Calories less than acute hospitals).

Part 3—Discussion and Recommendations

Chapter 9 The Control of Quantities and Quality of Food in Hospitals

The control of quantities and quality of food in hospitals is mainly financial; monetary allocations for provisions are made, based on the unit cost of provisions (National Health Service Hospital Costing Returns), the number of units being the number of persons, both patients and staff, fed by the hospital catering department. In the year ended 31st March 1959, the average unit cost per week in different types of hospital was as follows:—

	£	s.	d.
Acute Hospitals, over 300 beds	1	9	4
,, ,, 101–300 beds	1	10	2
,, ,, 51–100 beds	1	9	8
,, ,, 1–50 beds	1	7	8
Mainly acute hospitals	1	9	2
Partly acute hospitals	1	8	0
Mainly long-stay hospitals	1	7	4
Long-stay hospitals	1	3	11
Chronic sick hospitals	1	2	9
Mental illness hospitals	1	2	1

In some of the chronic and long-stay hospitals sampled, the unit cost for provisions was less than 20/-. In none of these was catering satisfactory.

The higher cost in acute hospitals is partly due to the higher proportion of resident nursing staff to patients. Many of the larger of these hospitals contain nurses' training schools, and the nutritional requirements and food consumption of young and active nurses in training are high. Partly they may be due to the greater numbers of

younger patients in acute hospitals, partly to the greater expense incurred by special therapeutic diets and partly to the much greater turnover of patients with continually changing numbers and types of patient to be fed.

The long-stay and chronic sick hospitals have much more stable and older populations, while mental illness hospitals have tended to have more or less permanent residents, living in a comparatively stable community. Though increasing numbers of patients with mental illness are elderly and inactive, many are living normally active lives and have the nutritional requirements of ordinary working people, and their requirement for more expensive protein-rich foods may not be so great as for acutely ill and convalescent patients. Many mental illness hospitals use produce of their own farms and market gardens and patients are able to supplement their hospital rations with their own purchases from shops.

It was not, however, quite clear how these differences in costs, or how financial allocations to the different types of hospital, were made and it certainly did not appear to be clear to many of the catering staff in hospitals. The matron of a small hospital would refer to the higher financial allocation to a neighbouring larger hospital with the comment that if only she had the larger allocation that the other hospital had she would be able to do much better for her patients. Where local comparisons could be made with a teaching hospital the same sort of comment was made: the sort of comment which says 'We have as many beds, we do as much work, we see as many patients, and if only we had some proportion of the extra money which they get we could do much better.'

The regulation of diets at the hospital level appeared to be entirely governed by this question of costs and all staff concerned appeared to be very conscious of this. In one region there was a points system for catering costs, based upon the expected requirements of different classes of patient. Eighty points were awarded for a geriatric patient, rising to the highest award of 120 points for chest hospitals. In another group there was a ruling that the provisions costs for mental hospital patients must be 30% below the ceiling set for general hospitals.

The Ministry of Health's handbook 'Hospital Catering' advises the officer in charge of the catering department to ascertain the total yearly amount allowed for provisions and what this amounts to per head per week, and then says that experience shows that this weekly figure needs to be allocated in the following proportions:

generosity; but these criticisms mostly came from larger hospitals of over 100 beds, and it is in these hospitals particularly that the amount of food required in the wards for meals is over-estimated, leading to very considerable wastage.

A number of catering staff had attended either the King's Fund courses for catering officers or other nutritional courses at technical colleges or evening classes and it was noticeable that these showed a much more lively awareness of the nutritional needs of patients and staff.

In twelve hospitals it was said that advice was received from a dietitian, but in only five hospitals were qualified dietitians employed in the hospital. Three of these were full-time dietitians, one was a dietitian-caterer, and in one other hospital there were three part-time dietitians; the rest were visiting advisers, usually a regional adviser. These occasional visits from an expert whose base was in another town, or perhaps another county, were not particularly welcomed by the hospital staff, and indeed in one it was said that the dietitian had called on an average once in eight years.

Of the 11 hospitals which had aimed to supply some minimum requirement of calories and other nutrients it was said that their diets had been checked and found to comply with the recommendations of the British Medical Association Committee on Nutrition, six had an average figure for requirements of calories and protein, in three an average daily allowance of protein was specified.

The general failure to appreciate a need for a scale of nutritional requirements upon which to base ordinary hospital diets was surprising. In countries where malnutrition is a serious problem, and where there is a limited supply and range of foodstuffs, the lack of a dietary scale based upon the estimated nutritional requirements of the inmates of any residential institution would be expected to lead to disaster, and an outbreak of nutritional disease. Though such serious results would not occur in this country, where food is plentiful and ordinary diet is based on a wide variety of foodstuffs, we do consider that a dietary scale designed to cover the nutritional needs of different types of patient would have very considerable advantages. It should ensure that patients receive the optimum diet for their needs; and it should act as a check on the economy of catering, for it is a straightforward exercise in dietetics to produce menus, recipes and quantities based on such a scale, and to cost them. Costs based on an estimate such as this would be a better foundation for econom-

ical catering than the rule of thumb and hit or miss methods which seem to be widely employed.

Many of the catering staff appeared to have little idea of what was meant by the nutritional value of food, or nutritional requirements; they usually said that their menus and diets were based upon their own experience. Sometimes all menu planning and even the ordering of food was done by people with little or no nutritional knowledge, by a cook for example, in Hospital No. 23. In Hospital No. 18 the hospital secretary was responsible, having had 24 years' experience of hospital management. Much of this ignorance of nutritional values may be due to indifferent teaching of nutrition to nurses, for in some hospitals nurses received lectures from catering officers who themselves were not always well qualified for this duty. On at least two occasions catering officers who were lecturing to nurses were heard to say that vitamin C was inevitably destroyed in vegetables when they were cooked, but this did not matter as the naturally-occurring vitamin could be replaced by tablets of ascorbic acid. It is true that vitamin C is destroyed by the methods of cooking employed in many hospitals; it is true that it can be satisfactorily replaced (at a cost) by manufactured tablets of ascorbic acid; but cooking so carelessly conducted as to destroy an essential nutrient may also be expected to destroy any of the more delicate flavours or aromas of food, which make it appetising. This attitude towards cooking must inevitably lead to tasteless, unappetising meals.

The ascorbic acid content of meals as they are served in many hospitals did appear to be at or below the borderline of adequacy, particularly when fresh salads are out of season. We have referred to the destruction of this vitamin through prolonged cooking and delay in service of vegetables, and we were struck by the absence of any provision of fresh fruit in the hospital menu in many hospitals; indeed in some hospitals it is a ruling that fresh fruit should not be supplied as sufficient may be brought in by the relatives and friends who visit patients. Canned fruits are supplied as sweets at midday meals and in the evening, but the most popular canned fruits in hospital menus were peaches and Bartlett pears, and another popular dish was stewed apples, or apple pie, while in some hospitals there was emphasis on the provision of fruit squashes which are popular drinks amongst many patients; but all these fruit preparations are poor or negligible sources of ascorbic acid compared to citrus fruits or such fruits as blackberries, blackcurrants and raspberries. Patients

do bring in a certain number of oranges, but the popular fruit for the sick still tends to be the grape, which is a poor source of vitamins, or the banana. Are stewed apples, canned peaches and pears, canned fruit salad, and canned pineapple chosen because of their convenience and lack of staining properties rather than for their nutritional value?

Chapter 10 The Protein-Calorie Value of Diets

There appeared to be confusion about the sources of protein in food, and the different factors which can affect protein-values. The need for a generous allowance of protein-rich foods was generally appreciated, but the need for supporting energy was not always realised. This was shown by the use of phrases like:—'I always know that complaints from patients about food refer to proteins and not calories' or 'If you look after proteins the calories will look after themselves'; such phrases were often used by nursing and catering staff. The ordering of 'high' or 'low' protein diets by telephoning the dietitian and specifying only the number of grams of protein, or prescribing a 'high protein' diet for a patient too sick to eat much, may not always produce the effects desired. No single nutrient should be selected for exclusive attention in this way; all should be considered in relation to each other as parts of the whole diet. Nursing and technical staff often interpret 'energy' as related solely to activity, in the sense that a physically active person is energetic but a person in bed is not; therefore a patient does not require much 'energy'. That the replacement of tissue lost by disease requires energy is not always appreciated.

The use of such classifications as 'protein-rich foods' or 'carbohydrate foods', useful as they may be in the day-to-day practice of dietetics, and for explanations to patients or technical staff, also appears to cause confusion. Many people are confused by terminology of this kind and the foodstuffs themselves may be referred to as 'proteins', 'carbohydrates' or even 'calories'. Emphasis in teaching on the need to consider the quality or nutritive value of a food-protein means that 'protein' to many hospital staff means meat, milk or eggs. One very good catering officer was surprised to the point of disbelief when it was suggested to him that bread, flour and cereals were not negligible sources of protein in the average diet.

In one hospital, where the *Line Ration* scheme for diabetics (Lawrence, 1960) was hung on the ward kitchen wall for reference, the matron said that diabetics needed a lot of protein, and that this was expensive. Lawrence's *Line Ration*, concerned as it is with enabling patients to control their own carbohydrate intake, classifies foods only as *carbohydrate foods*—all vegetables, cereals and fruits—or

protein and fat foods—all meat, fish, milk and egg. In fact the recommended average 10–15 line diet contains 75 grammes of protein per day; not an excessive daily allowance of protein for the average hospital patient. What the matron meant was that meat, fish and eggs are more expensive than bread, vegetables and sweets. She was not giving any more protein to her diabetics than to other patients.

Reducing diets and diabetic diets are commonly the only ones in the general wards of hospitals whose caloric value is of much concern to the nursing staff, and in both of these types of diet emphasis is placed upon the regulation of carbohydrate in the diet whilst the protein content is maintained; in fact some reducing diets are specified as high protein, low carbohydrate. These nutrients tend to be labelled as 'carbohydrate for calories, proteins for body building', and as foodstuffs also tend to be labelled as nutrients—bread as carbohydrate, meat as protein—nursing and catering staff may not always be clear as to the best way to make up a diet with a good balance of calorific constituents.

The loss of nitrogen which occurs on low calorie diets has been known for many years, and was observed by the earliest workers. Jansen (1917) placed 15 medical students of 63 Kgm average weight on a diet containing 1600 Calories and 61 gm protein per day for several weeks; their average loss was 2 gm nitrogen daily. Benedict (1921) observed a loss of 65 gm nitrogen in 3 weeks in 12 normal subjects who were given 1534 Calories per day with 51 gm protein. The protein-sparing action of carbohydrate and fat is well known. Those whose requirements for protein are high have also high requirements for energy and normally they have large appetites—the voracious appetite of the adolescent is an example. The appetite is not specifically for 'protein'—the hungry child is omnivorous—but appetite will be reduced if the food contains little protein and stimulated if the weight of protein given is increased. The stimulated appetite will be satisfied with any acceptable food that is available. Personal preferences will come into play but there is no particular craving for 'protein'; the appetite is for the satisfaction of energy requirements.

The varied appetites of sampled patients generally indicated their varying nutritional needs; this may be seen in the scaling down of caloric intake with age, and the lower intake of women. In the Technical paper that is to be published, reasons are given for relating caloric intake to protein requirement, and this, in hospital patients,

could explain the observed differences between long-stay maintenance patients and the shorter stay recovering patients, which did not appear to be attributable to differences in activity. These variations of appetite were met more by the variability in quantity of snacks taken between meals than by variations in amounts eaten at the three main meals, which did not vary so much. The average of 35% of total calories contributed by snacks was made up of varying proportions of *patients' extras* and *hospital extras*, of which *patients' extras* were the more variable.

It was often said that patients tended to spoil their appetites for the regular hospital meals by taking too much between meals, particularly in the consumption of *patients' extras* which form no part of the official hospital provisions. If this were so, one would expect that patients with the smallest requirements and the smallest appetites would be the most affected, but the tendency shown in Table 14 is the reverse of this, for the younger patients with the highest requirements and the highest intakes took the largest amounts of their own *patients' extras*. This tendency is shown also in Table 26, which relates the contributions made by *patients' extras* to the total

Table 26 *Energy-Value of* Patients' Extras *in* 129 *Weighed* Sampled Patients *Related to Total Dietary Intake, Measured as Percentages of Basal Metabolism*

	Number of patients *Total dietary intake/24 hrs : % basal metabolism*									*Total*
Energy value of patients extras % basal metabolism	<90	90–	110–	130–	150–	170–	190–	210–	230+	
50+					2	2	2	2	1	9
40–				1	2	2	1	1	1	7
30–				1	3	4	2	1	1	12
20–		2	1	4	2	5	5	1	1	19
10–			5	2	13	5	6			31
1–	2	1	5	6	4	4	2			21
Nil	3	3	7	9	4	1				27
Total Patients	5	6	18	23	30	21	18	8	4	129

The contribution made by *patients' extras* tends to increase with increasing appetite. There is a significant correlation;

$$r = +0{\cdot}51 \pm {\cdot}09 \text{ (S.E.)}$$

intake measured as a percentage of estimated basal metabolism. A more likely explanation is that the variations in appetite (which reflect nutritional need) are satisfied by eating what is provided and acceptable from the hospital, with a final 'filling in' from the *patients' extras.* Generally, those who ate the most food ate the greatest amount of *patients' extras.* The amount that could be eaten at the three set meals was limited; it supplied approximately the requirements for basal metabolism. What was required more than this was supplied by *hospital extras* and *patients' extras.*

Specific examples of the occurrence of this 'filling in' by patients are given in notes quoted in Chapter 7, particularly at Hospital No. 56, but similar observations were made at hospitals which were not included in this random survey, particularly in one patient whose diet was sampled for five days on the 5th–9th day after herniotomy, and in one maternity hospital which was visited, where nutritional requirements were higher than for most of the *sampled patients* in the random survey.

At the maternity hospital 5 pre-natal and post-natal patients admitted for their confinements had the following average intakes per patient:—

	Calories/24 hrs.	*% Total*
Midday	740	28%
Evening	323	12%
Breakfast	414	15%
Total Meals	1477	55%
Hospital Extras	763	29%
Patients' Extras	423	16%
Total	2661	

Little more than half the total was taken at mealtimes, the remaining 45% being from ward issues of which 16% was from *patients' extras.* Though the intakes were high compared to those of *sampled patients* in the random survey they were not high for healthy women at the start of lactation.

The post-operative patient was a man aged 49 years. During the five days that his diet was sampled his total caloric intake increased over the last 3 days of the five-day sample as shown in Table 27.

The data in this table demonstrates that the energy consumed at the three main meals did not increase with increasing appetite during the successive days of recovery. Appetite was satisfied by 'filling in' from

Table 27 *Energy Intake/24 Hours*

Day	*Three Main Meals*	*Hospital Extras*	*Patients' Extras*	*Total*
1	1562	546	440	2548
2	1723	813	0	2536
3	1543	888	390	2821
4	1861	914	279	3054
5	1587	756	803	3156

ward issues and particularly from the patient's own provisions; the three meals supplied approximately the requirements of basal metabolism—estimated to be 1430 Cals/24 hours.

If the 'filling in' of requirements with *patients' extras* and ward issues generally is not considered in the planning of the hospital dietary—so that the final satisfaction of appetite is left to the patient—the resulting whole diet may be less nutritious than would be desired or expected. Because the utilisation of protein is dependent upon the provision of sufficient energy in the food the most effective way to ensure that the protein-calorie values of diets are satisfactory is to consider them together. Protein should be measured as the percentage of protein Calories to total Calories (i.e. protein gm $\times$ 4) $\times$ 100 $\div$ Total Calories) and not as grams weight to be given to a patient; the specification of a suitable Caloric value for the diet will then ensure that a sufficient weight of protein is given, supported by adequate energy for its use.

The main meals generally had a higher percentage of protein calories than *hospital extras* or *patients' extras*; the latter were particularly poor sources of protein, often providing none, and rarely as much as 10%. Because those patients with the highest intakes tended to take the most *patients' extras* there was a tendency for them to receive diets with the lowest concentration of protein. Those diets containing less than 13% protein Calories had a mean caloric value of 2353 Calories per day; those with 13% protein Calories or more averaged 1942 Calories per day; the difference is statistically significant—$P < \cdot 05$. It is therefore important to ensure that fully adequate provision is made by the hospital to fulfil protein-calorie requirements exclusive of any contribution made by the patient. A method for accomplishing this is outlined in the following Suggested Protein-Calorie Scale for Hospital Diets.

Chapter 11 Suggested Protein-Calorie Scale for Hospital Diets

The requirements for protein of hospital patients during illness, and particularly during convalescence, are high. To ensure its effective utilisation there should be not only sufficient good quality protein but an adequate provision for energy. Normally the amount of dietary protein that can be effectively used is related to the energy-intake provided by the diet, but obese patients on a reducing diet may provide sufficient energy from their own body-fat.

The food given in normal diets in British hospitals usually contains enough good quality protein, provided that sufficient food is given in the whole diet to satisfy the caloric requirements of the patient. In many diets protein values are not restricted by the total weight of protein given but by the total caloric value. With some patients this may be because they are too ill to be able to eat more; with others because their appetites and nutritional requirements are fully satisfied at that particular level, and an increase in weight is not to be expected or desired. Where an improvement in physical condition is sought the mere addition of protein to the diet of patients with small appetites will not improve protein values, unless the addition is accompanied by a sufficient increase in caloric intake; though with a patient who is able to respond to the stimulus, the addition of protein, with an increase of concentration of protein in the whole diet, will itself tend to stimulate appetite. Usually, real increases in protein value can only be obtained by increasing appetite; normally this will occur as a patient recovers from illness and can be enhanced by good cooking, good nursing, the tasteful presentation and service of meals and by maintaining sufficiently high concentrations of protein in the diet considered as a whole.

Calorie-requirements may be calculated by estimating the energy needed by the patient for basal metabolism from Tables 18 and 19 and multiplying this by a *Diet Factor*. Suggested values for the *Diet Factor* are:—

1 *Recuperative Diet;* for the majority of patients whose diets are unrestricted, for whom active therapy is expected to lead to recovery—Basal Metabolic Calories × 1·8.

2 *Maintenance Diet;* for long stay and chronic sick patients who are maintaining their physical state without a prospect of further recovery—Basal Metabolic Calories × 1·5.

If more than 13% of the energy value of the diet is derived from protein, i.e. an allowance of over 32 gm of protein per 1000 Calories, the protein allowance will be adequate at the suggested caloric intakes. In general acute and chronic hospitals the protein content of the meals expressed as Calories was from 15% to 17%; that of food *provided by the hospital* including all meals and ward issues was 14% to 15%. The supplements usually made to the hospital provision by *patients' extras*—fruit, beverages, confectionery, etc., generally having a low content of protein—will reduce the protein-Calorie percentage perhaps to 12% or less.

It is suggested that the hospital provision—that is, meals and ward issues—should be designed to provide at least 90% of the requirements of 'maintenance' and 'recuperative' diets, though many patients (particularly long stay patients) will need to be fully provided for. If on the average, over a period of some days, the basic recommendation is attained on a good mixed diet in which the protein content expressed as Calories is 13% or more, then any addition provided by the patient will be of secondary importance; whether high or low in protein, the only change in the protein value of the whole diet that could be made by any addition above the recommended allowance would be an improvement.

The protein value of most hospital diets cannot be improved by the addition of protein concentrates or protein-rich foods without regard to caloric intake. If intakes of protein higher than these recommended here are desired for particular patients they can only be provided by giving more food—for example by feeding with hospital provisions (exclusive of *patients' extras*) at a *Diet Factor* of 2 or 2·5. At these high protein intakes it is desirable to ensure that the protein content expressed as Calories is maintained at over 13% and protein could be effectively administered at 15–20 protein Calories %, but addition of protein preparations to obtain high percentages of 20–30 protein Calories %, or measuring the weight of protein in the diet without regard to caloric intake, will usually be quite ineffective.

The diets recommended allow approximately:—

for 'Maintenance' diets 22·5 gm Net Dietary protein or 'Reference' protein per 1000 basal Calories.

for 'Recuperative' diets 34 gm Net Dietary protein or 'Reference' protein per 1000 basal Calories.

For a FAO 'Reference Man', this is equivalent to the effective use of 34 gm 'Reference protein' or the 'safe practical allowance' for maintenance diets, and 50 gm 'Reference protein' for recuperative diets (FAO 1957 a & b).

Tables 28 and 29 for basal metabolism have been corrected for heavy-weights by giving the figure calculated for weights at 10% above standard weight at age 25–30 given in the Medico-Actuarial Mortality Investigations tables, or the highest weight for a 'large frame' person given by the Metropolitan Life Assurance Company's tables, for all weights above this standard.

These scales are intended as a guide to average requirements. They have only a limited application to particular patients as individual variations are considerable. The scales are intended for full diets, but they could be applied to many soft, low residue, and other special diets. In any particular hospital or ward unit an estimate of the average requirements of warded patients can be made from time to time from these tables and used as a guide to the requirements of the unit.

Table 28 *Basal Metabolism*

Male *Calories/24 hours*

Wt. (St.) / Age / Ht	6½	7½	8½	9½	10½	11½	12½	13½	14½
	S M T	S M T	S M T	S M T	S M T	S M T	S M T	S M T	S M T
15—19	1350 1400 1450	1400 1500 1550	1500 1550 1650	1550 1600 1700	1650 1700 1800	1650 1800 1850	1650 1850 1900	1650 1850 1950	1650 1850 1950
20—24	1250 1300 1350	1350 1400 1450	1400 1450 1550	1500 1550 1600	1550 1600 1700	1550 1700 1700	1550 1750 1800	1550 1750 1850	1550 1750 1850
25—29	1200 1300 1350	1300 1350 1400	1350 1450 1500	1450 1500 1550	1500 1600 1650	1500 1650 1650	1500 1700 1750	1500 1700 1800	1500 1700 1800
30—39	1200 1250 1300	1300 1350 1400	1350 1400 1450	1400 1450 1550	1500 1550 1600	1500 1600 1600	1500 1650 1750	1500 1650 1750	1500 1650 1750
40—49	1150 1200 1250	1250 1300 1350	1300 1350 1400	1350 1400 1500	1400 1500 1550	1400 1550 1550	1400 1600 1650	1400 1600 1700	1400 1600 1700
50—59	1100 1150 1200	1200 1250 1300	1250 1300 1350	1300 1350 1450	1400 1450 1500	1400 1500 1500	1400 1550 1600	1400 1550 1650	1400 1550 1650
60—69	1100 1150 1200	1150 1200 1250	1200 1300 1350	1300 1350 1400	1350 1400 1450	1350 1450 1500	1350 1500 1600	1350 1500 1650	1350 1500 1650
70—79	1050 1100 1150	1150 1200 1250	1200 1250 1300	1250 1300 1400	1300 1400 1450	1300 1450 1450	1300 1500 1550	1300 1500 1600	1300 1500 1600
80+	1050 1100 1150	1100 1150 1200	1200 1250 1300	1250 1300 1350	1300 1350 1400	1300 1400 1400	1300 1450 1500	1300 1450 1550	1300 1450 1650

S = Short. Below 5 ft. 6 ins. (5 ft. 4 ins. taken)
M = Medium. 5 ft. 6 ins.–5 ft. 10 ins. (5 ft. 8 ins. taken)
T = Tall. Above 5 ft. 10 ins. (6 ft. taken)

Surface area calculated from Dubois, E. F. (1936) 'Basal Metabolism in Health & Disease'. Tindall & Cox, London.
Calories/24 hr./sq. metre/from Robertson, J. D. & Reid, D. D. (1952) Lancet 1940.

Table 29 *Basal Metabolism*

Female *Calories/24 hours*

Wt. (St.) / Age / Ht.	5½	6½	7½	8½	9½	10½	11½	12½	13½
	S M T	S M T	S M T	S M T	S M T	S M T	S M T	S M T	S M T
15—19	1050 1100 1150	1150 1200 1250	1250 1250 1300	1300 1350 1400	1350 1400 1450	1350 1450 1550	1350 1450 1600	1350 1450 1600	1350 1450 1600
20—24	1000 1050 1100	1100 1150 1200	1150 1200 1250	1200 1300 1350	1300 1350 1400	1300 1400 1450	1300 1400 1500	1300 1400 1500	1300 1400 1500
25—29	1000 1050 1100	1100 1150 1200	1150 1200 1250	1200 1300 1350	1300 1350 1400	1300 1400 1450	1300 1400 1500	1300 1400 1500	1300 1400 1500
30—39	1000 1050 1100	1100 1100 1150	1150 1200 1250	1200 1250 1350	1250 1350 1400	1250 1400 1450	1250 1400 1500	1250 1400 1500	1250 1400 1500
40—49	950 1000 1050	1050 1100 1150	1100 1150 1200	1150 1200 1300	1200 1250 1350	1200 1350 1400	1200 1350 1450	1200 1350 1450	1200 1350 1450
50—59	950 1000 1050	1000 1050 1100	1100 1150 1200	1150 1200 1250	1200 1250 1300	1200 1300 1350	1200 1300 1400	1200 1300 1400	1200 1300 1400
60—69	950 950 1000	1000 1050 1100	1050 1100 1150	1100 1150 1250	1200 1250 1300	1200 1300 1350	1200 1300 1400	1200 1300 1400	1200 1300 1400
70—79	900 950 1000	1000 1000 1050	1050 1100 1150	1100 1150 1200	1150 1200 1250	1150 1250 1300	1150 1250 1350	1150 1250 1350	1150 1250 1350
80+	900 950 1000	950 1000 1050	1050 1050 1100	1100 1150 1200	1150 1200 1250	1150 1250 1300	1150 1250 1350	1150 1250 1350	1150 1250 1350

S = Short. Below 5 ft. 3 ins. (5 ft. 1 in. taken)
M = Medium. 5 ft. 3 ins.–5 ft. 7 ins. (5 ft. 5 ins. taken)
T = Tall. Above 5 ft. 7 ins. (5 ft. 9 ins. taken)

Surface area calculated from Dubois (1936).
Calories/24 hrs./sq. metre from Robertson & Reid (1952).

Chapter 12 Catering and Administration

The main factors prejudicial to good catering in hospitals may be summarised under three headings:—

1 *Buildings:* badly planned sites and old hospital buildings, particularly old, badly designed and poorly equipped kitchens.
2 *The distribution of meals from the kitchen and service at the bedside.*
3 *Staff:* especially those concerned in preparation and service of food.

Buildings

On many kitchens, and on some complete hospitals, the only fair comment is an expression of sympathy for the patients who occupy them and for the staff who work in them. Too often really good work cannot be achieved whatever may be the devotion to duty of the staff, or however high their standards. The National Health Service formed a unified hospital service from a number of different organisations and incoherent units. These had developed independently in many different ways; local voluntary effort led to the growth of hospitals varying in size and importance from small cottage hospitals in country towns—sometimes with no more than 10 or 15 beds—to large county hospitals and teaching hospitals, with several hundred beds and able to provide for the highest standards of nursing and medical care; the old Boards of Guardians and Local Authorities had developed many kinds of municipal hospitals, fever hospitals, mental hospitals, workhouses and maternity hospitals. Together these formed a remarkable variety, from small fever hospitals in isolated places to hospitals covering acres of land near the centres of cities, whose services varied from the provision of the greatest possible medical skill to mere refuges for the poor, the incurably sick, or the infirm.They illustrate the historic development of English hospitals from small beginnings to elaborate and highly organised institutions, and they all share one common characteristic—none were originally planned or built to serve their present functions. Social

changes and developments in medical science have altered the requirements for hospital care and the use of hospital buildings has changed.

For these reasons the destructive criticism of existing buildings is not difficult but not, perhaps, particularly profitable; the facts are well known, and the plan for the hospital service will abolish many of the hospitals where we have seen bad conditions and rebuild, or entirely replace, others. On the other hand we have found that in small hospitals with less than 100 beds, and often with less than 50 beds, the admittedly smaller catering problem was managed more efficiently; as shown by the speed of service, by rapport between kitchen and ward and by standards of cooking; and more economically, as shown by unit costs, less plate-waste, less waste of leftover food and larger amounts eaten of the food prepared. Though in some small hospitals standards were indifferent or poor, the best of them produced plain, well cooked and well served meals, which were superior to anything that most large hospitals produced. For example some small hospitals could, as a routine, cook and serve an omelette for any, or all, of their patients. In any of the large hospitals seen the cooking and service of such a dish could only have been undertaken as a special service to a particular patient. It could not have been served as a routine item on the menu at one or two meals during the week, yet, in many ways, an omelette or a soufflé might be considered to be a very desirable and useful item on the menu for sick or convalescent patients. With nearly every factor that we have observed standards deteriorate as the catering problems increase with the size of the hospitals, but these small hospitals will disappear as the larger district hospitals that are planned take over their work.

Faults in the design of kitchens and catering organisations are not found exclusively in the oldest or most out of date of hospitals; it would be possible both to repeat faults in new buildings and, by inflexibility in planning, to permit faults, now so glaringly obvious in old buildings, to recur as new hospitals develop and expand. One recommendation that has been made is that meals should be staggered by arranging for groups of wards to be served over a period of one hour to one and a half hours, so promoting a more even flow of work in the kitchen and better distribution and service (*Hospital Catering*, Ministry of Health, 1961). The extent to which this can be done is limited and does not affect fundamentally the rigid pattern of mealtimes set for production in the kitchen. In one hospital meals were

staggered from necessity because of the complete inadequacy of the kitchen buildings, and because the meals had to be carried in motor vans over long roads. The staggering of mealtimes and service in batches certainly brought the problem of distribution down to just manageable size, but it did not appear to improve cooking very much. Batches of cooked food had still to be kept warm for long periods before dispatch from the kitchen.

Distribution of meals

One of the main factors in the relatively poor feeding of patients in larger hospitals is the problem set by the need to transport the cooked meal from a central kitchen to the patient's bedside. This problem has been met in most large hospitals by the provision of heated food-trolleys designed for the transport of hot meals. The disadvantages and abuses to which these trolleys are subject have been fully discussed.

The problem of distribution is often aggravated by the eccentric siting of kitchens in service blocks isolated from the wards, and the difficulties caused by this have been described. The reasons for designs of this kind are obvious; smells, noise, delivery vans, swill contractors and garbage must be kept away from wards and clinical units. *Hospital Building Notes* 3 and 4 (Ministry of Health, 1961) note these reasons, but in our view the notes seem to give contradictory advice. Note 3, *The District General Hospital,* states that it is preferable that the kitchen, bulk stores and staff dining rooms should be grouped together, and that the catering department should be sited to ensure that noise and odours are not objectionable to other departments. In outline plans the kitchen is sited with other services in an entirely separate zone of activity from wards, outpatients, administration and clinical units, all of which are interdependent and closely linked; but it is emphasised that it is important to ensure that patients' meals, which are usually distributed by means of heated trolleys, can be rapidly transported to the wards, and that direct and easy access is required from the main kitchen to all wards. *Hospital Building Note* No. 10 *Kitchens* (Ministry of Health, 1961) says that the design of the kitchen should not be determined by the structural pattern of other departments, the siting should ensure that noise or cooking odours do not affect other hospital departments, but that it is essential that

the position of the kitchen should permit of the delivery of food to the patients in the shortest possible time with the service exit from the kitchen as close as possible to the main circulation to the wards. Since good design compels the isolation of all this manufacturing activity from the clinical work of the hospital might not the best design remove it from the hospital premises completely, and concentrate in the hospital upon efficient distribution and service of meals?

In larger hospitals, when cooking is centralized in one main kitchen, the preparation of the meals becomes a considerable undertaking. *Hospital Building Note* No. 10, recommends that one main kitchen should serve all the requirements for staff and patients in a hospital, but that the numbers of persons to be served should not exceed 1,500 from any one kitchen; some kitchens seen in this study served a larger number of meals. This scale of catering is greater than would be found in any but the biggest hotels and is a considerable industrial undertaking. Kitchens of this size must use heavy industrial equipment, and they are in fact small factories; once this fact is accepted only the problem of distribution of the cooked meals would appear to stand in the way of a bolder policy of centralization. No modern competitive, industrial organisation, operating on so large a scale as the hospital service, could survive if complete production from raw materials to the manufactured product were to be split up into several hundred small self-contained factories, each of them carrying out the whole manufacturing process. The whole trend of observations in this study suggests that the replacement of the larger household kitchen of the small hospital by the small (but inefficient) factory of the larger hospital leads to less efficient cooking and distribution, less personal service and economy and more waste. A satisfactory solution to the problem of efficient distribution and service of meals in large hospitals has still to be found. Surely future planning should be directed to the greater centralization of primary production in highly efficient, well managed food factories, with the dispersion of final stages and preparation and improved service of meals to the patients in much smaller units, based upon the hospital ward.

Some areas visited seemed to cry out for a more centralized production with improved distribution of this kind. At Nottingham the City Hospital (Acute 811 beds), Sherwood Hospital (Chronic 363 beds) and St. Francis Hospital (Chronic 198 beds) were separately

administered with separate kitchens, but all occupied one enclosed site. The City Hospital had separate kitchens for staff and patients. Only two miles away was Mapperley Hospital (Mental illness 871 beds) and on an adjacent site The Coppice (Mental illness 121 beds) also separately administered with separate kitchens. Basford Hospital, also in the same area as the City and Sherwood, was being converted to a chronic hospital. There were a number of other hospitals in and around the town within a few miles.

At Warrington the General Hospital (Acute 335 beds), Aikin Street (Mainly Long stay 110 beds) and Whitecross Hospital (Long stay 236 beds) were all in one enclosed site. All had separately administered catering departments, separately costed. Whitecross also had beds administered by Warrington Corporation. About half a mile away was the Warrington Infirmary and Dispensary (Acute 170 beds). In the same group, six miles away, was Newton, between Newton and Warrington was Winwick. All these hospitals lie midway between Manchester and Liverpool, in a densely populated and hospitalized area.

Similarly most large towns contain a number of hospitals within short distances of each other, but these two towns were particularly notable in this study because three separate hospitals were enclosed within the same plot of ground. It did not appear that these six separate kitchens had ever been planned as the catering organisation best suited to the circumstances; they just happened that way when the hospitals were built at different times, for different purposes, by different authorities. The decentralization of catering into the six kitchens had not solved the problems of food distribution from the kitchen which still remained considerable.

An alternative method to the distribution of cooked meals in heated food trolleys with final service on to the plate in the ward is the 'Ganymede' system, which is being adopted in a number of hospitals. The unit has seen this system at work in two hospitals which were visited in addition to the 152 seen in the random survey —The Middlesex Hospital diet kitchen, and the newly built hospital at Crawley (the building of which has been completed since first visited as part of the survey). Patients and nursing staff in the wards requisition for each patient's meal separately on cards and the meals are dished up separately for each patient in the main kitchen, according to the instructions on each card. Each patient's plate is kept hot in a special container which is warmed by heated pellets; the

dishing up and plating of the meals is very highly organised, the food being served on to the plates as they pass on a moving belt. At the completion of service the plates are transferred from the end of the belt to specially designed trolleys on which they can be transported to the bedsides in the ward. The food on the plates when served to patients was very hot, and there appeared to be a tendency for it to be dried. There was no doubt that the system contributed very greatly to an orderly routine in the kitchen when the meals were ready to be served, though it is obvious that the system could not usefully be installed in any kitchen that was not well organised; but unless there were continual attention to detail, with a real interest by all staff concerned from consultant to kitchen maid, the system would still be open to many of the abuses seen in that employing heated trolleys. In view of the difficulties we observed in so many hospitals, the system would be liable to the same defects of delay in service.

At Crawley the system worked very well and there was little delay either in the main kitchen or from kitchen to bedside; but this hospital had only 100 beds. The kitchen was not subjected to as nearly as great a pressure of work as those in most larger hospitals. The system seemed lavish in its use of staff.

In the Middlesex Hospital diet kitchen the pressure of work was very much greater and we found here that, despite unremitting attention by the dietitian and nursing staff, it was not possible to avoid delays in service-time which substantially reduced the ascorbic acid in vegetables that were served. We were informed that the system had immeasurably improved conditions in this diet kitchen, and had completely abolished the hurry and rush which used to take place during the service of diets before its installation. The system of ordering individual diets on cards does bring the catering staff into closer contact with the patient, but no well organised system of this kind can fill the need for some responsible person, directly and personally interested in the clinical progress of the patient, who can find out what food is required and is acceptable and accepted. It is a nursing duty to make such observations, but there are many demands upon the nurse's time, particularly in large and busy hospitals. Nurses in most hospitals are not able to devote the time and attention to the feeding of patients which we believe is required. We are sure that whatever system of catering and distribution may be used it is essential that the person immediately responsible for feeding the

patient should be in immediate contact with, and have personal knowledge of, the patients who are to be fed.

Staff

The standard of efficiency of catering in the larger hospitals was not high. This was partly due to the handicaps of old, poorly planned buildings with inadequate kitchens and to shortages of skilled staff; but reference should also be made to the inferior status of catering staff generally within the hospital organisation as a serious contributory cause. At ward level, ward kitchens and the organisation of feeding in the wards, for which in most hospitals nursing staff were primarily responsible, generally showed a much lower standard than might be expected, and is usually obtained, in the nursing of patients. This appearance of reduced standards in the ward, often presenting a most marked and striking contrast to the good order and discipline seen in other ward activities, suggests that catering—the preparation, cooking and service of food—is regarded as a second-rate activity, an unfortunate necessity, an inconvenient intrusion into the real work of the ward. There was generally a lack of satisfactory liaison between ward and kitchen in most of the larger hospitals, with an unhappy division of responsibility for feeding between the catering staff in the kitchen who prepared the food and the nursing staff in the wards who served it to the patients.

Some catering officers are tough, efficient, educated men, or women, who can take an effective place in hospital committees, stand up for their catering staff and make a direct contribution to the welfare of the patients. A minority can actually intrude into the organisation of feeding in the wards, but this we believe to be exceptional. In hospitals where there were no catering officers directly in charge, where catering was managed by lower graded staff, some resentment was occasionally expressed to us by the kitchen superintendents, or whoever might be in charge, that though the management of catering was almost entirely left to them they had no authority and had no voice on a committee but had to approach management committees through a matron or hospital secretary. Catering officers generally have a lower status than dietitians, who find more ready acceptance in hospitals as professional colleagues by medical and nursing staff; but dietitians, where they exist, are mostly concerned with the provision of special diets. If the existing system is retained it can only be

made satisfactory if the status of catering staff is raised. The best cannot be expected when responsibility ceases as meals leave the kitchen, while the person nominally responsible for the food has no control over its treatment in the ward.

One example of this was seen in a group where catering in the principal hospital (Hospital No. 178) was managed by one of the most competent and efficient catering officers met during the survey. His own hospital kitchen appeared to be extremely well managed and he took a personal interest in the service of his meals to the patients. Nominally as Group Catering Officer he supervised Hospital No. 144 in the same town and the same hospital group, where an assistant catering officer was in immediate charge. At this second hospital there was little co-operation between nursing staff and kitchen. Special diets came up well presented by the diet kitchen, and were served by a ward servant who just dumped the food on a plate. Because of the team's visit the assistant catering officer was present for meal service in the ward kitchen and he expressed surprise at the amount of waste (3 Kgms of fish, chips and milk pudding). He accused the ward sister of ordering too much and this led to a heated argument. The bulk of this meal went to the pigs.

Again, in Hospital No. 96 the catering officer appeared to have no control of the food after it left the kitchen; far too much food was sent to the ward for ordinary and special diets but it appeared that ordering might be excessive. At lunch 500 gm of minced meat were sent for special diets but only 2 tablespoonsful were used; a plate of salad, tomatoes and lettuce was not touched and only half of the ham was used. The food left over was disposed of in the ward, mostly to swill, but there seemed to be some doubt about the ultimate destination of some of it.

Chapter 13 Recommendations for Improvements in the Existing Organisation

General

One principle appears to be essential:—that in each hospital one officer, whether it be catering officer, nursing officer, or dietitian, should have complete responsibility for the food and for the staff who handle it from the time that it is ordered and brought into the hospital to the time that it has been eaten, disposed of, and accounted for. The ward sister and ward nurses, if nursing is to retain any of its traditional meaning, must inevitably be the people who are most fully informed of the patient's needs, and good nursing demands that they should observe their patients and so make themselves fully aware of these needs. Therefore, whoever is responsible, if the responsibility is not given to nurses, must work in close liaison with the nursing staff; but this liaison must be personal, on the spot, in the ward, at the bedside, between the ward nurse and the person responsible for food in the ward. Only thus will the nonsense be stopped, that whole dishes of food are thrown away while the ward blames the catering officer and the catering officer blames the ward, and the patients reach into their lockers for biscuits. Other workers concerned with the treatment of patients in hospital, who come into personal contact with them—radiographers, physiotherapists, occupational therapists, etc., co-operate satisfactorily with nursing staff in the wards; why not catering staff?

Catering officers were usually very concerned about *portion control*, by which they mean the calculation of the right amounts of food for consumers' needs, but it is clear that the lack of liaison, due to difficulties of contact and division of responsibility between ward and kitchen, prevents them from achieving much success in control except in mental hospitals. Florence Nightingale insisted that good nursing, including proper feeding, depended above all else upon intelligent observation of the patient. Intelligent observation should surely take note of a patient's physical condition by recording, wherever possible, weight and height, and should measure the effect of treatment and diet upon the patient's progress as shown by changes in weight. The calculation of approximate basal metabolic requirements

by a reference to tables in the way that has been proposed, and the adoption of a dietary scale based upon the expected caloric requirements of different types of patient, would contribute to the better estimation of quantities of food required by the ward, but the diet must be considered as a whole, taking into account food from all sources. A great proportion of the diet is derived from ward issues and *patients' extras*; too much attention should not be concentrated upon the three main meals, but an attempt should be made to increase the variety and quality of the diet as a whole. It is a mistake to consider the food in two categories of main meals sent from the kitchen, and ward issues. Some flexible system is required which would enable the nurse to meet a patient's requirements throughout the day, and, if needed, at night, with a variety of suitable foods, properly prepared and expeditiously served.

What improvements could be made to the existing organisation? The variety of hospitals is so great that no single solution could be applicable to all hospitals; even hospitals within the same hospital group often differ so widely that each would call for separate consideration. If it be accepted that one person should be responsible to the Hospital Management Committee or, where appropriate, a Superintendent or House Governor for all food management in a hospital, and that this responsibility should cover the whole range from storage, preparation and cooking to service to the patient and final accounting for disposal, and that all this should be managed by staff under this one person's direction, then the choice lies in the majority of hospitals between the catering officer and the matron. Permanent whole-time dietitians only work in a minority of larger hospitals, and may be considered separately.

Matron's Hospitals

Where these are comparatively small, adequately staffed, and provided with sufficient funds and proper equipment, there appears to be no need to make any change in the matron's present authority and responsibility.

Large Hospitals with Catering Officers

In large hospitals the pressure of ward-work, particularly in acute hospitals, is very much greater, and it appeared to be doubtful if

nurses had sufficient time to give the attention to service of food to patients that is needed. This obviously is related to the shortage of trained nurses, which is itself due, in some measure, to the increasing demands made upon nursing skills and on the nurse's time. If the present system with a central main kitchen in the charge of a catering officer is retained, then his responsibilities should be enlarged to include responsibility for the service to patients in the wards, and the management of all food and feeding in the wards. For the catering officer to do this effectively he would require to have a new class of hospital auxiliary who would be concerned with the personal service to patients in the wards. Such an auxiliary would be more than a waitress; something more in the style of an airline hostess, who would be instructed in the needs of sick people and could herself prepare food that was needed in the ward. This ward-caterer, or ward dietitian, would work in co-operation with the nursing staff; she would relieve the nurses of all their practical duties concerned with food, and would make some contribution to relieving the present shortage of trained nurses. If it should be argued that, by reason of their training and experience, catering officers have no place in the management of any aspect of ward work, then the reply must be that they have not been suitably trained for work as hospital caterers. It may be that most hospitals are more in need of a dietitian-caterer than of a dietitian.

Intermediate Hospitals

There remain a number of medium sized hospitals of various types in which present practice varies. In some, the kitchens are in the charge of matrons, in others the group catering officer based in another hospital may nominally be in charge. Catering in each one of these hospitals could be considered separately, in the light of the available staff and facilities; perhaps the matron should be in charge, perhaps an assistant catering officer. But whoever is in real charge of the kitchen should also be in charge of feeding in the wards and conversely whoever is in charge of feeding in the wards must be in real control and have unquestioned responsibility for the management of the kitchen.

Dietitians

Dietitians are too few in number to have much direct effect upon the day to day preparation of ordinary diets of hospital patients. Their role in the teaching and education of hospital staff generally is invaluable, but the survey raised genuine doubt as to the effective part they take as advisers upon nutrition to hospital management committees. Partly this is due to their scarcity, but partly also it may be because they administer a diet kitchen separately from the main kitchen in most hospitals where they work. They concentrate upon the requirements of patients who have been ordered special diets, and measure the food consumption and progress of these patients most carefully, but in more than one hospital average calculations of the nutritional value of food issued per patient/day were based upon kitchen and store issues, with a conventional percentage cut for waste, without any weighed measurements being made of actual consumption in the ward. To be 'on a diet' is an event, and a satisfactory subject for conversation between patients and their friends; 'ordinary' patients in popular speech do not take 'diets'. Dietitians certainly appear to some hospital staff not to be concerned with 'ordinary' food for 'ordinary' patients, and more than one matron or catering officer has said that their advice, though nutritionally it may be unexceptional, does not take sufficient account of practical difficulties. 'What,' said one catering officer, 'is the use of telling me that watercress has more vitamins than lettuce, when nobody in this hospital will eat it?' Perhaps the dietitian should take some more practical part in the preparation and measurement of ordinary hospital food; more catering officers should be trained as dietitians, and more dietitians as catering officers, or they might have some part of their training as nurses.

Hospital re-organisation

New hospitals as they are built, will be far more flexible and capable of adaptation to changing requirements. Many more patients than formerly are ambulant and able to care for themselves during a large part of their stay in hospital; as they need not be confined to bed they can make use of the day-rooms, sitting-rooms, and dining-rooms that are included in the designs of new hospitals. The extent to which this could affect the existing pattern of catering services will

depend as much upon changes that may occur in the whole hospital routine and organisation as upon new designs of kitchens or dining-rooms.

How much, in the future, will hospital in-patient organisation be based upon the ward unit? Dr. W. Mackie, Group Medical Superintendent of the County and City of Perth General Hospitals, recently questioned the need for the organisation of work in self-sufficient ward units in their present form. He wrote of catering, 'Hospital catering is attempting to become more like hotel catering, but the system of distribution is archaic. No hotel would attempt to serve all its guests with all their meals in their bedrooms; but that is exactly what the hospital service is trying to do. Most patients have healthy appetites and are perfectly capable of going for their own meals to a central dining-room. This would also relieve the nursing staff of unnecessary housekeeping duties.

The system must also be altered to meet the new situation and allow the mobile patient to lead a more normal and independent life.'

(Mackie, 1963)

Re-organisation of this kind could clearly simplify or eliminate many of the problems that stand in the way of good catering, but to some extent it seems to suggest that patients in hospital are not sick, and that the feeding of patients is, for nurses, an unnecessary housekeeping duty. No doubt there are hospitals where most patients would be able to go to a dining-room for their own meals, but in the random sample of patients said to be on ordinary diets in this study, 30% were bedfast, 20% sedentary—i.e. able to sit out of bed for short periods—and only half were ambulant to the extent that they could use a sitting-room or day-room. There are bound to be some who must be confined to the ward unit, and these are the patients who are in the greatest need of good nursing which includes attention to their taking food. 'This want of attention is as remarkable in those who urge upon the sick to do what is quite impossible to them, as in the sick themselves, who will not make the effort to take what is perfectly possible to them.'

(Florence Nightingale op. cit).

Medical interest

Important acute hospitals to which patients are admitted for urgent treatment, or for diagnosis involving some special procedure,

or for specific therapy following diagnosis, where clinically interesting patients are found, tend to attract the most medical interest and attention. In these hospitals the turnover of patients is rapid and by the time patients can eat an ordinary diet most may be able to go to a central dining-room, and many will be ready for discharge. Many of those who require a longer period of hospitalisation may be transferred to less important hospitals, so that their beds may be made available for patients who require the special services provided by teaching hospitals and the more important acute hospitals.

For many doctors, their principal interest in nutrition is its application to the treatment of diseases which call for specific dietetic measures—diseases of metabolism such as diabetes, of digestion such as coeliac disease, or of malnutrition such as obesity. The training both of doctors and nurses in hospital practice tends to lead them to think exclusively in terms of diagnosis and therapy, and nutrition is considered more in terms of the pathological results of particular defects which appropriate therapy can cure, than in physiological terms of the limitations that may be imposed upon recovery or well being by a diet less good than it might be. Nurses' answers to examination questions in nutrition are striking in their tendency to describe nutrients in terms of the deficiency diseases associated with their lack, and by their quotation of recommended allowances of nutrients as though they were dosages of drugs or antibiotics.

This attitude to the nutrition of patients was often observed during the survey. Matrons and ward sisters wishing to be co-operative and helpful would give a short selected list of wards or patients which they thought might present the greatest nutritional interest, and would sometimes express disappointment when the random selection fell upon a ward or patient that in their view had less dietetic interest. In Hospital 122 a consultant surgeon in the sampled ward expressed surprise that the team should visit a ward which contained no patients of much interest as it had only just been re-opened after closure during an epidemic of influenza; he thought that the burns unit on another floor held much more of interest. In fact the *sampled patient* who had been admitted that day for a diagnostic examination of the uterus under general anaesthesia had a protein/calorie intake approximating to the average, though the weight of protein (60 gm) was somewhat low, but she was considerably overweight for her height (9 st. 8 lb. at 5′ 2″) so nutritionally she did not appear to be without interest.

Only partial success in efforts to improve the efficiency of catering and the quality of hospital food can be expected from a central administrative direction concerned with unit costs, staff management, supplies and stores. All these must be designed to respond to the continually changing requirements of the patients in the wards, as these are discovered by the observation and interest of nurses and doctors. This is a medical problem; it is up to medical and nursing staff to find what is required for their patients and to demand an organisation which will meet these needs.

Part 4—The Future

Chapter 14 Trials of New Techniques

Strictly limited benefits are to be expected from any improvements that may be made within the existing organisation of hospital catering along the lines of the recommendations made in Chapter 13. The large hospital kitchen is a small food factory, and these might be combined to form efficient factories serving large numbers of hospitals. The industrial activity of the catering department is out of place in hospitals, but with the existing organisation provision must be made for it to take place within easy reach of the wards. Many present defects are imposed on large hospitals by the inescapable rigidity and lack of comprehensive planning of old hospitals. Good design, good planning, and expensive machinery for distributing meals would, no doubt, bring considerable improvements, but attention would still be concentrated upon the provision of three meals per day which provide less than 65% of the energy value of food in patients under 50 years of age. Attention in hospital should be focussed upon the patient and what he does with the food on his plate, and how he can obtain good food at times other than set meal times, rather than upon the mechanics of food preparation and food distribution.

The Nuffield Provincial Hospitals Trust has made a further grant to enable the Unit which conducted this survey to carry out trials of new techniques discussed in the following paragraphs.

A possible new plan for hospital feeding introducing new techniques

The alternative to improvements within the existing administrative organisation might be to centralize production in efficient, hygienic food factories; the final stage of 'cooking' and service of meals being to serve small ward units of not more than about 60 patients, supervised by one sister. Modern techniques, such as are used in the pro-

duction of quick frozen foods or of accelerated freeze-dried food, can conserve the nutritional value and palatability of prepared foods or cooked meals until they are ready for final preparation where they are to be eaten. The main hospital kitchen in its present form would be abolished; each compact ward-unit would contain a small service kitchen with cold storage and equipment for the reconstitution, final heating and service of meals. There would be refrigerated storage at a convenient depot. In these ward-units the widest variety of available products should be used without restriction to any one method of food preparation. Some foods, eggs for example, would still be freshly prepared and cooked and this would be done in the smaller service kitchens in the ward units.

The final preparation and service of the food in the ward to the patients would be in the hands either of nursing staff, or of a dietitian or 'ward caterer' or 'ward hostess'. The caterer would run the smaller catering unit, pay personal attention to patients' needs and tastes and organise the personal service in co-operation with nursing and medical staffs. Using factory-prepared, pre-cooked foods that are already available it is possible to store and have ready for immediate use a variety of different dishes that can be quickly reheated. One method, designed at present for the needs of industrial canteens, will heat up pre-cooked meals in one batch, taken from a refrigerator at 0°F. to the serving temperature of a hot meal in 20 minutes, using a hot air convector oven. Modern microwave ovens will heat different dishes in a few seconds.

It has been suggested that such a system would have the following advantages:—

1 The best features of preparation, cooking and service of meals found in the best small hospitals could be retained in the larger hospitals. There would be much more direct contact between kitchen and patient; the consequent more lively response to the patients' needs should both improve service and reduce waste.

2 The final preparation, particularly with some kinds of pre-cooked food, is a relatively unskilled operation, which could be undertaken by staff who are not employed exclusively on catering and cooking. This would make it possible to serve a greater variety of between-meal snacks and provide some alternative to sugar or milky drinks. Highly skilled catering staff would not be required to prepare the food in the ward unit; even at periods when the ward housekeeper or the ward kitchen staff were off duty, it would not be impossible

for nursing staff to supply a considerable variety of hot dishes or snacks. The removal of an industrial process from the hospital precincts would allow a greater concentration upon the welfare of the patients (as it is affected by feeding) by the hospital administration, and nursing and clinical staff, who would not be directly concerned with skilled preparation of meals from raw food.

3 The chefs and skilled kitchen staff would be in the food factory, using modern equipment efficiently with skilled planning and organisation. A streamlined factory production, freed from the handicaps inherent in the separated batch production of single meals, would be expected to make far more efficient use of specially trained staff.

4 The hygiene of food-handling could be greatly simplified and brought within the capacity of ordinarily available domestic staff by an extensive use of disposable equipment, eliminating the risks and difficulties observed with 'washing up'.

5 Resident hospital staff would enjoy similar advantages in feeding, and meals for staff on night duty could be more easily provided.

The advocacy of these methods in hospital catering is fully discussed in an article entitled 'The Kitchen', by Professor B. S. Platt, originally published in The Architects' Journal, and reprinted in The Hospital Caterer for September–October 1961. We hope to carry out a preliminary trial of these methods in one London hospital in the near future.

Part 5—Notes on Hospitals Surveyed

Index to Hospitals

Hospital No.	*Notes*	*Type of Hospital*	*Size of Hospital*
1	124, 196, 385, 408	Acute	15 beds
2	32, 306	Acute	180 ,,
3	51, 252, 367	Partly acute	330 ,,
4	80, 105, 210, 292, 393, 423	Chronic sick (geriatric)	40 ,,
5	227, 465	Acute	160 ,,
6	245	Mainly longstay	270 ,,
7	113, 236, 361	Acute	240 ,,
8	49, 88, 166	Mental illness	250 ,,
9	45, 114, 244, 402	Longstay	240 ,,
10		Acute	60 ,,
11	60, 258	Mainly acute	540 ,,
12	77, 123, 407	Mainly acute	15 ,,
13	135, 176, 287, 355, 419, 455	Acute	70 ,,
14	152, 280, 389, 412	Acute	30 ,,
15	107, 138, 217, 297, 396, 425	Mental illness	50 ,,
16	54	Mainly acute	370 ,,
17			
18	48, 103, 250, 317	Mental illness	180 ,,
19	27, 222, 463	Acute	130 ,,
20	232	Acute	200 ,,
21	185, 225, 304	Partly Acute	160 ,,
22	128, 167, 413	Acute	30 ,,
23	78, 96, 153, 200, 281, 414, 452	Acute	30 ,,
24	142, 237, 383	Acute	250 ,,
25	38, 238, 347	Mainly acute	260 ,,
26	31, 229, 398, 434	Acute	180 ,,
27	275, 386	Acute	20 ,,
28	133	Acute	60 ,,
29	25, 81, 108, 182, 220, 301, 428	Acute	130 ,,
30	104, 289, 457	Acute	98 ,,
31			
32	126, 199	Acute	20 ,,
33	134, 417, 454	Acute	60 ,,
34	12, 136, 453	Mainly longstay	30 ,,
35	93, 125, 197, 276, 450	Acute	20 ,,
36	20, 216, 296, 424	Chronic sick	80 ,,

Hospital No.	*Notes*	*Type of Hospital*	*Size of Hospital*
37	28, 224, 397	Acute	150 beds
38	44, 165	Chronic	160 ,,
39	18, 137, 395	Chronic	70 ,,
40	177, 288	Acute	90 ,,
41	411	Acute	30 ,,
42	63, 150, 259, 366, 480	Mainly acute	900 ,,
43	156, 204, 285	Acute	40 ,,
44	181, 427	Acute	130 ,,
45	130, 284, 416	Acute	40 ,,
46	65, 151, 170, 260, 331, 375	Longstay	300 ,,
47	3, 95, 279, 371, 387, 410, 451	Acute	20 ,,
48	24, 218	Acute	130 ,,
49		Acute	30 ,,
50	86, 243, 349, 401, 468	Chronic	150 ,,
51	343, 372	Mainly acute	60 ,,
52	17	Mainly longstay	60 ,,
53	85, 164, 311	Acute	236 ,,
54	23, 139, 180, 345, 426	Acute	122 ,,
55	19, 215, 295, 458	Longstay	70 ,,
56	233, 309, 399, 466	Acute	205 ,,
57	1, 91, 121, 273, 341	Acute	10 ,,
58	73, 270, 380, 483	Mental Illness	1700 ,,
59	268, 337	Mental Illness	1200 ,,
60	183, 300, 430, 462	Acute	130 ,,
61	106, 179, 294, 370	Longstay	70 ,,
62	131	Acute	50 ,,
63	69, 172, 335	Mental illness	840 ,,
64	46, 187, 314, 362, 436, 470	Mainly longstay	260 ,,
65	94, 277, 362, 409	Acute	20 ,,
66	34, 161, 230	Mainly acute	190 ,,
67	8, 100, 132, 205, 286, 353	Acute	60 ,,
68	102, 421	Acute	80 ,,
69		Mental illness	1360 ,,
70	359, 431	Acute	140 ,,
71	21, 198, 278, 370	Acute	190 ,,
72	127	Acute	30 ,,
73	35, 231, 308, 356, 435	Acute	190 ,,
74	50, 251, 319	Acute	310 ,,
75	15, 212	Longstay	50 ,,
76	214, 394	Chronic sick	70 ,,
77	11, 208, 373, 392	Chronic sick (geriatric)	30 ,,
78	56, 116, 149, 168, 191, 255, 325, 351, 384, 405, 440, 477	Acute	440 ,,
79	82, 109, 184, 303, 357	Acute	160 ,,
80	370, 469	Longstay	150 ,,
81	242,	Mainly Longstay	130 ,,
82	79, 206, 354, 390, 418	Acute	60 ,,
83	68, 263, 334, 444, 482	Mental illness	570 ,,
84	6, 157, 283	Acute	48 ,,

Hospital No.	*Notes*	*Type of Hospital*	*Size of Hospital*
85	40, 240, 348	Chronic sick	110 beds
86	248, 473	Mental illness	170 ,,
87	53, 90, 404	Acute	360 ,,
88	101, 175	Acute	60 ,,
89	7, 99, 174, 370, 388	Acute	50 ,,
90	195, 342	Acute	15 ,,
91	97, 202	Acute	30 ,,
92	252, 322, 323, 363, 403	Mainly acute	340 ,,
93	207	Acute	70 ,,
94	143, 358	Acute	250 ,,
95	61, 193, 328	Acute	750 ,,
96	59, 117, 257, 327, 365, 479	Partly acute	520 ,,
97	111, 162	Acute	200 ,,
98	29, 140, 226, 305, 370, 432	Acute	160 ,,
99	159, 178, 459	Acute	100 ,,
100		Acute	240 ,,
101	155	Acute	40 ,,
102	302, 464	Acute	140 ,,
103	324, 439, 476	Mainly acute	400 ,,
104	344	Acute	70 ,,
105	13, 209, 291, 422	Chronic sick	30 ,,
106	266, 336, 377, 406, 447	Mental illness	1100 ,,
107	115, 312	Acute	300 ,,
108	71, 194, 264, 446	Mental illness	940 ,,
109	72, 267, 378, 448	Mental illness	1200 ,,
110	272, 340	Mental illness	2200 ,,
111		Mainly acute	96 ,,
112	119, 269, 338, 379	Mental illness	1600 ,,
113	368	Mental illness	2050 ,,
114	43, 313	Chronic sick	130 ,,
115	75, 173	Mental illness	2050 ,,
116	10, 290, 391	Chronic sick	20 ,,
117	14, 211	Chronic sick	40 ,,
118	219, 299, 346	Acute	130 ,,
119	47, 247, 315, 472	Mental illness	120 ,,
120	87, 249, 316, 437, 474	Mental illness	170 ,,
121	223	Acute	140 ,,
122	57, 226, 364	Acute	160 ,,
123	98, 203	Acute	40 ,,
124		Mainly longstay	140 ,,
125	39, 186, 239	Longstay	100 ,,
126	16, 213, 293,	Chronic sick (geriatric)	50 ,,
127	274, 369	Acute	11 ,
128	26, 221, 429, 461	Mainly acute	130 ,,
129	70, 265, 481	Mental illness	880 ,,
130	67, 171, 262, 333, 443	Mental illness	460 ,,
131	52, 89, 147, 321	Mainly acute	340 ,,
132	144, 188, 246, 471	Mainly longstay	280 ,,
133		Acute	40 ,,

Hospital No.	*Notes*	*Type of Hospital*	*Size of Hospital*
134	41, 241	Chronic sick	110 beds
135	5, 154, 201	Acute	30 „
136	37, 163, 235	Acute	230 „
137	145, 189, 318	Acute	330 „
138	74, 120, 271, 339, 381, 449	Mental illness	2000 „
139	58, 192, 256, 352, 478	Acute	460 „
140	4, 129, 282, 415	Acute	30 „
141	376, 445	Mental illness	640 „
142	66, 118, 261, 332, 442	Longstay	310 „
143	42, 400	Chronic sick	130 „
144	148, 254, 475	Partly acute	360 „
145	30, 83, 110, 141, 160, 228, 360, 433	Acute	170 „
146	9, 158, 420, 456	Acute	76 „
147	33, 307	Mainly acute	184 „
148	55, 146, 320, 350, 438	Acute	340 „
149	62, 169, 329, 441	Acute	810 „
150	36, 84, 112, 234, 310, 374, 382, 467	Acute	220 „
151	64, 330	Mainly acute	920 „
152	22, 298, 460	Acute	110 „

Notes

Hospitals and Hospital Kitchens

Acute—1–100 *beds*

1 A small cottage hospital, under the same management committee and supervised by the same matron as Hospital No. 47. It had originally been built by a local benefactor and had been designed as a complete unit by a good architect. One elderly sister-in-charge managed the place with very little help. The kitchen was a pleasant place and was well cared for. Cooking was done in a separate room from the main room used for preparation and serving.

2 The scullery was being used, in addition to vegetable-preparation and washing up, for washing nappies and baby clothing. The kitchen itself was being used for airing. Ceiling pulleys and airing rods were fixed over the solid fuel cooker.

3 A general practitioner's hospital, mostly for geriatric and chronic sick—built in 1890 and extended in 1935. The kitchen was very cramped. Preparation, cooking and some washing up were all done in one room which was visibly dirty. A potato peeler and electric mincer, both old and dirty, were roughly bolted to wooden benching, and were wired up with rubber flex to an ordinary wall plug adjacent to a stainless steel sink. The whole place looked down at heels and dirty.

4 Most patients appeared to be geriatric. The hospital was the old village manor house converted for use as a hospital for chronic sick. A minimum of conversion had been done—beds being put into living rooms, etc. It still retained much of the old manor house furnishings and decorations.

5 A small cottage hospital built in 1923 as a war memorial. Situated in an isolated country lane but about to be surrounded by a large housing estate. Across the road and about 200 yards down the lane was an old isolation hospital. In 1949, it was decided that there was no need for a separate isolation hospital, and both hospitals

were now run as one unit. The cottage hospital was a surgical unit, and the isolation hospital was the medical and geriatric unit of this general practitioner's hospital. The main kitchen was in the old isolation hospital and the cottage-hospital kitchen was used as a ward kitchen or servery. Food was cooked in the main kitchen; it had to be wheeled in a trolley along an open road to the other hospital. Matron described this small, light trolley being wheeled on a windy day with one hand on the trolley, and one on the nurse's cap. The disused kitchen was spacious and reasonably well-equipped, with ample space for food, cold storage and preparation.

6 A good type of old cottage hospital opened in 1923 by a duchess and looked like it. The kitchen was average; gas cookers, no modern fitments, wooden plate racks, wooden benches, etc.

7 Built as a voluntary hospital in 1939. The kitchen was very small. Everybody seemed to be working on top of somebody else and it did not seem well designed or properly laid out. A new kitchen is being designed now. The kitchen looked untidy and not very clean; the rest of the hospital showed a high standard of cleanliness.

8 The duty room served three wards—for males, females and children. It was the serving room for food; it contained:—case-history sheets, and the staff nurse stood at the bench of a sort of kitchen dresser on which they were hung to write up notes; poison cupboard; sink (in which water-bottles and glasses were washed and refilled); toys; oxygen; books and comics; baby weighing scales with a doll in the weighing basket; flour; assorted groceries; glass-shelved instrument-cupboard with usual diagnostic instruments, procto-scope, syringes, etc.; odd soft drinks; X-ray inspection screen; soiled dressing bins, removed by a porter with a trolley; fruit; nurses' collars and cuffs. Everything for the whole ward was done here, and food was served from one small square formica-topped table. Children in the children's ward kept looking in at this scene of fascinating activity through the open door of the ward; cots in it seemed to be overcrowded, it contained one cot in a cubicle, the rest were in the open ward. They were mostly surgical cases, squints and tonsils and adenoids. One staff nurse did most of the work for these three wards from this one duty-room. She appeared to be considerably overworked, we met her at 10.0 a.m. and she was on duty in the evening when we left at 8.0 p.m. The sample patient had had a radical mastectomy 7 days before; her temperature was rising throughout the day.

Washing up was done in the ward-kitchen which seemed to be fairly well equipped, but was inconveniently placed for most food activity. It had a single stainless steel sink.

9 Former seamen's hospital, endowed by shipowners and designed and built as one unit on ground given for the purpose early in this century. The main kitchen was spacious, very well organized and run under the charge of the matron. Intelligent planning had been used in renovations, cookers being placed in an archway of a former dividing wall to form a platform between two halves of the kitchen, but a good deal of the equipment was old, with an old boiler and old iron cooking pots. The kitchen was exceptionally clean and spotless.

Chronic—1–100 *beds*

10 As in many small hospitals everything was scrupulously clean and tidy, and the place was run like a large family house.

11 A very well kept geriatric hospital, with many helpless patients. It was very clean, and the patients were well cared for, with flowers for wards and bedside tables. An old fever hospital with wards in separate pavilions, It was free from the musty smell found in some other chronic hospitals.

12 A former fever hospital, pleasantly sited in rural surroundings close to a large town. Food was cooked in the kitchen of the residence —a separate house containing the matron's quarters. It had to be carried on trays in covered dishes through the open yard and garden.

13 An old Georgian country house with a parish church adjacent. Another example of old people in cots, in the rooms of a private house roughly adapted as wards. The kitchen was an improved household-type and well kept. There was a musty odour all over this depressing building, placed in beautiful surroundings.

14 A gloomy old building about 100 years old, an old nursing home which had started from a charitable bequest. Originally on the outskirts of the town, it is now surrounded by buildings on a main road. The kitchen and cloakroom were evil-smelling. The whole place smelt, and there were a lot of houseflies.

15 A very down at heels, not very clean, mouse-infested hospital. It was to be closed in 5 years' time. An old fever hospital in an isolated place some distance from the nearest village. A dead mouse was seen

outside the wards (on two successive days) following a clean up by the sister in charge. Sister herself had been attempting to clean the wards with little help, and her hands were visibly dirty when we interrupted her in this task. The place smelt, was dirty and insanitary. Very helpless vegetating patients.

16 A wartime hutted camp adapted as a pavilion type of hospital, with a day unit for old people. Very well managed, clean and well cared for.

17 A very old-fashioned hospital, partly mentally deficient, partly geriatric—an old poor-law establishment. The matron and housekeeper had been there for 21 years and nothing has changed much in their time. The kitchen was small with old equipment.

18 A very old poor law institution, very dirty from top to bottom —it stank of urine and the toilets were disgraceful. The kitchen was on the second floor in what was previously the nurses' home. Bedrooms had been altered to stores, washing-up rooms and rooms for cleaning vegetables and for boilers and friers. The old bathroom was used for peeling potatoes. All was very makeshift. The actual kitchen for the whole hospital was only about 15 ft. × 12 ft. This hospital has since been adversely reported upon in a report to the Regional Hospital Board.

19 The older part was a gloomy 19th-century poor-law building, which contained the kitchen, but though externally depressing it had been well decorated inside.

The sampled patient was in a newly built block that had recently been opened for acute geriatric admissions; this was a well designed and well equipped unit, connected by a long enclosed corridor with the old buildings.

20 The day room was to be equipped so that ambulant patients might feed in it. At present they must eat in the ward. Well planned kitchens and ward-kitchens.

Acute—101–300 *beds*

21 Good modern kitchen recently installed in a war memorial cottage hospital.

22 A very well run local general hospital with good, fully co-operative nursing staff. There was a good kitchen run by a capable housekeeping sister in good modern airy premises. The ward-

kitchen was average—there was a refrigerator, electric cooker and stainless steel sink.

23 A former stately home, converted for hospital use. Very inconvenient and must be most difficult to run. A new hospital has recently been built to serve the district, but this old conversion is still in use.

24 A fine older type of hospital building. The sampled ward of 12 beds was good, well kept and spacious. The ward-kitchen contained a refrigerator, gas stove, a sink in one corner, an electrically heated box plugged in for the meal, and a kitchen dresser. This accommodation was cramped for a 12-bed ward.

25 The main building was of good conventional hospital design with a well laid out and spacious kitchen placed at the end of one wing on an H-shaped block on the ground floor—not a very satisfactory site for meal-service. The sampled ward was a 'temporary ward', one of a group of huts put up after the war over ten years ago. It was most inadequate, and was not designed as a ward as far as could be seen. It was more like a barrack hut. The ward-kitchen was very unsatisfactory—very cramped, not well cared for, and dirty. Enamelled aluminium trays were in use, but the enamel had worn off. They were not properly stowed away, but propped on top of the hot-water pipe above the skirting. The floor was dirty, the trolley was dirty, there was a domestic-type vacuum cleaner in a dirty cardboard carton under the kitchen table. The refrigerator was dirty outside, the enamel had worn off, the exposed steel was rusty and unpolished. At the evening meal, grapefruit in bowls covered with a saucer was seen on the table, not in the refrigerator, waiting for breakfast the following day. A nurse's wrist watch was lying on top of one of the saucers. Three cheap towel rails were screwed up roughly to a roof beam. In this unsavoury accommodation the flex from the hot food-trolley, which was a small square type on castors, trailed over the kitchen table used for food-service. It was not possible for two people to pass each other owing to congestion and lack of space. Washing up was done by a cleaner who also helped with food-service. These conditions contrasted with appearances in the rest of the ward which was very well kept. Indeed, a nurse was seen swabbing down the walls and cistern of the toilet with disinfectant, with such devotion to duty that she had to climb on to a chair to reach parts otherwise inaccessible.

26 A good type of district hospital. Catering is under the charge

of the matron with a sister in immediate charge. The ward-kitchen was well laid out and adequate. Plates were kept in a hot locker after washing up. There was a steriliser for crockery, etc. in the ward-kitchen but it did not appear to be in regular use. There was a compact, recently designed kitchen with modern equipment. The staff dining room was adjacent. All parts of the hospital were accessible from the kitchen.

27 An old voluntary hospital sprawling across the centre of the town.

28 An old E.M.S. hospital. Like others of its kind it is spread out over the ground in single storey pavilions, so that there are long distances between kitchen and wards (there are 15 wards).

The ward kitchen was equipped with a stainless steel double sink, hot closet for drying crockery, electric boiler plates, electric kettles, and a refrigerator, a cheap wooden dresser and one very small formica topped table. It was small with cramped accommodation, with a concrete floor with worn-off floor paint.

Full milk bottles were kept on the steel draining board of the sink, not in the refrigerator, and everything—trolley, trolley pans and crockery—was washed up and wiped with one dishcloth, which the cleaner carried in her armpit. The ward as a whole, and the hospital, were well maintained and showed a good standard, but the equipment in the ward kitchen was obviously not being properly used.

29 An ex-voluntary hospital serving a very extensive agricultural area. Large, rambling and unplanned.

30 An old infirmary and dispensary. The kitchen was at one end of the ground floor at the extreme end of the main block, above the furnace and boiler room. The cold room and stores were underneath, in cellars adjacent to the boiler room. They were approached from the kitchen by steep, dangerous, worn cellar-stairs. The boiler was coke-fired, and the whole place consequently dusty. The stores were ordinary whitewashed brick cellar-rooms, but they had not been whitewashed for some time. Staff have to go up and down these steep stairs to obtain stores for the kitchen. Boiler-room dust was seen on a fruit trifle waiting in the cold room for service at the evening meal. The kitchen was cramped and not well organized. The potato peeler did not work very well, because the waste outlet had been fitted with a right-angled bend ; it therefore tended to become choked. Boilers were 20 years old. The kitchen superintendent said that he did not believe in *time and motion* which was meant for lazy people. Shelves

for equipment had been replaced by large cumbersome trolleys in the washing-up scullery. Food trolleys cluttered up the working space, and people were in each other's way.

31 The hospital was built in 1938, and there was a very high standard of efficiency in good modern buildings, but the outbreak of war prevented the completion of the building programme, so there was no kitchen. Ordinary full diets were cooked in the kitchen of a neighbouring geriatric hospital on the same site; this kitchen was about 500 yards away from the new buildings. There was no covered way between them. The kitchen layout was bad, and it looked very untidy at the peak of the day's work; staff were in each other's way filling the food trolleys. This one kitchen supplied food to four hospitals in the same group, and had even cooked for a small hospital some miles away—Hospital No. 40—where the kitchen was being renovated.

The ward-kitchen in the new building was spacious and well equipped with a stainless steel double sink and a small hot closet with hot plate. A cleaner did the washing up in this ward-kitchen, drying crockery, etc. with her damp dishcloth: the hot cupboard did not look large enough to contain all the crockery.

32 An old religious foundation about 100 years old, and the buildings still retained some of this atmosphere. There was a new out-patient block—a model of its kind. The wards were spacious and were being improved. The kitchen was dark with antiquated equipment and long plank benches with large grooves between planks. There were many houseflies. It was very poorly ventilated with inadequate extraction plant. The matron said it was due to be 'up-graded'. The ward-kitchens were very poor with wooden-topped tables, and houseflies. An old marble slab, from a disused wash-basin stand, was fixed to one wooden table to provide a working surface.

33 An old Victorian poor-law building, well adapted, extended and decorated to make a more modern style of hospital. The kitchen was in its original building on the ground floor, and as in many of these old buildings was large.

34 Late nineteenth-century poor-law buildings, still very institutional in appearance. Sampled ward, female geriatric, was in a group of wartime huts (containing 1–5 wards) 200–300 yards away from the main block and kitchen. It was approached from the kitchen by an open road up a hill. For these huts the ordinary trolleys could not be

used because of the hill, so electrically heated boxes were stacked on a small milk-round type of van. The food trolleys were seen going down-hill in the rain. It seemed a hazardous procedure—one porter with two trolleys was just able to hold them and was getting wet. The 'milk float' for the boxes was seen in the rain, unprotected. It was managed by one porter in dungarees getting wet in pouring rain. Nurses also had to walk in the open between these wards and the main block. Equipment and layout of the ward-kitchen were very poor. The wards smelt dirty, and there were many houseflies.

35 An old voluntary hospital in the middle of a nineteenth-century industrial area. Unpleasant cooking smells from the kitchen on a lower floor, penetrated the sample ward from the lift shaft.

36 An old nineteenth-century building with kitchen and stores in the ground floor and basement. Equipment was poor. Refrigerators were very indifferent—too few and too old. Stores were cramped, in poorly lit basement rooms and there was an inadequate day-larder with almost no reserves for use in an emergency. The kitchen was due to be redecorated and equipped in 1961.

37 Originally a miners' hospital formed from a manor house, with later ward-extensions. It was a very well cared for hospital with one fine new modern block. The kitchen was in the original block in, or adjacent to, the original house. It was not far removed from the original wards, but was a considerable distance from the new post-war block. It was spacious, clean, well run and well equipped though some equipment was rather old and two 30-gallon boilers seemed very large. It was under the charge of the matron. Some storage space had been sacrificed to make room for a new boiler plant which had been moved up from the basement, and this was less satisfactory. Stores and kitchen were very clean, well ordered and well kept.

38 Another E.M.S. type of hospital built in the war. It was being improved. As in other E.M.S. hospitals there were long corridors, but the sampled ward was next to the kitchen which was centrally placed. The main kitchen was a large, airy and pleasant building.

Chronic—101–300 *beds*

39 An old workhouse, now mainly for geriatric patients. The kitchen was spacious and clean in a central block, separate from the rest of the hospital. There was some new equipment including some large boilers.

40 An old workhouse with grim and forbidding exterior but well renovated inside so that wards were pleasant and comfortable. The kitchen was small and compact in its own central block. The sampled ward was in a different block. There was no covered way between the two blocks.

41 A final stay hospital for incurable patients. It was an old country house in a well kept garden and grounds, formerly belonging to a well known local family. Furniture and amenities had been maintained as they were when it was a private house. The patients were cared for perfectly. There was no sign of neglect, inadequate staffing or sour smell that had been observed in some other chronic hospitals.

42 An old workhouse under the same management committee as Hospital No. 114 (Note 43). There were no lifts, food had to be carried upstairs and put on to trolleys there. The kitchen was off the main entrance hall, the sampled ward was in another wing reached through a long narrow passage containing doors and other impediments with a narrow workhouse staircase containing a U turn at the end. Despite these poor-law handicaps, the kitchen was light and airy and well laid out. Equipment in the ward-kitchen was reasonable for this type of hospital but it was very cramped.

43 An old workhouse still known in the district as 'The Union'. The kitchen was in the basement, with a dining room above, in the centre block. The wards were in wings approximately 100 yards away on either side. Cooked food had to be wheeled along narrow passages to newly installed lifts. It then went up to the ward and was wheeled through the ward to the ward-kitchen in the centre of the wing, from which it was distributed to patients. The ward-kitchen was well equipped and spacious, with a stainless steel double sink, formica tops to benches and tables, hot closet, gas ring, large refrigerators, fitted cupboards, etc. The wards were well equipped, well decorated and well run.

44 An old workhouse with very steep, stone staircases. Food had to be carried upstairs on trays. The buildings were being modernized and renovated; the kitchen was being re-floored; one ward was closed for re-building.

45 It was a former workhouse. This was a joint user hospital managed jointly by the County Borough Council for mental deficiency patients and the Hospital Management Committee for geriatrics. The kitchen was spacious and clean (compare Hospital No. 145, Note

30, which is nearby), and provided meals for all 240 beds. A good deal of space was wasted in the kitchen through bad design.

46 An old workhouse which had been improved by decoration but its original function, and it is to be feared the old traditions, were still evident. Patients tended to sit about aimlessly and dejectedly on hard chairs. The kitchen was on the ground floor at the back of the building.

Mental—101–300 *beds*

47 This was a hospital with 'amenity beds', in extremely pleasant private rooms and surroundings, comparable to a good hotel. Under the same management as Hospital No. 129. There was a day hospital run as a club entirely by the patients. There was complete freedom in these two hospitals, and patients walk about as they please into town, and may even visit bars, if they wish to do so. The team were not accompanied by keys and 'security' as in other mental hospitals.

48 This mental hospital was now largely for geriatric patients. Constructional work was being done to improve it, but it was still very institutional. It had strict security with locked doors to wards. Apparently this was because of shortage of staff as patients tended to wander outside the hospital grounds in a confused state. One had recently been found walking down to the town.

49 Originally a barracks, now a mental hospital. Four blocks surrounded a quadrangle with arcades, presenting a fine appearance with good lawns and flower beds, but the whole place was very institutional, with drab, depressing rooms and wards. The kitchen was to be rebuilt and replaced by a new catering unit with a central dining room, but this plan had just been cancelled or postponed, owing to the uncertain future of this and other mental hospitals. The kitchen was not very clean, having uncleanable corners to floor and walls, with old tiles on the walls, and quarries on the floor. The whole place was poor and inadequate with very few recent improvements; it had a new mincer and new boilers. The space for preparation and service of 244 meals was very cramped. It was sited at one corner of the quadrangle—the sampled ward was at the opposite side.

Acute—over 300 *beds*

50 A war memorial hospital about 40 years old with modern additions which had architectural dignity; the buildings and equipment were above average. Apparently many improvements and amenities were attributable to a considerable endowment from the war memorial fund. The kitchen, though somewhat old-fashioned, was well equipped with good extraction ventilating plant. Adjacent to the kitchen was a central washing-up plant for the whole hospital. Utensils were stacked and moved on specially designed trolleys to avoid unnecessary handling. They were returned from the washing-up plant to the ward in about 10–15 minutes, and loaded with clean crockery and cutlery they went to curtained bays in the ward-kitchens, which were heated by hot air so that plates are ready for service. Large plastic bags were on order to cover these trolleys. Ward-kitchens were very well equipped and laid out.

51 An old type of Board of Guardians institution. The kitchen was not in covered communication with the ward.

52 The ward-kitchen was not very well equipped:—one single sink with a wooden draining board, gas stove, tea boiler, one gas boiling ring with electric hot closet and one rough kitchen table with oilcloth tacked on. It was very congested.

53 The ward-kitchen was spacious. There was one large wooden table in the centre with a scrubbed surface but otherwise unprotected wood planks. It was equipped with a dish-washing machine but this was not used. It did not appear possible to put all the crockery from the wards served into this machine, as it was much too small. The cleaner who did the washing up said that it would not do large plates and cups satisfactorily, adherent food was not washed off by the machine so that cups felt gritty after washing. She washed up in the ward kitchen using one dishcloth for all crockery and for the interior and exterior of the food trolley and its containers. The trolley when wiped 'clean' with the dishcloth was visibly smeared with an emulsion of food and fat. Little soap was used. All the crockery was 'dried' with one towel. The food trolley smelt of stale food.

54 An old poor-law hospital with additions in 1927 and later. Worn wood block floors with old terrazzo and tiles. Green and buff paint. The ward-kitchen contained a gas oven and one domestic type earthenware sink with wooden draining boards. The main kitchen was small and dirty.

55 A former E.M.S. hospital, well converted and well decorated making an attractive unit with 14 wards in pavilions leading off the central corridor. Local miners' organizations have supplied many amenities. The main kitchen is in the pavilion at the main entrance at one end of the long corridor.

56 An old voluntary county hospital, much of it somewhat drab, but there is a new post-war theatre block and the whole hospital is to be rebuilt. The present basement kitchen is to be replaced by a completely new catering block at an early stage of the rebuilding.

57 An old unplanned voluntary hospital of formidable appearance. The kitchen was in the basement close to the main entrance. Around it were small cellar storerooms branching off very dark passages. One kitchen served all meals for patients and staff. There is a small diet kitchen but it was not separately administered. The kitchen was conveniently near to the service entrance for stores, etc., but as it was placed at one corner of the site some wards were a long way from the kitchen in remote blocks and some storeys above it. Dining rooms for resident and other staff were on the same level as, and adjacent to the kitchen. The consultants' dining room was on a more lofty level and their food had to be carried upstairs, because the lift that was formerly used also served the theatre, and there was an outbreak of theatre-tetanus in this hospital.

58 An old type of voluntary hospital in a city centre on a limited site. The kitchen is old and inconvenient. A completely new restaurant block is planned. The ward-kitchen was well equipped but it was shared by two wards and duplication of equipment caused congestion, for example:—two sinks, two draining boards, two refrigerators and two hot plates were in the one room. A dishmaster and wastemaster sink unit were installed.

59 An old workhouse which used to hold over 1000 paupers, but now accommodates about 500 patients. Kitchen and dining rooms were in a vast building with a semi-circular roof on cast iron girders like a railway station. The kitchen was very spacious. The dining room was divided into two by a screen, one half being for the nursing staff, the other for non-resident staff. Meals were served at small tables for four people and there was a marked resemblance to the older type of railway station restaurant. The accommodation round the ward was cramped with insufficient room in the ward-kitchen. Narrow landings had wall pegs for the nurses' cloaks. To reach the sampled ward from the main building and the kitchen, required a walk through

a very long passage and an open yard, the lift to the upper floors opened on to the yard—a very inconvenient arrangement for staff and food-service.

60 There was a separate annexe with 150 beds with the same management and catering officer but with a separate kitchen.

61 An ex E.M.S. hospital, very large and spread out in single storey pavilions covering an extensive area. Communicating corridors were open and exposed and there were very long distances between ward and kitchen.

62 This was a very large hospital in a large area containing three hospitals with other hospitals nearby. The kitchen was far away from the ward; food sent to the sampled ward had to pass along a very long corridor, up a lift in an adjacent block, and over an open bridge between the two blocks. This journey took several minutes.

63 A very large industrial type of kitchen; there was no diet kitchen and diet cooks complained of the inconvenience of using the general cooking equipment.

64 A very large old fever hospital covering an extensive area. The food from one central kitchen was carried in electrically heated food trolleys which were driven from block to block in small electric trucks. There were two large mental illness hospitals and a partly acute hospital within a few miles.

Chronic—over 300 *beds*

65 Depressing workhouse buildings externally, but very well modernized inside.

66 An old poor-law hospital. The kitchen was the usual type with large steamers and boilers. There were two modern type solid fuel stoves; one large domestic type stove which was very satisfactory, and a newly installed canteen type which was said to be very unsatisfactory.

Mental—over 300 *beds*

67 The main kitchen was a pleasant looking place with plenty of up to date equipment, but the ward-kitchen was very poorly laid out and equipped. There was no stove and only one small electric kettle for heating water. The ward was a considerable distance from the main kitchen.

One small new refrigerator had been supplied but had not yet been connected to the mains. Tea in a large urn was placed on the table, but there was no means of keeping it hot. The flooring was poor, with worn linoleum, and paint had deteriorated. Work was in progress to improve the building. There were no lifts. The sampled ward was a long way from the main kitchen.

68 A smaller type of mental hospital built by the municipality. Well decorated and cheerful, but with very long depressing passages. The sampled ward was a long way from the kitchen.

69 A typical large mental hospital with long rambling corridors and no lifts.

70 There were difficulties on the day of survey owing to rebuilding of the catering department. After argument over the necessity for one kitchen or two, it was decided to improve the central kitchen, provide a centralized dining room instead of many small ones, with a centralized washing-up plant. Ward-kitchens were modernized, well equipped and well maintained by patients. Furnishings and equipment were of a high standard.

71 A large mental hospital of the usual type with long dreary passages which were being improved. The wards were well decorated and furnished. The kitchen in the centre of the hospital was having major alterations at the time of the visit.

72 The large kitchen was divided into two sections for patients and staff, with a kitchen superintendent in charge of each. Both sections shared the same wash-up area and vegetable preparation rooms. There was an extremely low standard of cleanliness. There were no lifts at this hospital.

73 The main kitchen was the original building built in 1833 ; it was being improved. Two other kitchens had been modernized, and another may be in two years' time.

74 There was one kitchen, 100 years old, for both patients and staff. The whole of the kitchen premises were so cramped and inadequate that general dirt and faults in hygiene were unavoidable. Arrangements for washing up were bad and unhygienic, in close proximity to food preparation. The wards served were up to three-quarters of a mile or more away from the kitchen, and the cooked meals were delivered to them by a motor delivery van in insulated unheated containers. An old building (formerly a second kitchen, but closed by the County Council before the National Health Service for economy) was being converted to a modern kitchen for 700

patients. This was to be equipped with electrically heated trolleys for the 700 and was to be ready in 1961; after that it was hoped to improve the present kitchen. There was no room for electrically heated trolleys in the present kitchen. We were informed that there was considerable argument as to whether two kitchens would be required or whether the widely scattered patients could be served from one, before this new building was undertaken.

75 A very large mental hospital built in 1901 but much improved inside with provision of flowers from its own gardens, etc. The kitchen was very large with Rotary ovens and many steam boilers, but organization appeared to be bad. The vegetable preparation room was separated from the steam boilers by the bake house with the ovens, which was very busy, and the meat section was separated from the ovens by the boilers. Vegetables had to be taken to the boiling room through the bake house and meat pies had to be taken to the ovens through the boiling room. One fish frier was at the east of the kitchen, the other at the west. At the peak of the morning's work there was confusion.

HYGIENE

Acute—1–10 *beds*

76 The sister-in-charge said that this hospital was becoming less a general acute hospital, but predominantly a maternity hospital, most beds now being occupied by normal maternity cases. The sampled patient was a youth with petrol burns of the leg; another patient in the hospital had face burns, and had been tube fed. The sister-in-charge said they admitted a good many patients with burns. The hospital serves an extensive but sparsely populated area, so that emergencies of this kind are to be expected. The danger of cross infection with mixed casualties and maternity does not seem negligible, particularly in view of conditions reported in Note 2 and that nursing staff is limited and non-residential.

77 The cook-in-charge had been in this hospital for 8 years. She did all her own washing up, vegetable preparation and kitchen cleaning. After dishing up and before serving she tidied the kitchen and washed her hands, then checked to see that there was sufficient for the staff, then washed up. The kitchen was very well cared for.

78 Kitchen far from clean.

79 A mixed fever and general medical hospital, formerly a tuberculosis hospital. All patients' crockery was washed together in the only kitchen sink. The 'fever' patients' crockery was sterilized in a boiler before washing up. No wash basin was seen in the kitchen.

Chronic—1-100 *beds*

80 The place did not appear to be well cared for. Male patients were seen with urinals on their bed tables together with their meals.

Acute—101-300 *beds*

81 The washing up was hurriedly done by the cleaner at an inadequate single sink with a wooden draining board. She started to do this before food-service was completed and stopped to serve a diabetic diet that had been overlooked. All crockery and cutlery was wiped with the usual damp dishcloth which was used also for the food containers on the trolley.

82 The catering officer kept her pet dog in a dog-bed in her office, adjacent to the kitchen.

83 The kitchen superintendent made ice cream in an ice cream machine ('20 years old and only one day out of service'). The noise it made in action suggested that it would soon be permanently unserviceable. Ice cream was made up from his own recipe, and flies were seen around the unfrozen mixture which was waiting on final preparation and freezing. There was no suggestion of heat treatment before final freezing. Nearby were a large mincer and mixing machine —not very clean with peeling paint; the beaters and other appliances for the machine were kept on shelves in a wooden cupboard. They were not clean, and were soiled with visible food particles, though they had not been in use that day. Steamers were not in use because the steam plant had closed down for Sunday, when they were seen, but on opening they were seen to be dirty with spilt food. We were invited to handle cakes that had been made in the kitchen, and were kept in tins in the cellar, to feel their lightness. No arrangements for handwashing were seen.

84 Washing up in the kitchen was very poor, but should improve when the kitchen is re-equipped. Leftover food is disposed of in the

ward, the containers were washed in the ward kitchen and then the trolley returned to the main kitchen.

85 The kitchen was not badly equipped, but not very well kept. Vegetables were lying around, and there was a pot of fat on the floor.

Chronic—101–300 *beds*

86 Very dirty kitchen, everything piled on top of the ovens, meat all over the table; apple boiling over the pans; dirty, nasty steam boilers. The hospital was old and dirty with a nauseating smell around the wards.

Mental—101–300 *beds*

87 The kitchen was up to date but the standard of cleanliness was poor. The rest of the hospital appeared clean and well cared for.

88 Patients in sampled ward had low social standards shown by unpleasant and childish table manners attributable to their mental condition. One inspected his dentures after every mouthful of food, another licked his plate clean after every course, another poured tea in his saucer to drink it, another wiped all his crockery clean with a dirty cloth from his pocket and returned plates and cups to their places on the table as cleaned; the table was not cleaned before the next meal, when the plates were used again as they had been left. Incidents such as these have not been observed in other mental hospitals, and the difficulties in this hospital may be greater as its patients were all elderly men.

Acute—over 300 *beds*

89 Washing up in ward-kitchen was very poorly done by cleaner, drying up with the usual damp dishcloth.

90 The sample ward was in a surgical block. The lift in this block was an old-fashioned type in an open cage with guides and cables exposed. These, as is usual, were covered with tacky lubricating grease, which acted as a dust trap. The grease was covered with $\frac{1}{2}''$–$\frac{3}{4}''$ of fluff, made up of easily recognizable cotton and wool fibres. They were lightly attached to the grease and obviously had been airborne.

91 In the evening a sister-in-charge cooked vol-au-vent herself and helped to prepare sandwiches with domestic help.

92 The meal was held up for 10 minutes for individual Yorkshire puddings to be cooked and served hot and fresh. The meal produced by the single-handed cook was one of the best seen.

93 The food was delightful. A savoury omelette was served at the evening meal.

94 The matron was very interested in food and had been at this hospital for six years. She made use of all meat trimmings, crusts, etc. Stock was always made for soups and gravies, but soup stock was improved by the addition of canned soups. Vegetables were cooked with butter or margarine. Meat was cooked to be ready a few minutes before the service of the meal. The only cook specialized in bakery and the home-made cakes were very good (employed 9 years).

95 At the evening meal luncheon sausages were reheated and sister reheated the baked beans in the kitchen. Potatoes were being peeled at 10.30 a.m. for the midday meal. Breakfast and supper are cooked by the nursing staff in addition to carrying and serving the meals to the patients.

96 The vegetables were all cooked with the meat in a great deal of water. The cook prepared the evening meal and left it ready for the night staff, but did not actually cook it.

97 Influenza had caused the absence of the hospital secretary, one nursing sister, two staff nurses and the cook on the day of survey. The matron was the only responsible person left in charge and was fully occupied with attendance to a C.M.B. inspector and in acting as relief to the theatre sister. Cooking and food service had therefore to be left to kitchen and ward maids without much supervision.

Minced beef was put on to cook at 11.20 a.m. and was 'ready' at 12.0 p.m. and ground rice was being prepared at 11.30 a.m. Both were undercooked. Cooking of potatoes started before the mince and they were boiled for more than 40 minutes. Fish for gastric diets was cooked for 10 minutes only before service, and was heavily salted and peppered.

Despite these accidents due to staff shortage, the patients made a point of telling the matron on her round, that they had enjoyed their food.

98 Potatoes were peeled one day in advance and kept in cold room. Greens were hot in the oven for 35 minutes before service.

99 Peeled potatoes were soaked overnight.

100 Roast potatoes were in the oven at 10.45 a.m. and carrots were coming to the boil.

101 Potatoes were peeled the day before and were soaked in cold water overnight. Dried peas were soaked four hours before cooking started.

102 Chips were cooking when the sampler visited the kitchen at 11.0 a.m. for serving at 12.0 p.m.

103 The same matron, secretary and administration as Hospital No. 29 (Note 108). Potatoes peeled the previous evening for the midday meal, were left soaking overnight. They were put on to boil at 10.30 a.m. for the 12.0 p.m. meal.

104 Same catering officer as Hospital No. 78 (Note 116) who is not satisfied with catering at this hospital. Potatoes were seen at 5.0 p.m. peeled and soaking for meals on the following day.

Chronic—1–100 *beds*

105 Carrots, potatoes, soup, cabbage and custard were all cooking on top of the stove while puddings and meat pie were on the hot plate on the arrival of the team at 10.20 a.m.

106 The assistant cook was upset by the survey and in his confusion he put the cold chocolate mould into a hot oven, it was served as a hot chocolate sauce.

Mental—1–100 *beds*

107 Swedes for the staff lunch were cooking at 10.15 a.m. for service at 12.15 p.m. Food is prepared well in advance to allow for delays and emergencies. Bacon for the following day's breakfast had already been cooked by 10.15 a.m.; so also had the stew for the day's midday meal. Meat for Sunday lunch had been roasted on Saturday and was in the oven being warmed up by 10.15 a.m.. The hospital as a whole looked exceptionally clean and well cared for and all equipment was of the best, but food preparation and cooking were very institutional.

Acute—101–300 *beds*

108 Potatoes had been peeled some hours before 12.45 p.m. when they were seen, and were waiting soaking in the sink for the evening meal.

109 Potatoes were being mashed at the time of the visit which was 11.0 a.m. for service at 12.0 p.m. meal. Cauliflower was already cooked at 11.0 a.m. for cauliflower cheese for special diets. Cabbage was already shredded and soaking in water ready for night staff's meal. Meals for the night staff are left ready prepared for cooking by one of the night staff on duty.

110 The kitchen superintendent cooks the potatoes in nets in boilers. Each net contains 20 lbs. of potatoes at various stages of cooking, so that service of those just correctly cooked can be made in batches. He learnt this in the Army in the 1914–18 war.

111 Roast beef was being sliced cold, and put into the refrigerator at 11.0 a.m. apparently for the evening meal.

112 Chips were seen being fried immediately after lunch at about 3.0 p.m.

113 Potatoes were peeled, cut and left in water overnight. They were cooked in two large batches; the first batch was cooked by 11.10 a.m. after 35 minutes' steaming, and then kept hot for service at 12.0 noon.

Chronic—101–300 *beds*

114 Cabbage was put into the boiler at 9.0 a.m. and cooked with the lid of the boiler open until 9.50 a.m., the water was then drained and cabbage left to cool down till 10.40 a.m. It was then put into small serving pans which were dropped into their places on the serving trolley at 10.45 a.m. to be served in the ward at midday.

Acute—over 300 *beds*

115 Brussels sprouts cooked for one hour in soda were dished up 30 minutes before serving; potatoes were similarly treated.

116 Potatoes were seen being peeled and prepared for midday cooking at about 11.0 a.m.—this is a last minute job. The kitchen was well organized with proper circulation of staff and materials. Vege-

tables were cooked in large steamers and boilers and we were told by the catering officer that these were about to be replaced by smaller cooking pots. Vegetable cooking was then to be broken down into batches and food service for different wards was to be staggered to coincide with completion of cooking times. The catering officer's objective was a continual stream of meals issuing from the kitchen instead of one large batch causing a sudden burst of activity.

117 Cabbage seen being sliced and potatoes peeled and already soaking and also being peeled in the morning at 11.30 a.m. for the evening meal and, probably, also for the next day which was Sunday; this was said to be unavoidable. 56 lbs. are peeled at a time in 4 minutes.

Chronic—over 300 *beds*

118 Green vegetables seen cooking at 11.0 a.m.

Mental—over 300 *beds*

119 At 9.15 a.m. potatoes and cabbage were being prepared for lunch on the following day. They are kept in cold water to soak overnight.

120 Because over 2000 people must be fed from one kitchen, meals are cooked in batches and served in batches over a period of 1¼ hours. Though the catering officer said food must be cooked in batches for these different servings, it seemed doubtful whether this could be accomplished. Visiting the kitchen on a Saturday afternoon, food and vegetables were seen being prepared for Sunday lunch, as staff is short on Sunday morning, and it was noted that the cooking of vegetables started at 10.0 a.m. for lunch at 12.0 noon.

LIAISON BETWEEN KITCHEN AND WARD

Acute—1–100 *beds*

121 Food was served direct from the kitchen, meat was carved by the sister-in-charge and other food served out by a nurse. All patients appeared to enjoy their food and their personal wants and appetites were considered.

122 As the food was cooked it was drained and put on top of and inside the cooker, together with the plates to keep warm. Trays were laid in the kitchen 5 minutes before meal service, and carried to the patients immediately by nursing staff. There was a very happy atmosphere in this hospital and excellent liaison between kitchen and ward. A ward maid was seconded to the kitchen for meal periods and took over completely from 4.30–7.0 p.m. daily, the cook having left the supper ready for final cooking.

123 Food was served from the kitchen by the cook, distributed by nurses, four meals to a tray. Food was served from the utensils in which it was cooked and after draining was left on top of the cooker to keep hot. Plates and covers were kept in the warm oven.

124 The meals were served by the sister in the kitchen. The food was served from the utensils in which it was cooked. The nurses collected five plates at a time on trays and took them direct to the patients. The staff knew the patients' likes and dislikes. Helpings for both patients and staff appeared small, but the sampled patient said that the matron was very good about giving second helpings if they were required. Patients and staff were eating exactly the same food cooked in the same pots. The meals generally were of good homely quality, though perhaps dull.

125 As all meals were served from the kitchen, patient and staff meals were served immediately after each other from the same containers. The staff worked well together and had been at the hospital for many years.

126 The midday meal was served in the kitchen, and the matron helped in preparing the food. Breakfast and midday meals were taken on the hot trolley around the hospital.

127 Meals were served in the kitchen by the cook. This was well done and the meals looked attractive.

128 The meal service was direct from the kitchen to all wards.

129 The ward sister carved the meat in the kitchen and ward service was directly from the kitchen on trays. Patients' likes and dislikes were accounted for and there was good rapport between server and patient.

130 The meal service was interrupted twice for emergencies. One patient became cyanosed after operation, and another patient was brought in from the theatre on a stretcher. The matron was obviously well liked by her staff, and there was excellent liaison between kitchen and ward.

131 All meals were dished up and served in the kitchen, which was 70 yards from the sampled ward. They were carried on open unheated trolleys. This must be very unsatisfactory in cold weather. Patients were asked what meals they would like and the kitchen was told.

132 Nurses went twice to the distant main kitchen to obtain additional portions. The staff nurse apparently had not ordered the right number of meals in advance. This could have been due to overwork.

133 A good clean kitchen from which the meal was served.

134 The matron served the meals in the kitchen. They were quicky and efficiently served to the patients.

135 There was very good liaison between kitchen and ward.

Chronic—1–100 *beds*

136 See Note 12.

137 The sampled patient—a paraplegic suffering from amyotrophic lateral sclerosis, with a history of over 10 years' progressive illness, and a developing inguinal hernia—was left in the toilet from 3.20 p.m. to after 4.40 p.m. He could not move without help, and the sampler heard him calling for help inside the toilet, but none of the staff were able to find an opportunity to come to his aid. The sampler had to leave the ward before he was released; his tea was served at 3.30 p.m. when he was in the toilet, and it was still waiting for him on his locker at 4.40 p.m. when the sampler left, while he was still incarcerated. It was recorded that he took two cups of tea at 4.50 p.m. but nothing to eat.

Mental—1–100 *beds*

138 The sister-in-charge served food direct from the kitchen. Patients queued up to take their meals and each patient was asked what was wanted. Some patients took plates to their friends. The meals were taken in the dining room at tables for four, properly laid.

Acute—101–300 *beds*

139 Catering arrangements are in the hands of a firm of contractors who are directly responsible to the group secretary and their

London office. There was a much larger catering staff, particularly supervisory staff, than is usually found in this size of hospital; but their liaison with nursing staff in the wards appeared to be bad or non-existent (see Note 180).

140 Before the catering officer had been appointed to this hospital there had been trouble leading to an enquiry about the bad quality of food. It was said that at his first interview with the matron the catering officer told her that he had never learnt nursing so would not presume to interfere, but she had never learnt catering so should not interfere with his work. He discovered recently that food leaving the kitchen at 11.45 a.m. to be served in the ward for lunch was not served until 1.0 p.m. He was therefore proposing that food should be served in the wards by his own staff from the kitchen. The catering officer appeared to be very competent and his kitchen was well run, but he had no control over meal service in the wards which was very poor.

141 The kitchen superintendent said that he disliked big hospitals with big kitchens because food preparation was too distant from the patient. He said he could not follow up complaints about food or control waste as he is not allowed in the wards, or even in the dining rooms, and he had no control over food service. Waste was consequently on a scale which would never be permitted in commercial catering to which he had been accustomed. It must be noted that the kitchen superintendent was not the type of officer who would be accepted by nursing staff in the ward as a professional colleague.

142 A kitchen supervisor controlled the day to day management of catering. She prepared menus and submitted them every week to the matron, but the wards were not given copies. Indents for food supplies were prepared by her and orders were made out in triplicate by clerks in the general office ; the matron signed these. The stores were controlled by the kitchen supervisor. There was good liaison between the kitchen and ward staff with no apparent difficulty in getting suitable food for a Moslem. The staff were used to handling this type of problem for seamen.

At the evening meal, beans and soup sent to the ward on the trolley were not sufficient for the ordinary diets and more had to be sent for; hence there was nothing left over, and little plate waste. The sister said that there was never enough, and she often had to telephone two or three times to the kitchen to obtain more, so that she could finish serving.

143 The food sent to the ward was carefully accounted for. The exact number of portions requisitioned was sent. As there were many emergency admissions on this ward, staff were sometimes embarrassed by having to wait for more to be sent from the kitchen, which was some distance away. Fortunately one patient refused his meal which allowed extra for a new admission.

Chronic—101–300 *beds*

144 Liaison between kitchen and nursing staff was not good. The nursing staff on the sampled ward had just reported the catering officer to the matron because of poor quality of food sent to the ward.

Acute—over 300 *beds*

145 There was a very obvious lack of interest in food service by nursing staff and it is obvious from other notes on this hospital that there was a lack of liaison between nursing staff and kitchen. The nursing staff appeared to be genuinely hostile to the work of the team. The group catering officer, who had been recently appointed, was based on this hospital, and he appeared to have a great deal of opposition from the nursing staff.

146 On visiting the kitchen during lunch the kitchen was busy serving extra food to meet requests from wards, as the result of demands for second helpings from patients. This was encouraged by the catering officer who tried to teach that portions should be limited in size, but second helpings should be unlimited. He said that large helpings upset appetite and caused waste. His issues were based on his menu calculations, but he was prepared for extra demands on his kitchen.

147 The ward sister said that she usually had to ask for more food from the kitchen as there was not enough on the trolley. On the day of survey she remarked that the catering officer had put more on. The ward sister also exclaimed at the presence of butter on the peas. This does not usually happen.

148 The group catering officer, at Hospital No. 78 (Note 149), supervised catering here. There was little co-operation between nursing staff and kitchen. Special diets came up well presented by the

diet kitchen, and were served by a ward servant who just dumped the food on a plate. Because of the team's visit the assistant catering officer was present for meal service in the ward-kitchen, and he expressed surprise at the amount of waste (3 Kgms of fish, chips and milk pudding). He accused the ward sister of ordering too much, and this led to a heated argument. The bulk of this meal went to the pigs.

149 The catering officer was a man of ability, above the average standard. He had personality with good technical backing, and could therefore talk to professional people in his hospital with an expectation of results, as his opinions would be respected. He had charge of all aspects of catering and no person—matron, committee member or consultant—could enter his kitchen without permission. Nobody was permitted under any circumstances to delay the service of meals, and he would request a consultant to wait if he chose to do a routine round at meal time.

150 There was poor liaison between nursing and catering staff and incorrect ordering of quantities. The sampled ward was a 30-bedded ward. 30 raw eggs were sent up to the ward-kitchen to be boiled for breakfast, but there were only 20 patients, of whom only 11 were on ordinary diets, and only 5 wanted boiled eggs. The remaining 25 eggs were placed in the refrigerator. Also 75% (1 Kgm) of the sliced and spread bread and butter sent from the kitchen was unused and was sent back to the main kitchen, and most of the porridge was put into swill. Nobody could say when the eggs would be used. At lunch 5 special diets were sent to the ward which had been ordered by the sister. These were not served and were sent back to the main kitchen after the meal.

Chronic—over 300 beds

151 The sampled patient did not usually eat supper, and many patients preferred to have a high tea, with a hot drink and light snack later at night. Despite this, there was a standing order for 20 suppers nightly; only 14 out of the 20 evening meals were served on the day of survey.

THE USE AND ABUSE OF FOOD TROLLEYS, AND DELAYS IN THE SERVICE OF FOOD

Acute—1–100 *beds*

152 One trolley serves all patients and one nurse on duty serves the meal. It was a very good service with proper attention to the patients. The nine suppers ordered were served in the kitchen and taken to the ward.

153 Food service was very unorganized, served from one unheated and open trolley which was wheeled up and down passages to the wards. Pans of food without lids were put on top of the trolley, plates underneath, and there must be considerable cooling of food in cold weather.

154 After arrival of the food trolley from the kitchen down the lane, food to the top floor needs to be carried upstairs. There is a manually operated food lift but it was not used. The electric trolley cannot go upstairs. Food sampled was quite hot when served despite these difficult arrangements.

155 Though this was a small hospital, heated trolleys were used for meal service.

156 The electric trolley was used only at lunch time. At supper food was sent up in a lift on an open trolley ready served on plates that were not covered.

157 The meal service was good both in morning and evening. There is only one electrically heated trolley. It was used in turn at successive meals by different wards, otherwise meals were sent direct from the kitchen in a container and were served in the ward. There was no ward-kitchen, only one main kitchen; there was good control of food. Too little food for requirements was sent as a rule, but there was no difficulty in obtaining more from the kitchen as it was required.

158 All catering from stores to final service of the ward was under the firm supervision of the matron. She and all staff concerned had a personal interest in each patient that was served. Their likes were catered for and there was little waste. Meals were served on to plates in the kitchen on a hot plate. They were covered and each plate was put at once into the hot trolley ready for service in the ward. This was done quickly just before meal time.

159 Meal service was poor. Electric hot trolleys were used only for the midday meal. There were not enough porters for other meals,

and they were considered to be too heavy for nurses to handle. At other meals lighter open trolleys, loaded with food for more than one ward, were used by female staff. This unwarmed food was then plated and put on patients' trays in the ward-kitchen.

Acute—101–300 *beds*

160 The kitchen superintendent said that the food trolleys were often left disconnected, but on the day of the survey French beans and other food were kept standing in the hot trolley for a full hour.

161 Electric hot trolleys had only recently been in use in this hospital, one from the Hospital Friends, one from the Management Committee. They were of only limited use owing to the peculiar lay-out of the hospital described in Note 34.

162 Electric trolleys were supplied, but on the sampled ward in this old workhouse they could not be used because there was no lift.

163 The electric food trolley was used only at the midday meal. At breakfast and supper food containers were carried from the main kitchen on a tray, placed in an oven in the ward-kitchen, and then carried into the ward on an open trolley. See also Note 159.

164 Food was served from the hot trolley in the ward, but the trolley was left disconnected all the time.

Chronic—101–300 *beds*

165 The male staff were kind and sympathetic to very helpless old men. The patients were very well kept, and kindly treated.

Hot lockers have to be carried upstairs at present. There were no electric trolleys as lifts had not yet been installed, but meal service, having regard to the inconvenience of the building, was good. The place was well kept, free from smell, and the wards were decorated with flowers.

Mental—101–300 *beds*

166 In the conditions mentioned in Notes 49 and 88, meal service was indifferent. Food had to be wheeled in unheated wooden trolleys to the wards, a very considerable distance around the open quad-

rangle. The meal arrived in the ward dining room rather cold and it was not re-heated. It was then roughly thrown on to the plates, one thing on top of another.

Acute—over 300 *beds*

167 In this old poor-law hospital food had to be carried on trays to upstairs wards from electric trolleys on the ground floor, because there were no lifts.

168 The matron said that ice-cream kept in the cold department of the electric trolley did not keep frozen.

169 The food trolleys were switched on in the wards to heat up, and were then taken to the main kitchen by porters who had to queue for at least 20 minutes outside the kitchen to collect the meals. After they had returned by the circuitous route described in Note 62, the ordinary diets were served from the trolley in the ward but special diets were sent up, separately served for each patient, from the kitchen.

Chronic—over 300 *beds*

170 The meal service by the male nurse was poor. There was no lift to the ward so the hot trolley had to be kept downstairs. Dishes of food were carried up to the ward and put on the ward-kitchen table. An old trolley in the ward-kitchen was used for heating plates.

Mental—over 300 *beds*

171 There were 14 wards but only 7 electric trolleys. These could only be used in the ground floor wards because there were no lifts. The sampled ward was a considerable distance from the kitchen and the food was wheeled along on a very large wooden trolley through unheated passages. The containers were carried upstairs by the patients and placed on a large wooden table. There was no way of keeping it hot; they had one very ancient and small insulated box, but all the other containers were uninsulated.

172 The meal was taken in the hot trolley from the kitchen to the base of the ward staircase, it was then carried upstairs and kept hot

in the ward-kitchen, finally it was served in the ward dining room—a very cumbersome arrangement.

173 The food trolleys were not heated though distances involved were considerable. Ambulant patients assisted in the ward-kitchen, they buttered bread, etc. and helped with the meal service. Patients queued to collect meals and sat at tables supervised by a male nurse. Food service was well done in the circumstances and the food well presented.

DELAY

Acute—1–100 *beds*

174 The matron arrived for her round just as supper was to be served. The ward sister carried on with her service and the meal was not delayed. The service was quiet and efficient.

175 At the evening meal the service was held up by a doctor's round. The orderly started the meal service and was joined by the staff nurse half an hour later. At the midday meal the meal service was stopped for about 20 minutes for the nurses to go and collect their pay. Most of the service was done by orderlies.

176 The meal was 10 minutes late arriving in the ward, but the ward sister served it immediately. The late arrival was due to difficult conditions during the rebuilding of the kitchen.

177 At the midday meal presentation was poor, medical staff arrived at the same time as the meal and food service was delayed for 15 minutes while the staff nurse accompanied them. Presentation of food was poor, food all looked the same dull colour—fish, potatoes, and pudding. But the evening meal was better, and patients were asked what they wanted. There was a lack of imagination in planning and presentation.

178 At lunch the food trolley arrived 10 minutes late, 12.10 p.m. The staff nurse started to serve at 12.15 p.m. but she had to leave in the middle of service to take her own lunch. The service was continued by another nurse after a further delay of 10 minutes.

Chronic—1–100 *beds*

179 The food was kept waiting for half an hour due to a doctor's visit. The food trolley was left disconnected in the middle of the ward during this time.

Acute—101–300 *beds*

180 The food served seen at the midday meal was above average for a larger hospital, and the condition on arrival in the ward-kitchen excellent, with hot crisp chips and fish, but the long period of waiting in the ward in the trolley before service spoiled the food. The fish was sent up on a large tray on top of the trolley and arrived in the ward kitchen at 11.35 a.m. The tray was too large to go inside the trolley and two smaller containers instead of one larger one would have been better. The deputy matron arrived to do a round just after 12.0 p.m. so that the meal was not served till 12 minutes past 12.0 p.m. During this 35 minutes wait the trolley was connected and switched on in the ward, making a smell of fish during the whole period of waiting. It was observed that trolleys leave the kitchen with cooked meals from 15–35 minutes before the scheduled meal times.

181 The cooking of the midday meal and supper was completed and the meal seen to be in the trolley 1 hour before it was served in the ward (at least 70 minutes for lunch).

182 The evening meal was ready in a small heated trolley in the ward-kitchen at 7.0 p.m. A consultant arrived to do his round and the service of the meal was delayed till 7.20 p.m. He had postponed his morning round owing to other engagements.

183 The food trolley was standing in the ward for 15 minutes as the staff nurse was too busy to attend to it, both at evening and midday meals. The staff nurse served very efficiently at the evening meal, when she was ready. At the midday meal the orderly started service, the staff nurse joining in later on.

184 The service of the midday meal was held up by a consultant's round. He arrived just as the food trolley arrived. None of the male patients wanted to start their meal in his presence, so female patients were served first. Meal service otherwise was very good.

185 At supper time the trolley arrived at 6.45 p.m. It was connected and switched on in the ward-kitchen till 7.30 p.m. It was then taken into the ward for meal service.

Chronic—101–300 *beds*

186 Service of supper was held up for some time by a doctor's round and matron also appeared at the same time for her round. The

meal for the patient who the doctor was examining was kept, but when she was served the meal after the examination it was found that she did not like braised heart, so this meal was thrown away. Another meal with chicken was served but the patient was upset and could not eat it. The second plate was also thrown away.

187 The electric trolley on arrival from the kitchen was only connected to the power point after 10 minutes altercation between the porter and sister, as the wrong trolley sometimes came. The poorly cooked meals were unappetizing. Cold beef had become warmed up by the trolley, and the chips were soggy. A very large open unheated trolley was stacked up with plates of food from the heated electric trolley before meal service, and was then wheeled round to serve 4 wards. 52 patients were served in this way with soup in a cup and saucer and bread roll by one auxiliary nurse. Some patients asked for tea instead of soup, but it was not available. Three of the staff were taking temperatures and pulse rates, and giving bed baths to patients, during the service of the meal. This undermanned service in the evening contrasted with events at the midday meal, when there appeared to be extra staff from at least one other ward, with two sisters serving. On that occasion the service was poor as the staff did not appear sure of the routine in a strange ward.

On the ward block visited, one electric trolley was used for heating plates. Other ward blocks apparently had no provision for heating plates.

A blind man nearly had his supper taken away, as he could not see it, and so had not eaten it. At breakfast the sampled patient, having been sedated, was too sleepy to eat his breakfast properly at 7.0 a.m.

188 The sampled ward was visited on the consultant's day for a ward round. The matron warned us that this might delay the service of the midday meal.

Acute—over 300 *beds*

189 The service of the midday meal was delayed by the surgeon's round. The food trolley arrived from the kitchen at 12.0 p.m. and food was left in and on top of the trolley. Fortunately it was seen that the cold ham and jelly were getting warm, and they were removed before 12.25 p.m. when the service of the meal was begun as soon as the surgeon left. This meant that the nursing staff had little time to

prepare patients for their meal, and their trays could not be set up until 25 minutes after normal meal time. A consultant visiting the ward made bitter complaints about the food to members of the team, but appeared to think that little could be done to improve it.

190 The evening meal sent to the ward at 5.30 p.m. was cold at 6.0 p.m. when due for service. The ward sister insisted that it should go back to the oven and refused to serve the food until it was hot enough.

191 The catering officer had reduced the time of delivery from the completion of cooking to serving in the ward to a maximum of six minutes. As noted earlier nobody was permitted to delay the service of meals.

192 Breakfast arrived at the ward at 7.15 a.m. for service at 7.45 a.m. There were long delays between service in the kitchen and service to the patient in the ward. Supper was sent to the ward one hour before meal time and was put into the ward-kitchen oven to keep hot. There was a lot of plate waste at supper.

193 Lunch was kept for a long time in the ward in the electric hot trolley. The male charge nurse took no notice of the meal; he was sitting in his office. The service of the meal was muddled and nobody seemed to know who was on light, ordinary, or gastric diets. The service at the evening meal was similarly muddled and delayed. The trolley was in the ward at 5.30 p.m. for the meal served at 6.15 p.m. The charge nurse remained in the office during the meal service.The staff nurse who served the meal was busy at the same time with other duties—he helped a doctor to perform an aspiration, and had to go to the medicine cupboard whilst he was serving food. Most of the service was done by the female ward servant.

Mental—over 300 *beds*

194 The distances involved in distribution from the kitchen were considerable. There were no lifts and food had to be man-handled through long passage-ways and up narrow stairs. The electric trolley was left in the kitchen while food was put on a very dilapidated ordinary trolley.

Acute—1–100 *beds*

195 The patients were well looked after and the meal was well served.

196 Individual trays were sent up for afternoon tea. The sampled patient was allowed to have her own china tea cup and saucer for all meals.

197 The sister served the supper in the absence of the matron. The service was notably good. All the staff have been very well trained by the matron.

198 The ward sister said that breakfast was served at 8.0 a.m. On arrival at 7.20 the sampler found that porridge and cornflakes were being served. The nurse said that they never took any notice of the time, they served the meal whenever it was convenient.

199 The food was prepared and served as in many other small hospitals. The staff knew every patient so well that they were able to serve correct portions with very little waste.

200 Breakfast was said by matron to be at 7.30 a.m. but both patients and staff said that it was usually much earlier. The sampler arrived at 6.45 a.m. and was just in time to find breakfast being served. She had to ask for the service to be held back whilst she did her weighings. The matron came on duty at about 9.0 a.m. and was apparently unaware of the actual time of service of breakfast. The matron was responsible for catering, but was apparently not much interested in food, and did not attach much importance to it. Portions were poorly served and appeared to be small. A very ill patient was offered the ordinary meal i.e. lentil soup, shepherd's pie and ice cream.

201 Service by the matron and ward sister was of a high standard. The food was carefully dished out and spots made on the margin of a plate were carefully wiped off before service. This sort of care contrasted favourably with the treatment of food in larger hospitals of the same group.

202 Matron served the meal from the kitchen and she was obviously aware of the patients' requirements. The evening meal was served by two part-time maids, and was indifferently done but this was due to staff shortage mentioned in Note 95. Chipped enamelled iron basins were used for serving vegetables.

203 Matron was in charge of the catering. The female cook

appeared efficient with no particular training but good practical experience. She was concerned about the appearance of food on the plate and appreciated that this affects appetite. The service of the meal was very good.

204 Very ill patients required to be fed were fed by their relatives or by ward servants, not by the nurses. All the service of food was done by maids and ward servants at breakfast and supper. The ward sister and nurse took no part whatsoever in the service. Apparently the ward servants even decided which patients were fit for fluid or solid diets.

205 Two staff nurses, one assistant nurse and one auxiliary served all three wards. All including the children's ward had the full diet except for six patients (including two babies), these received minced chicken and carrots.

206 Patients' trays were made up and food was served in the ward-kitchen with good attention to the needs of particular patients. Trays were carried quickly to the patient six at a time. The sampled patient helped himself to two biscuits from the locker immediately after the midday meal, and would probably have taken a second helping of pudding if it had been offered. The ward sister asked if this patient had been chosen for any particular reason as he had an exceptionally good appetite. (The patient was recovering from a dermatitis and said that his appetite had improved following hospital treatment with Prednisone; previously his appetite had been poor following the death of his wife some months earlier.)

207 The meal was served from the centre of the ward, it was a good service, the food was well presented with attention to patients' needs.

Chronic—1–100 *beds*

208 The patients, though very old, ate their food well; it was well presented and they liked it. There was little waste. Breakfast was served at 6.45 a.m., and patients were still half asleep.

209 Like the rest of the catering in this hospital the service of food was badly done, with very bad presentation of food.

210 Service of the midday meal was seen in the dining room. Food was served from the kitchen by the cook and the kitchen maid. Ten female patients were all given similar helpings though the sampled patient had a smaller helping than the average. The food was distributed by nursing staff in the dining room from the kitchen hatch.

At high tea in the evening the kitchen maid served, with the ward sister giving occasional help (which apparently she does not normally give), with very indifferent service. The main course was baked beans, bacon and tomatoes; the meal planned originally before knowledge of the survey had apparently been baked beans on toast only. Jam tart for the second course was served on the same plate. Those patients who did not eat all of the first course had to eat jam tart on top of the main course.

211 The sister-in-charge was seen to be in close consultation with the cook and carefully counting out portions of food, slices of meat, etc. for the sampled patient. There was negligible waste from the dining room which was sampled, but a good deal was seen coming from the first floor wards which were not investigated. A concentration of nursing staff in the kitchen was noticed which did not appear to be usual or normal. Three additional ward staff appeared to have been added to the normal kitchen muster. The patient, being in a wheelchair, was fed in the dining room. The sister-in-charge served from the sideboard with the assistance of one nurse and two maids for 15 patients. This staff did not appear to be accustomed to this work and had to ask each patient her requirements for gravy, custard, etc. As many of these chronic patients had been admitted for months or years, they would surely have known these details if they were being served as usual with their normal diet. Two patients asked for potatoes only for their main course; although this appeared to be quite a usual meal for these two, who on subsequent enquiry were said to be vegetarian, or mainly vegetarian, because they said they had no teeth, the sister-in-charge was surprised at the request.

The sampled patient had been edentulous for quarter of a century, and had been in this hospital for 7 years. When the sister-in-charge was asked whether the patient possessed dentures, she did not know, and did not appear to know that the patient was edentulous, had no dentures, and therefore could not wear them. This information had to be obtained by the team questioning the patient.

212 Meal service by the ward sister at midday was satisfactory. The sampled patient sat at table in her wheel chair. In another ward patients fed themselves from pudding basins. At high tea service was poor; patients showed surprise at being offered second helpings, and service by seven nursing staff seemed to be unusual. Trays were not prepared before the meal, and rapport between patient and server was poor.

213 Catering was in charge of the matron who was interested in nutrition. She was appreciative of the finer points of catering and the proper presentation of food to patients. The service from the food trolley in the ward was with most careful attention to the patients. The trolley was disconnected during service.

214 Many patients were helpless and had to be fed. These alternative patients were therefore selected at random from a list of patients said to be on a normal full diet, and were put in order of selection to the sister-in-charge.

Patient 1 was unsuitable—helpless and unable to eat much.

Patient 2 was said to be quite suitable and was chosen.

Patient 3 when mentioned was found not to be in the hospital having recently been transferred elsewhere.

Patient 2 when work started was found to be suffering from severe anorexia, probably psychogenic, and was eating a most inadequate diet supplemented with Complan; given by the ward sister, apparently without reference to the matron or the physician.

Another younger patient was therefore taken.

Service was from a small pantry, the sister-in-charge served for all patients with the cook helping. The service was confused and the place was crowded out with staff. Patients were not asked by nurses if supper was required, it was put out as a routine. The patient first sampled (see patient 1 above) had supper provided though she had not eaten a normal diet for months. The last main meal is served at about 4.45 or 5.0 p.m., nothing else appears to be served after this by the hospital until breakfast but many of the patients can care for themselves and are able to move about and supply food of their own to fill in. Breakfast was not efficiently served, a small number of staff arrived at about 7.40 a.m. to start washing and dressing patients and they were brought to the dining room in ones and twos from 8.0 onwards. The meal service did not really start until about 8.30 a.m. when about half the patients had arrived. The hot course of the breakfast had been kept on a hot plate from 8.0 a.m. in full view of many of the patients.

215 Service of high tea was hindered by two maids working with floor polishers in the middle of the ward. Patients required to be fed were not well looked after and one patient might have missed one course altogether if it had not been noticed just in time. Service was poor compared with others in the same group.

216 An assistant nurse served from a trolley in the ward, the table

was well laid and patients were asked what they required for supper beforehand.

Mental—1–100 *beds*

217 A sister-in-charge of the hospital served food direct from the kitchen. Patients queued up to take their meals and each patient was asked what was wanted, some patients took plates for their friends. Meals were taken in the dining room at tables for four, properly laid.

Acute—101–300 *beds*

218 Seen on Sunday. One staff nurse did all the work of serving lunch with no help. No other nursing staff were in the ward until the junior nurse came from lunch to relieve her. The staff nurse then had to leave for her own lunch. This was a 12-bed ward. The staff nurse was very quick and competent; worked in a diet kitchen before starting nursing, and the service of the meals was very good. At the evening meal the sister served with one helper.

219 At the evening meal the staff nurse in charge served food from the ward-kitchen on to trays which were carried to each patient. The sampled patient liked coffee but did not like tea, she received tea on several occasions, but coffee only once. The meal service was rather hurried and perfunctory but the ward sister was away.

220 The service was very poor. A diabetic diet sent up on the food trolley was completely forgotten and overlooked. The ward servant, who was washing up, eventually took it from the trolley to serve it, but the diabetic had already taken an ordinary diet.

221 Meals were served on to trays by the staff nurse in the ward-kitchen and carried to each patient by nurses. This was well and capably done.

222 Meals were efficiently and quickly served by the ward sister and the patients were contented.

223 There was smooth, efficient service of meals by well trained staff, with good rapport between server and patient.

224 There was very good service in the ward. The charge nurse went up and down with the hot trolley serving the meal with two helpers. Trays were properly equipped and laid.

225 Breakfast was served by pupil nurses and the service was not well organized. See Note 185.

226 The meal service was chaotic. Special diets were weighed in the ward and this was done by an unsupervised student nurse, who was confused and incompetent through lack of knowledge and experience. At breakfast, porridge was left uncovered in the ward for one hour before service, on a food trolley that was not connected to a power point. The nurse overlooked the bacon and eggs sent for diabetics and all of this was sent back to the kitchen. At supper the meal arrived at 6.0 p.m. but service did not start until 6.30 p.m. Ordinary diets were served by the staff nurse and special diets by another nurse. They were not properly organized and wasted much time with ineffective movements about the ward and kitchen. It took 1½ hours to complete the service of supper. Service of lunch by the ward sister was more efficient and expeditious. Special heated plates were on trial for paying patients; this seemed to be a contrast with attention to service in the sampled ward.

227 The ward sister served the meal. She was insistent that food should be served very hot. The service was good with very good rapport.

228 Staff meals have to be sent to the nurses' hostel in unheated insulated boxes, the hostel is some 300 yards away from the kitchen. In the sampled ward the food service was very indifferent. Food was just dumped on to plates one thing on top of another very quickly, the resulting mess looked very unappetising.

229 Midday meal was well served on to bed-tables in the ward from an electric trolley, by one male nurse assisted by a student nurse. The evening meal was also well served by a staff nurse with about six student nurses.

230 The hospital was working under considerable difficulties and was understaffed owing to sickness (influenza epidemic). Both the assistant matron in charge of catering and her relief were sick. Food arriving in the unheated containers was cold on service. At the midday meal service by the ward sister was considerate to patients, at the evening meal, service by an assistant nurse was poor. Service from two trolleys was mixed up, so that some patients received sweet before soup. Feeding of helpless patients appeared to be done with undue haste and with insufficient care. Soup was emptied into a cold jug and plates were unheated. Food was kept in the unheated containers for 20 minutes before serving.

231 Very efficient, well trained nursing staff who served food with quiet efficiency. A staff nurse was acting for the absent ward sister. She had to leave the service to attend to an ill patient (there were several very ill patients in the ward). Service was carried on by other nurses without loss of efficiency.

232 Rapport between server and patients was very good. They were all asked what they wanted to eat and food was placed attractively on the plate.

233 No account was taken of particular patient's needs, all were served alike. The sampled patient's temperature had been rising since the previous evening but the staff nurse did not know on enquiry whether his appetite was good or bad. There was considerable plate waste both in the whole ward and from the sampled patient. This could have been due to excessive portions as the sampled midday meal was 784 calories of which 31% was wasted (see Note 399 about extras).

234 The midday meal was served by the ward sister from a heated trolley in the ward-kitchen. There was fair rapport between server and patient. The evening meal was served by student nurses as the sisters go to their own meal at 7.0 p.m. Service was poor and extremely muddled. Tea was being given out before soup and trays went round without condiments.

Ward servants were insolent both to staff nurse and to patients. One servant, who had been off duty sick for some time, was helping both at lunch and evening meals. She was dressed in a jumper and slacks. She demanded and got various items of food.

235 Food was properly served by the ward sister and the staff nurse. All patients were asked what they wanted before being served.

236 Breakfast was served at 6.30 a.m.

237 Eight of the patients were ambulant, but all had to eat at their bedsides without much attention to their comfort instead of being served at a table. Meals were served from an electrically heated trolley in the ward kitchen, and taken out to the ward on trays. At the evening meal all 18 diets were carried round by one staff nurse, and this took some time, so that food tended to become cold. At breakfast, tea, milk and sugar were mixed in one pot.

238 Lunch was served in the ward by the ward sister. All portions were alike without regard for the patients' wishes, though second helpings were offered. The plate waste was considerable—14%, 9% and 11% at the three meals. Service appeared to be hurried; bed tables and trays were not properly used.

Chronic—101–300 *beds*

239 Meals were well presented and well served except for delay from rounds, see Note 186. There was attention to individual patients. Milk was offered to one patient who did not want the supper.

240 There were only one staff nurse and two nursing auxiliaries for a ward containing 34 patients, but the service of meals was well done. The staff nurse served the food from the ward-kitchen, and there was good personal attention to the patients and the presentation of food. The sampled patient was served sitting up at table in the day room. The patients appeared to be very cheerful and appreciative of the things done for them.

241 Meal service was very quick and efficient, perhaps a little too quick at the midday meal as the meal was over in half an hour and old people need time. The regular ward sister was away on leave and was being relieved by someone new to the ward. Proper and considerate attention was being given to patients' wishes.

242 Food was well presented and looked appetising. The ward sister served the food as soon as it arrived with careful attention to each patient whose needs she knew. Food was attractively served on good quality crockery. There was not much plate waste or food left over.

243 Meals were served by the ward sister and staff nurse from the ward-kitchen, service seemed to be automatic without reference to patients' appeties. Equal rations were served for all.

244 Relations between nursing staff and patients were excellent; the nurse in charge of the ward having been in this one ward for 25 years. The old people were treated like a family. Arrangements were made for holidays and for them to meet their friends outside.

245 At lunch the male nurse asked patients about their teeth before serving the meal to find out who needed mince instead of chops. Many patients took their dentures from their lockers in order that they might obtain chops. The ward servant served the evening meal and none of the male nurses took any part in the service. The sampler eventually helped to serve ovaltine because the service of the meal took such a long time, but the male nurse gave no help.

246 Relations between staff and patients seemed to be very distant in this hospital, and the sampler had the impression of very strict order and discipline reminiscent of its poor-law origin.

247 Vegetables were sent up in covered stainless steel dishes ready for tables for four which were well laid. Second helpings were offered. There was very good service from nursing staff in conditions comparable to those of a good hotel.

248 Patients were half asleep at breakfast, which was served at 7.0 a.m. Tea, sugar and milk, and coffee and sugar were all mixed in the kitchen and sent to the ward ready mixed in jugs.

249 Breakfast and lunch were served after the staff meal in a central dining room. Supper was served in the dining room before the staff meal. This was formerly a private hospital and there still appeared to be a selection of better class patients, who were treated more like private patients with only very light occupation in ward duties. They do not take part in the general running of the hospital as in some other mental hospitals. Plate-waste was exceptionally high, and would probably have been less if patients had taken more part in the food service, and more say in the amounts of items of food served to them. Although 110 of the 176 patients were fed in the dining room there was no senior nurse on duty, only nursing assistants. The matron could not give the names of the patients who used the dining room, as apparently neither she nor the sisters ever supervise the patients during their meal times, in fact the time of their own main meal coincides with that of the patients.

At lunch, nurses collected food on trays from the servery in the central dining room. Patients did not help themselves in any way. Food was served by senior dining room maids and two cooks from a hot plate. All portions were similar in size and nursing staff did not ask patients about their requirements or preferences. Plate waste was large. The evening meal was served single-handed by a servant with a scoop in each hand. The patients' meal was followed by staff supper served ¾ hour later in the same room and patients had to be hurried out to allow tables to be cleared in time for washing up and the re-laying of the tables. This made a lot of noise. Bread and butter, jam and sugar, were laid on the table one hour before the service of the meal.

250 Meal service was good and the staff competent.

Acute—over 300 *beds*

251 The meals sent up from the kitchen had an attractive appearance, in particular the special diets were made to look most appetising, served in small round dishes and oranges were served surrounded by paper lace. These efforts accounted for nothing in the sampled ward, as the nursing staff appeared to be indifferent. At the evening meal service was poor with little attention to patients' requirements. Baked apples, which were sent up from the kitchen attractively presented in small dishes, were turned out on to ordinary plates.

252 The sister served the meal in the ward on to trays which were not very attractive. No second helpings were offered.

253 At the evening meal the male charge nurse was on duty.The cold meat and salad looked attractive, but it seemed strange to expect patients, particularly ambulant patients, to eat this meal with a spoon. Because of this most of the patients were using their fingers. There was a notable difference when the female staff nurse was on duty; she was assisted by one other male nurse, and the meal was more graciously served.

254 The ward sister served the midday meal quickly and without reference to patients' requirements, though the food was well presented. At the evening meal, nursing staff took part in the meal service which was done by a ward servant unaided. She carried on alone, and the staff nurse came to tell her to hurry up or she would never finish in the ward, but the staff nurse was seen later reading a patient's newspaper in another room. All the soup sent to this meal went to swill and none was served. Note this with Note 148 and 149 as a comment on the inability of a competent group catering officer to ensure good management in more than one hospital, and see Note 255.

255 The group catering officer already had a choice of menu for one ward, and aimed to extend this to all wards. In his opinion this could only be done if he had complete control of all food, from preparation to ward service, which he planned to obtain with supervisors, or hostesses. Supervisors could go to patients with a menu, ask for their choice, inform the kitchen accordingly, and finally be responsible for serving the food in the ward. He considered that much waste and dissatisfaction is due to unskilled food service by nursing staff in the wards. Nurses are not trained in catering; the service of

food requires knowledge and skill and should be directly in charge of catering staff. Hospital No. 144 (Note 254) is in the same group supervised by the same catering officer.

256 Breakfast arrived at the ward at 7.15 a.m. for service at 7.45 a.m. The meals were of good quality, but not very appetising in appearance. Service by the nurses was good though there were few of them. The staff nurse went round with the food trolley serving each patient herself, whilst two other nurses were engaged on urgent nursing duties. The first patient selected vomited at the beginning of meal service. This may have been due to emotional distress, as she was lying next to a very ill patient who was dying. The ill patient was not screened and her condition was causing distress to many other patients.

257 The service of supper and breakfast was not well organized. One nurse started and then left to attend to a patient. Another relieved her but also had to leave for other duties. Meanwhile the trolley was disconnected, and the food was going cold. A plate of food was put on one side for 10 minutes, and then had to be thrown away as it was too cold to serve. The ward sister served lunch with much greater efficiency, but too little regard was shown to patients' tastes and requirements.

258 The ward sister was by herself during supper time, and the sampler helped her to serve the food and wash up dishes afterwards. It was a very busy ward, very under-staffed, but with very efficient service of appetising food and little waste.

259 The food was served from the main kitchen which was a long way from the ward, so there was practically no rapport between server and patient. Nurses often came back to the kitchen with food from the ward saying that a patient did not want it.

Chronic—over 300 *beds*

260 The male nurse in charge served from the table in the very small ward-kitchen. No account was taken of patients' wishes, all servings were of identical portions. At the evening meal service was very disorganized. No attempt was made to find out patients' requirements beforehand; though the charge nurse served the meal, this did not appear to be his usual practice, as he did not know how to set about it—soup, pudding and bread and butter were not even offered

to patients on three wards and 450 gms. of soup and 1200 gms. (=70%) of milk pudding went to swill. Bread rolls sent up for breakfast were being kept for tea although cakes were already being sent up for tea in the morning.

261 Patients were well served and received most careful attention. They were washed and brushed up after meals and flowers were placed at the bedside.

Mental—over 300 *beds*

262 Male nurses served the meal from a large wooden table in the ward-kitchen and 12 plates were taken out to the ward at a time on a large trolley. A patient distributed the food. One male nurse went off duty during meal service. All servings were of similar size.

263 Much of the food was distributed in small containers. There were only a few electric trolleys. In the sampled ward, elderly women were served with plates of food which they themselves took to a table in the mess-room to eat. The mess-room appeared originally to have been a passage way to the ward and it was rather cramped. They all sat at one long table, which was properly laid and set.

264 Meals were served at tables for four which were well laid by the patients. The male charge nurse served the meat, and service was slapdash and rapid without reference to patients' wishes. The servings were too large for many patients, and there was considerable waste. Second helpings were offered. Fried eggs were served in the evening from the containers in which they had been cooked—20 to a pan and swimming in fat.

265 'Prefect' patients who are given extra responsibility, together with other patients, managed their own affairs to a great extent, including the service of food and the care of the ward-kitchen. Meat was carved and food dished up by the nursing staff for service at the tables by the patients. Second helpings were available. The sampled ward was an acute admission ward with a number of disturbed patients. In other wards patients were completely responsible for the service of meals and ward management. The service to properly furnished tables is run with the minimum number of trained staff, who are well trained and of high quality. The general administration appeared to be good.

266 Lunch was served by the sister with one assistant nurse in

the dining room, while bed-patients were fed by a large team of nurses and selected patients. Feeding was very well done in an unhurried attentive manner and plenty of time was allowed. Meal times were important intervals in this ward and dining room. The matron and secretary had been in this hospital for many years and all the senior staff worked as a team. The whole place was spotlessly clean and well kept. The patients were obviously friendly with the matron, who insisted that those fit for it should pull their weight and work. The women patients were smart and attractively made up, there was a hairdresser on the staff, and great emphasis was placed on good personal appearance and civilized living.

267 Meals were served in the day room at tables for four, furnished with table cloths and flower vases. Two ward sisters served lunch from the ward-kitchen and nurses took round trays. There was a small hot plate but no attempt was made to heat the plates. At the evening meal tea was sent up from the kitchen in urns, and tea pots were filled from them; the tea was very weak, and milk had already been added to it in the urns.

268 Soft diets were served by fitter patients to those on a soft diet. The soft diet was bread and butter soaked in milk at the evening meal, and biscuits soaked in porridge for breakfast. These peculiar dishes seemed to be given for ease of administration. The male nurses served the normal diet, but did not serve or administer food to the soft diet patients.

269 Patients help with the meal service, and do most of the serving and sorting out of special diets.

270 Patients mostly served the food themselves, the tables were well laid and the food well presented.

271 Tea, milk and sugar were all mixed in the same pot. There is an excellent dining hall to seat approximately 500 adjacent to the kitchen, with a very good servery with hot plates, etc. and satisfactory washing up facilities. Meals were served here in two batches. There was good modern furniture, and the hall was very well decorated with proper floor covering. Ward-kitchens were very inadequate.

272 Meals were served in three batches to the wards, with ½ hour intervals between batches. In the sampled ward disturbed patients had more help from other patients than from the staff.

FOOD QUALITY

Acute—1–100 *beds*

273 This hospital was under the same administration and the same matron as Hospital No. 47. The sister-in-charge made out the menus and orders for food. The orders were sent to the matron at Hospital No. 47 ten miles away who signed them and sent them on to the supplies officer at Group Headquarters whose office was 25 miles in the opposite direction, this hospital being situated half way between the matron and the supplies officer. The menus appeared to be much better and much more varied than those at Hospital No. 47. The sister-in-charge prepared the supper. She frequently gives male and female patients slight variations—for example, ham and mushrooms to women, and ham sandwiches to the men.

274 The cook and the matron plan menus four weeks in advance, and compile the order for the following week on Sunday afternoons. This place was run on typically domestic lines. The cook had been there for 14 years without a day's illness. The gardener put his head through the kitchen window to ask if they wanted any vegetables for lunch. Fruit and vegetables were grown in the garden. The meals were simple, but of excellent quality, and enjoyed by the patients.

275 The matron was a woman of very firm, downright opinions. She objected to the survey and showed her hostility. The group catering officer sends a menu-sheet to the hospital, but the matron does not like this, so she tells the cook each day what she wants for the hospital. Despite this autocratic administration, or perhaps because of it, this was obviously a well-run and well-kept hospital. Good quality food was sent from a domestic type of kitchen, by a cook who was on very good terms with the matron.

276 Catering is in the charge of the matron, who frequently changes or modifies menus in the evening to use up food left over from lunch. The lunch served was a very good homely meal, with good quality hot roast beef and salad, followed by an apple pie, with custard made of eggs. An appetising omelette was served at supper.

277 The matron was very interested in the food served, and had been at the hospital for six years. The cook had been there for nine years. The menu planning was imaginative, and there was a variety of meals which were well cooked, well served and appetising. Careful attention was given to the personal likes and dislikes of

patients. No attempt was made to keep to any particular nutrient scale of requirements.

278 The matron said that she used the King's Fund book of *General Hospital Diets* for reference, but could not give meals as suggested by the book, as they would put up her costs too much. For example, it gave two meals with three courses each day, with soup. The meals she could give were limited by her financial allocation. She appeared to be quite unable to grasp that any other standard than that of the cost limit could be applied to feeding, and could not accept the need for a nutritional scale. She appreciated the need for a caloric measure for patients like diabetics, but could not see how such a need applied to other patients. She did not appear to comprehend what was meant by the survey, nor what was meant by the nutritional requirement of patients, but could only appreciate that control must be financial: yet there was considerable waste, as salt beef was served, which patients did not like and left on their plates, and she had herself noticed that many geriatric cases were in poor nutritional condition, and improved on hospital feeding.

279 A cooked breakfast was never supplied on Sunday, and the main dish for supper on Sundays was chicken broth. See also Note 387.

280 The matron was responsible for catering, and had a competent pleasant cook who had been there for many years. Meals were well cooked, well served, and the patients ate well and liked their food.

281 Shepherd's pie was served at the evening meal. It was most unappetising, and obviously a re-cooked hash. It smelt most unpleasant, and one of the samplers tasted some and found it very unpalatable, with a lingering unpleasant taste. The remainder of the pie left over after service of the evening meal was intended for the night staff, but it was seen to be in the waste bin at 7 o'clock on the following day. There was a very high proportion of potatoes in the pie; no gravy or sauces were served; large lumps of vegetable were seen in the lentil soup. One patient, who appeared to be very ill, was offered this meal—shepherd's pie, ice cream and lentil soup; the patient was quite unable to eat it.

282 The food served on the day of study was very dull, but the cook was off duty, and this might not have helped.

283 The food was well presented. It looked good, and appeared to be appetising. A rice pudding was served with a meringue top.

284 This was another example of a small hospital run like a large household, with a good type of simple domestic meals. The cook had been there for over six years, and was proud of her kitchens, which were well kept, and the meals served were appetising. The matron plans the menus at least a week in advance. She does not draw them up in accordance with any nutrient standard.

285 The feeding of patients appeared to be poorly organised and badly cared for. Menus were planned by the cook, who planned the menus and ordered the food. At supper, very unappetising meat rissoles were served, with soggy potatoes.

286 The meat served up for lunch was ewe mutton, which was of poor quality and quite unpleasant. Roast meats appear to be served about four times a week, and salad twice a week. There was practically no provision for special diets. The ewe mutton was served to all patients, including all the children, except for two babies. The wards contained a good deal of major surgery, including three radical mastectomies, and one of the children was badly burned.

287 The cook in charge had been at the hospital for nine years. She assisted the matron with the menus, which are planned daily. They are not related to any particular dietary scale.

288 The food seemed to be rather better than in Hospital No. 29, which has the same administration, though it lacked imaginative planning. At the midday meal the food all looked the same colour—fish, potatoes and pudding—and was not very appetising. Food in the evening was better, and patients were asked what they wanted. The King's Fund book of *General Hospital Diets* is used as a guide more for special diets than for ordinary diets. There is no nutritional standard for ordinary menus, which are planned by the sister-in-charge.

289 The evening meal looked most unappetising. There were complaints by nurses about food, and they said that it was time somebody investigated the hospital diet. Catering is very strictly controlled. No extras such as orange squash or delicacies of that kind are allowed for patients. The staff meal served to the sampler was a small piece of fish, eight chips, a small square of apple tart, and a glass of water. There was apparently insufficient food to allow for one extra person. There was appreciable plate waste at all meals.

290 Because they were often cut off by snow in the winter in this isolated hospital, they did their own preservation of fruit for the winter. The hospital have made considerable adjustments to their feeding routine. so that patients were sufficiently hungry to eat their meals well. The morning 11 o'clock snack had been abolished: instead the patients had an early lunch, followed later by a high tea. At night they had only a light supper. This had worked well, and they had greatly reduced the plate waste by adopting this routine.

291 At breakfast, brown sugar was served with cornflakes, on the grounds apparently that it is cheaper, and also that it is said to have more food value. The patients did not appear to like it. No menus or plan of menus could be obtained: apparently they are not prepared. At the midday meal cold meat consisted only of thick layers of fat, and the ward sister who was serving had difficulty in finding a few decent pieces. At supper, a quarter of a slice of bread and butter with ham was served, followed by half a slice of bread and butter, with one cup of tea. A ration of milk pudding was offered —two tablespoonfuls—to those who asked for it. Sugar is rationed, 20 teaspoonfuls for tea for 33 persons for morning and evening. The sampler was told that cauliflower served at lunch had been intended for the staff, but was switched to the patients because of the survey. The survey took place during the matron's day off, and a staff nurse was acting for her. The staff nurse was a temporary relief from the local county hospital, who had a poor opinion of this chronic hospital. She told the food sampler that in the men's ward, which was not seen, porridge and bread and butter are served in one dish for breakfast for ease of feeding. Neither staff nor patients ever have a cooked breakfast, always cornflakes, bread and butter, and marmalade. Nursing staff posted on relief duty from the county hospital said that they had reported to the matron about the food, without effect, more than once, but there had been no action.

292 Sandwiches were being offered to some of the patients for breakfast.

293 The matron appreciated the finer points of catering and the proper presentation of food to patients. A wide choice of food is given, and she attempts to give a high protein and vitamin content to her meals. She has no set scale of requirements, but aims at three protein meals per day, giving an average portion of 3 ozs. of meat or

4 ozs. of fish, or a comparable amount of egg or cheese. On this diet she has seen that patients admitted with pressure sores recover within a fortnight, and patients remain free of pressure sores throughout their stay in hospital, except for a few who may break down with pressure sores shortly before death.

294 The sister in charge of catering told the food sampler that she planned her menu according to the calorific value of the food, but she could not say what allowance of calories per patient she made. She did not appear to know the meaning of the terms she was using. The evening meal did not look very appetising.

295 The quality of the meals was poor. They neither looked nor tasted good when tried by the sampler. There is no variation of menus from week to week, and standing orders are used, leading to a monotonous rotation of meals. (See Note 457 about special diets.) Glucose was used instead of sugar for the breakfast tea, as they were short of sugar in the ward kitchen.

296 The meals served in the ward appeared to be very good, but were perhaps not well suited to the needs of old people. At lunch, roast beef, yorkshire pudding and vegetables were served, which some of them had difficulty in eating.

297 The food was not very appetising, and the meat portions were very small indeed. Very few extras additional to the meals were provided by the hospital.

Acute—101–300 *beds*

298 A sister-housekeeper was responsible for the food. She admitted quite frankly that she had no knowledge of the nutritive value of foods; she had been trained as a housekeeping sister, but had received no instruction in nutrition. She attempted to make the food as attractive as she could, and worked according to menus which she received during her training in housekeeping, which were given to her as suitable for ordinary hospital diets.

299 The catering officer, a women, expressed interest in the survey. Her diets were not designed to any particular scale of calories or nutrients. She did not appear to feel any need for such a dietary scale, and was proud of her menus. She referred to King's Fund *General Hospital Diets* when she required information. She had been trained in domestic science and catering at a technical college.

300 Bread pudding, served as a sweet, was unappetising, overcooked, and as hard as biscuit. (See Note 430 on staff meal.) The assistant catering officer did not appear to be able to answer any question about a nutritional standard for meals. The King's Fund *General Hospital Diet* Menus are used as a guide, but the quantities were said never to yield one hundred portions, as prescribed, and adjustments had to be made.

301 Very unappetising fat belly pork sent for supper was refused by the sampled patient, and was sent back to the kitchen with a complaint by the staff. The ward sister said that there was not much point in feeding patients well in the ward, as they were admitted for so short a time and could recuperate with good feeding at home. She did not attempt to improve their appetite, because 'When they feel well enough, they will eat'. The sampled patient had a diagnosis of alcoholic malnutrition, and was receiving vitamin supplements, which were prescribed and supplied from the dispensary. She was a very sick woman, and probably had a poor appetite. Her intake on the day of study was below her estimated requirement for maintenance.

302 Brown sugar was used because it was said to be of greater nutritional value.

303 The catering officer has no definite nutritional standard for meals. She relied on her own experience to make up suitable recipes.

304 Patients did not want the tinned tomatoes supplied for breakfast, and had their own eggs instead. Lunch was not very appetising.

305 The catering officer said that he did not find the King's Fund publication *General Hospital Diets* was a good guide for cots. He had attended King's Fund courses for hospital caterers, and made sure that protein foods were well represented in each meal.

306 The assistant matron, who is in charge of catering, had taken a housekeeping and dietic course. The matron said that there was no recognised nutritional scale; she had no great opinion of the value of dietitians or catering officers, and did not want their services in her hospital.

307 Catering is managed by the deputy matron, assisted by an administrative sister. The deputy matron is about to retire. There was a static weekly menu which had lasted for months or years, and unvaried standing orders were placed by the hospital secretary for food. The standard of catering was very low, and years behind the times.

308 The midday meal was good, but the evening meal seemed to be dull and unappetising. It was not much taken by the patients.

309 Apart from the defects in serving noticed previously, the food was of good quality and looked appetising.

310 The catering officer had attended the King's Fund course for catering officers. He had occasionally worked out the caloric value of meals supplied, and mentioned the figure of 2700 calories per day. He felt that if the patients were getting adequate protein in the diet, the rest of the diet would take care of itself.

311 The supper was not well liked, and most of the braised oxtail was not eaten.

312 Soup in the evening was poor and cold. There is no scale of nutrients. The catering officer says he never knows how many he has to cook for in the canteen.

Chronic—101–300 *beds*

313 The consultant geriatrician considered that old people eat too much of the wrong type of food, both in and out of hospitals. Many admissions are obese, and the type of feeding in hospital had probably too high an energy value, with too little protein. Appreciating the need for a high protein diet, he prescribed Casilan for about every other patient, for he did not feel able to rely on the hospital food quality to provide sufficient protein. He thought that it was possible that Part 3 patients in this hospital, mostly mental defectives, who did a day's work in the grounds, received no different food from the geriatric patients, though obviously their requirements were different.

314 The matron was asked if menus were made according to any nutritional scale of requirements. She said 'We feed our patients to capacity'.

Mental—101–300 beds

315 The group catering officer at the neighbouring hospital, Hospital No. 129, was responsible for catering here, and supervised the work of the cook-in-charge. The cook-in-charge managed on an allowance made according to a strict scale of issue; he finds this tight,

but did his best. Two-thirds of the beds are amenity beds, and all are fed on the staff-scale of rations and costs, that is a unit cost of £1.5.0. a day instead of £1.1.6. This was said to be a regional ruling. The patients spoke well of the food, which appeared to be appetising.

316 The food was monotonous, dull and tasteless. The menus were the same as at Hospital No. 150 (Note 310) but the patients here did not get pudding for supper.

317 The hospital secretary was responsible for catering. He had 24 years' experience of hospital management, and had always planned the menus.

Acute—over 300 beds

318 At the evening meal apple stew and custard was offered to the patients, being taken round the ward in the ordinary way. None was taken, as the apples were dark and unappetising in appearance. The whole dish was left over and put into the swill bin.

319 The catering officer said that there was no definite dietary Scale, but the King's Fund *General Hospital Diet* Menus were used for reference. The quality of meals and their presentation was well above average, and the food was very appetising.

320 The catering officer had received his early experience in South Africa, and was well acquainted with the need for a scale of nutrients in hospitals there. He had made up four sets of weekly menus, which were planned according to a definite standard of nutrients based apparently on an old edition of *Hutchinson and Mottram*. He aimed to provide around 2000 calories for a daily diet, with appropriate amounts of protein, carbohydrate and fat. These he worked out from food tables published in this old edition. Local preferences were for potatoes, baked beans, and similar vegetable foods. The catering officer therefore enriched his potatoes by adding eggs to the mash, and appeared to add eggs to a number of foods in this way, and milk is allowed *ad lib.*

321 The ward sister, talking of orthopaedic patients, mentioned how much they eat, particularly one young boy, who would eat seven slices of bread and butter. She said that she had to stop him, as he was eating too much. A resident medical officer who heard this conversation said that it was wrong to say he was eating too much, as he probably needed it, but the ward sister said this consumption

was putting up her bread bill beyond the limits that she could afford. The hospital secretary said that previously they had an ex-hotel caterer with very high catering standards, but he put up the costs so greatly that the Committee objected. He refused to reduce standards, and left. The secretary agreed that costs are the standards which govern feeding in hospitals, not nutritional standards based on the calculated needs of patients.

322 The patients receive orange squash daily, normally with their midday meal. Several patients on the ward would have done better with a lighter and softer diet than the one that was offered. The male nurse in charge of the ward did not like ordering light diets for his patients, as he thought they were too uninteresting. This meant that many frail old patients were offered small portions of fried fish in batter, mostly batter.

323 Breakfast frequently consisted of sandwiches for the patients. The nurses, mainly male nurses, make the bacon, sausage, etc., up as they go through the ward with the trolley. The catering officer did not know this until she was asked by a team member whether it was the general practice to serve sandwiches for breakfast.

324 The quality of all meals was poor. *Spaghetti Italienne* that was served was spaghetti only, without tomatoes or cheese. (See also Note 439 on staff meals.)

325 The catering officer said that as patients are only a few days in the hospital, they do not require much ascorbic acid, but he provided fresh fruits and salad every day for the staff, as they have to live on hospital food for a long period. He did not appreciate that cooked vegetables such as potato might supply appreciable Vitamin C. On the day of survey food looked somewhat monotonous, all of one colour. The catering officer aimed nutritionally, chiefly at the provision of 'protein foods', and showed costs illustrating the high expenditure on meats, eggs, cheese and milk. He aimed at an intake of 70 grams of protein or 14 lbs. of protein food per week. He said that he knew that any complaint about food referred to 'proteins', he did not bother to make any investigation of 'calories' when he looked into complaints, but would always find 'something wrong with the proteins'. He estimated the nutrient value of his meals about three times a year by weighing, taking values from tables. The results were said to show 2500–3000 calories per day for one patient. The matron thought that the hospital tended to supply too much in the way of milk drinks to patients, and felt that it might be better to concentrate

more on the provision of good protein, by which she meant probably meat, in the main meals.

326 The catering officer was following a course in food technology at evening classes, but she did not appear to know very well what was meant by a nutritional standard or a food group. She did not think that the King's Fund book of menus were very suitable for her hospital, and could serve a much better meal by planning in accordance with her own experience. The surgeon of the sampled ward thought that it was odd that the team should choose an uninteresting ward at random rather than their Burns Unit, where nutrition was considered to be very important. (See also Note 364 on special diets.)

327 The evening meal was dull, with dry meat rissoles with very unattractive tinned tomatoes. At breakfast, sausages and spaghetti were also unappetising, and most patients did not eat them. Waste was considerable. The catering officer has good catering experience, and makes use of the Mayo Clinic diet manual as a guide for his diets.

328 The catering officer and his assistant both said that they did not make much use of frozen vegetables, but a large packet of quick-freeze spinach was seen in the kitchen. Their opinion was that spinach in the diet was only good for roughage, as they had learned in training that the oxalic acid content of spinach was so high that it rendered the vegetable nutritionally useless, except as roughage.

329 The meat at lunch looked tough and not at all appetising. Steak from the staff canteen was also very poor quality.

330 The catering officer lecturing to student nurses, said that there was no need to worry about Vitamin C: it is inevitably destroyed during cooking, and could be conveniently replaced by tablets of ascorbic acid.

Chronic—over 300 *beds*

331 Ham sandwiches and jam sandwiches with porridge were served for breakfast. This was the complete menu.

332 The matron, who was responsible for catering, was interested in the nutrition of old people. She had noted that pressure sores admitted to the hospital recover quickly with feeding and rehabilitation, but sores developing in a patient after admission were very difficult to treat. She had to be careful about over-feeding old people,

as this could be as fatal as under-feeding. She was probably talking of bulk rather than of nutritional value of food. (See Note 293 which also refers to pressure sores.)

Mental—over 300 *beds*

333 The catering officer had attended the King's Fund course for catering officers, and had also taken a postal course. He expected mental patients, particularly men who are working, to have a high energy intake of 3000–3500 calories, and women from 2000–2500 calories. Many of the women patients were old and bedridden, and he appreciated that their requirements would be low. He appreciated the need to get a good allowance of protein-rich foods into the diet. He kept himself up to date with current memoranda from the King's Fund on catering, but he is not in full agreement about the quantities or the balance of meals given in their recipes and quantities for hospital diets.

334 The medical superintendent said that at present there were different standards for menus for different wards, because he was attempting to up-grade all menus, but could only do this by stages. Some wards were up-graded to staff diets, others were not, but were left on a lower grade of diet. He hoped that geriatric wards might have a special fortified diet. A team member was given a staff meal in the evening, which she said was a very good and appetising mixed grill. She thought this must have been an expensive meal to produce. It is presumably to this high standard that the medical superintendent is anxious to up-grade all meals.

335 The menu was based on a ration scale laying down quantities of meat and vegetable per head in a four-week rota that is changed three times per year. The allowance for meat is about 3½ ozs. per head per day for uncooked boneless meat to 4½ ozs. of uncooked meat with bone. This scale is used for ordering and making up meals in the kitchen.

336 Meals sent to the patients were well flavoured, but their appearance was indifferent.

337 Catering in this large hospital is in the charge of the kitchen superintendent, who plans the menus, which show a monotonous routine.

338 There is no nutritional standard for ordinary diets, but the

catering officer tries to give them the most protein that he can afford.

339 A working party from the regional Hospital Board made a report on feeding in mental hospitals, with recommendations. Before these recommendations, the catering officer was working to a daily average of 2600 calories per person per day, calculated from tables. The catering officer complained that various recommendations and works of reference appeared to vary. He had obtained different standards from the Ministry of Health's recommendations and standard menus, the King's Fund publications, specimen menus and recipes which he had obtained from the Regional Board in which he had previously worked, and the recent recommendations from the working party in his present Regional Hospital Board. He had the impression that they were being overloaded with confusing advice from different sources.

Processed peas were extremely pale when served to the patients, but the same peas were a bright and chemical green when served to the staff, to the surprise of the hospital secretary, who exclaimed, 'Good God, have they been dyed?'

340 Fresh fruit is supplied to the patients twice a week, oranges on Tuesday, bananas on Friday.

CHOICE OF MENUS

Acute—1–100 *beds*

341 Steamed fish is always served on Friday, and chicken is always served on Sunday, but otherwise the menu is not static.

342 Both patients and staff were given fish for supper, and at lunch the following day. There was only one household refrigerator for storage.

343 The ward sister goes round every morning with a list of the food they can offer during the day, and patients choose what they want for each meal. The matron is very satisfied with the small amount of waste and costs at this hospital. The menu sent by the group catering officer weekly is not used, the matron plans her own menu.

344 Soup and milk pudding were offered to those on ordinary diets who did not want ham and beans. This alternative was apparently provided by an excess of special diet food.

345 A choice of menu items was offered to both patients and staff.

346 The patient refused milk pudding at the evening meal, as did four or five other patients. It did not look appetising. The patient also refused the scrambled egg served at breakfast. There were no alternatives to offer.

347 At the three-course evening meal patients were given a choice of pudding or biscuits to be taken with an evening drink. This was apparently popular. Soup was served at both the morning and the evening meals.

Chronic—1–100 *beds*

348 The issue of food appeared to have been well controlled by the head cook, and quantities to the wards had been cut down. The supper meal was ordered separately on the diet sheet, and there was a choice of dishes, for light or full diets. The ward sisters varied their numbers of light and full diets daily, to cater for patients' likes and dislikes. The head cook liked to vary the menus as much as possible.

349 The patient provided a duck egg of her own to provide an egg sandwich for her tea. A milk pudding that was served looked nasty and sticky, and the sampled patient did not eat it, preferring her own bread and butter and a banana, which had been sent to her from her home. At breakfast the porridge was burnt, and the scrambled eggs did not appear to be fresh. The ward sister thought that they were off, but they were served and were eaten. The food generally was appalling. Sandwiches at tea were so dry that the corners were curled up and pointing to the ceiling.

Acute—101–300 *beds*

350 There was a considerable range of choice of foods. A standard form was used by the wards, which not only gave the numbers of full and special diets but allowed for a choice of sweets, which was always available.

351 The catering officer already had a choice of menu for one ward, and aimed to extend this to all wards. This is referred to more fully in Note 255.

352 Excessive quantities of food were sent to the ward, and

patients were offered a choice of all that came. They tended to choose fish and mince, intended for gastric diets. One alternative dish, rabbit pie, was not recognised as a first course, but was thought by the nurse serving to be a sweet pie. All this was wasted and none of the pie was served.

SPECIAL DIETS

Acute—1–100 *beds*

353 There was practically no provision for special diets. The ewe mutton was served to all patients, including children and very ill patients.

354 For light diets porridge was given for breakfast, and rice pudding at lunch. No provision was made for them in the evening, so the hotpot provided for the full diet was mashed up, but it was not acceptable to the patients. It was therefore decided to offer Ovaltine with Complan to patients on light diets later.

354 Patients on light diets seldom have supper. A few patients had tea and bread and butter. The sampled patient was seen by a non-medical member of the team (who was well acquainted with the condition) to have what appeared to be a mild cheilosis and angular stomatitis. He had been on a low-residue diet on admission, preparatory to a barium meal, X-ray and sigmoidoscopy, but he had been put on an ordinary diet the day before the study. He drank a lot of barley water, which he said was in place of the beer he would have had at home. Seen one week later by the medical officer of the team, he showed no lip-signs.

Acute—101–300 *beds*

356 The first patient chosen at random was not followed through, because she was dying from a late carcinoma, and so was eating very little; it was feared that she might be disturbed by the survey. She was entered in the ward records as being on a full diet, as were a number of other very ill patients, and it was from the list of full diets that the random selection was made. Some waste of food might have been avoided by more careful assignment of light and special diets.

357 A considerable number of special diets were made up in a bay in the general kitchen. There was no dietitian, and they were prepared by the catering officer.

358 A dietitian had been recently appointed, who was to advise the group on therapeutic diets, and give advice in clinics. There had been another dietitian in the past. There were a considerable number of special diets, and they were carefully given out by the nursing staff. As the menus for patients on full diets were the same as those used for the nursing staff and other active people, it appeared that some patients might have been better served by a lighter alternative. One patient created confusion by asking for a helping of pudding from the light diet. Eventually she got it.

359 The catering officer was asked if she could supply a low-protein diet for sample. She agreed to do this, read it up in a text book, which she passed to two girls who were in charge of the diet kitchen.

360 In the ward kitchen details of the line ration for diabetics were displayed on the wall. The ration classifies foods as carbohydrate or protein foods, and these labels possibly become synonymous with protein and carbohydrate in the minds of a number of people. The ward sister said 'Diabetics, as you know, require a lot of protein, and this is very expensive'. In fact, the proportion of protein allowed for a line diet is very little different to that found in ordinary hospital meals. A similar confusion was shown by the catering officers at Hospital No. 78, Note 325 and Hospital No. 150, Note 310.

361 A meal for a low-fat diet was sampled, and found to contain 337 calories, with 3·4 grams of fat, and 18·9 grams of protein, that is 9·1 % of fat calories and 22·4 % protein calories.

362 No special diets were served, but much use was made of mince and mashed, which was a daily stand-by for soft diets. Orange squash was given to one very ill patient, but no other food or beverage was offered.

363 The male nurse in charge of the ward appeared to have little idea of the requirements for different special diets. A patient on a fat-free or low-fat diet had seven slices of bread and butter for tea. A diabetic patient was given tinned fruit in heavy syrup.

364 The catering officer was asked if she could provide samples of the high-protein meals for the high-protein diets served in the Burns Unit. She said quite frankly that she was not a dietitian, and

therefore did not feel really competent to make one up. What they did was to give extra portions of the dishes on the menu that would have more protein, such as meat. She did give the team duplicates of meals served to patients on high-protein diets in this Unit, but it was not possible for the team to sample in the usual way and measure precisely what was eaten by the patient. In fact, the meals provided contained very large portions with very high caloric value, but were not greatly different in their proportion of protein to the sample patient's meals. The amount of food in these duplicate sample meals was so large that it seemed doubtful that a patient would be able to eat it all. The team was given a recipe for a high protein fluid diet for nasal drip used in the burns Unit, and this was calculated to provide 3000 Calories and 268 grams of protein per day, that is 35 protein Calories per cent or 11·7 Net Dietary protein Calories per cent, equivalent to 36 grams of Net Dietary protein per day.

365 The catering officer said that minced lamb or mutton, minced rabbit and minced chicken were used in special diets, but of course never minced beef. The reason for this exception is obscure.

366 Previous Notes 63 and 150 refer also to special diets.

367 Four bananas were sent for diabetics, and one of these was offered to a patient on a reducing diet. Chicken for special diets sent up for the midday meal was not touched, but meat from the full diet was used instead for the patients on special diets. It was said that the chicken was always made up into sandwiches for the special diet patients.

368 The sampled patient was said to be on a 'high-protein' diet in order to increase the weight, which was only 7 stone. The patient was somewhat over-active.

HOME GROWN FOOD

Acute—1–100 *beds*

369 There was a well-kept vegetable garden. Reference is made to this in Note 274.

370 Four hospitals received vegetables from the group garden—a vegetable garden run for the whole group.

371 Most of the fruit and vegetables were provided by the hospital garden. This meant that there was only a limited selection.

Home made jam was made from the garden fruit and used in the hospital.

372 Most of the vegetables were supplied by the hospital's own garden, which was very well cared for.

Chronic—1–100 *beds*

373 The hospital has a good garden with well laid out grounds, containing fruit trees and flowers. Fruit and vegetables were supplied to the hospital from the garden in summer and autumn.

Acute—101–300 *beds*

374 Fresh fruit and vegetables were supplied by farms which belong to the hospital.

Chronic—101–300 *beds*

375 Some wards in this hospital were for mental defectives. The hospital ran a piggery, and pigs were kept both for slaughter for hospital needs and for sale.

Mental—101–300 *beds*

376 Some use was made of produce from the hospital farm.

377 Home grown food was obtained from the farm and garden. Sheep, cows, pigs and chicken were bought cheaply, fattened up on the hospital farm, and slaughtered on the catering officer's orders as required. The farm and garden were under hospital management, the patients taking part in their running.

378 Half the meat at the hospital was supplied by stock reared on their own farm. Approximately 140 pigs were fed on swill from the hospital, and this supplied all the pork that was needed, and some pigs are sold. The farm also supplied half the milk and half the eggs required by the hospital, and nearly all fruit and vegetables. A number of patients worked on the farm. There was a large butchery department, with two butchers and assistants. All sausages, brawn, potted meat, etc., were made at the hospital.

379 Home grown food, fruit and vegetables were obtained from the hospital farm, and pigs were fed for slaughter at the hospital butchery.

380 Seven hundredweight of swill was used daily for 300 pigs on the hospital farm. The catering officer believed that costs of farm produce were higher than the cost of meat from outside butchers. He had to purchase meat from the farm by weight for whole carcase, including bones, etc.

381 The hospital was no longer allowed to keep its own pigs for slaughter, as according to the catering officer 'There was a tendency in some hospitals for the pigs to receive more attention than the patients'. In this area they could not contract for meat wholesale, but must deal with retail butchers. This, according to the catering officer, added to the expense of catering.

USE OF QUICK-FROZEN OR PRE-COOKED FOODS

There was practically no use of pre-cooked deep-frozen foods, but some hospitals have contracts for the supply of deep-frozen vegetables, and several catering officers were interested in the possibilities of using quick-frozen products, but with one or two exceptions few had any great facilities for storage of deep-frozen food of this kind. The following selection of notes gives an indication of the importance placed on this source of supply.

Acute—101–300 *beds*

382 There was a group contract for the provision of deep-frozen vegetables, and these were stored in an ice-cream refrigerator, supplied by the ice-cream manufacturer. The catering officer was particularly interested in the increased use of frozen vegetables and frozen food of this kind, because of labour problems (but see Note 36 about the refrigerator storage in the hospital).

Acute—over 300 *beds*

383 Quick-frozen foods were said to be most acceptable, and a deep-freeze refrigerator had recently been bought for £28. The

group catering officer commented that this was the thin edge of the wedge for further expansion.

384 The hospital is equipped with extensive deep-freeze storage. It is in an agricultural district, with numerous fruit and vegetable processing firms who have quick-freeze plants. The catering officer can obtain quick-frozen produce from local factories, many of which are run by well-known large firms, during the season. This can be stored in the hospital's own refrigerators for use at any time during the year. In addition to these supplies, he has local arrangements with market gardeners to supply fresh produce of their own growing or from sub-contractors. He said that this was expensive, but he considered it worth the money in resulting food quality. No vegetables were bought from middlemen in the market. All were purchased in this way from the primary producers, either big concerns or local market gardeners.

EXTRAS

Food supplied either by the patient or the hospital in addition to the three main meals.

Acute—1–100 beds

385 Ice cream was bought by the nursing staff from a shop opposite the hospital at the sampled patient's expense three or four times weekly. Sometimes it was bought at tea and supper time. The patient frequently consumed a shilling block. She did not have ice cream on the day of the sample. Apparently she was the only patient who did this. She did not share it with other patients.

386 The matron said that patients were not allowed to bring their own eggs, but at 7 a.m. the sampler saw eggs being collected from patients by the night nurse, who was going round the wards. This led to difficulty when the sampler asked for a hospital egg to match for her sample.

387 A supply of bacon was issued to the wards weekly and this was served daily for breakfast until it ran out. The bacon was supplemented by eggs provided by the patients. Occasionally hospital eggs were provided in the morning if the bacon had run out before Sunday, when a new supply of bacon would arrive. A cooked breakfast was

never supplied on Sunday, and the main dish for supper on Sundays was chicken broth.

388 The nursing staff complain that the issue of sugar to the wards was inadequate, and they either had to ask patients to supply their own sugar, or else used additional glucose ordered from the dispensary. Soft drinks were never supplied by the hospital, the patients had to provide their own; the nursing staff kept any that was left over by patients when they were discharged, to help out those who received none from visitors.

389 In most hospitals in the whole of this area patients appeared to like a large meal for tea—a high tea rather than a supper meal. The supper provided later in the hospitals is not liked so well, and in this hospital the patients were asked if they would like supper, and a precise number of suppers is ordered according to their request. Those not taking supper had a milk drink and bread and butter, but because only an afternoon tea was provided, many of the patients ate a lot of their own extras for tea.

390 See note 206 which refers to extras.

Chronic—1–100 *beds*

391 A ration of fruit was distributed twice a week to the patients. This week they had one pear and one banana.

392 A bowl of fresh fruit was on each patient's table. Some of the fruit was supplied by the hospital, and some by visitors. On the week of survey, the hospital had supplied bananas, oranges and pears. This contrasted with conditions seen in some other hospitals.

393 Orange juice was made up in the dispensary for the use of staff and patients. It is diluted 3 :1 for use.

394 Many patients in this hospital were fairly well off, and they had lots of visitors, with the provision of many home comforts. A lot of them had their own personal stocks of butter and other food items, which they used as described in Note 214.

395 The sampled patient refused the shepherd's pie which was offered him at the evening meal, and took his own cheese sandwiches with two onions, which had been brought in by his friends. Food appeared to be in rather short supply, and hardly anything was put on to the last three plates at the midday meal. There appeared to be no question of asking for more from the kitchen. There was considerable plate waste.

Mental—1–100 *beds*

396 Carafes of orange squash were placed on the tables in the dining room. These were not an official issue, but were saved up by the sister-in-charge from an issue that was made for invalids. She served what is saved up on Sundays.

Acute—101–300 *beds*

397 All patients had a carafe of orange or lemon squash at their bedsides, and this was provided by the hospital. A few had *Lucozade*, which they had provided themselves. Two or three of the patients who were poor feeders had their milk drinks fortified by *Complan*. The sampled patient, who was a somewhat disagreeable person, had practically no personal extras provided by himself or his friends, as he had no visitors and was not friendly with other patients. Up till about six weeks previously, it appeared that he had been receiving substantial amounts of food which were brought in for him by a cleaner.

398 Some of the patients' lockers had jugs of milk placed on them, and 48 pints are consumed by the wards daily.

399 Only early morning and afternoon tea were provided by the hospital in addition to the three main meals. No other drinks or extras of any kind were offered to the patients by the hospital. The sampled patient, a young man, had a rising temperature fourteen days after a compound fracture of the tibia. From his own personal provisions he provided 1376 calories in sweets, biscuits, and *Lucozade*. His dietary requirements were obviously very high, and this high consumption of sweet foods should be compared with the provision of a large portion of 784 calories at the main meal, of which he could only eat two-thirds (see Note 233).

Chronic—101–300 *beds*

400 The matron did not agree that patients tended to receive a decreasing amount of personal extras following the early days of admission. Old people were like children with regard to the stuffing of sweets and cakes, and relatives brought many extras. A patient on a strict reducing diet, or a diabetic diet, would often join in a box of

chocolates, etc., with other patients. Patients made very considerable use of the travelling shop service. The general impression both here and at Hospital No. 114 (Note 313) which is in the same group, is that old patients tend to eat too much.

401 See Note 349 which refers to extras.

402 Oranges, bananas and sweets were distributed to every patient once a week, and more frequently to those who had no visitors. Money from their Old Age Pensions is used for this. The pension was collected, a charge for their keep deducted, and the remainder credited to the patient's account for use on these items.

403 For the morning snack at 10.30 a.m., coffee and biscuits were supplied apparently by a patient in a side ward who was in an amenity bed. There appeared to be some irregularity, as the catering officer was able to find that coffee and biscuits were already being supplied as a normal ward-issue.

Acute—over 300 *beds*

404 The patients had their own tea-club, but it appeared that the staff found the tea-club supplies convenient for providing tea and sugar for the whole ward.

405 Eggs were brought in by patients and their friends, but were never given with the main meals, as 'this would tend to cause the main meals to be left over'. The catering officer had noticed this happen. The catering officer considered that it was a very good idea for patients to receive eggs from their friends, and they could be given boiled for tea, or some snack of this kind, but not with the main meals. The matron thought that the hospital tended to supply too much in the way of milk drinks as extras, and sometimes felt it would be better to concentrate on the provision of 'good protein' in the main meals. By 'good protein' she apparently meant meat.

Mental—over 300 *beds*

406 During the morning, an extra snack of tea and toast was provided for patients who are working on full physical activity. The sampled patient was working in the ward kitchen and dining room, and several patients were working in the ward.

STAFF MEALS

Acute—1–100 *beds*

407 The staff had the same meals as the patients. The meals were cooked in the same pots as the patients' meals, at the same time. The staff meal is served at 1 p.m., one hour after the patients' meal has been served. All the staff feed together, including the matron.

408 Patients and staff ate exactly the same food, cooked in the same pots.

409 Staff lunch, exactly the same as for the patients, was served thirty minutes after the patients' meal. Both were cooked at the same time. The sampler who ate the lunch said that it was above average for hospitals, and as the patients were served earlier the patients' meal would have been better still.

410 Roughly two-thirds of the crockery used for the patients was in good condition, but one-third of it was chipped very badly. The staff's china was very much worse, and there was great difficulty in producing two extra cups for the samplers.

411 Nursing staff complained about their own food. The team sampler had breakfast with them and they expressed surprise that a dish of tomatoes, bacon and fried bread was served, as they usually have less than this.

412 Staff meals are the same as those given to the patients. Those eaten by the sampler were well cooked and well served.

413 Patients and staff share the same meals, which are cooked together.

414 Staff meals and patients' meals are all cooked at the same time, but stewed steak for the staff was cooked in a separate pan. Half the nursing staff fed at the same time as the patients, at 12.30. A second meal for the rest of the nursing staff was served at 1.15. The cook prepared the evening meal in readiness for the night staff to finish, but did not actually cook it. Inadequate portions were served to the staff in the dining room.

415 Meals for staff and patients were cooked at the same time, the staff meal following the patients' meal. Unserved food left-over from the patients' meal was served to the staff meal from the kitchen. Extra fruit was given to the staff, but whereas patients were served three courses at the midday meal, the staff were only given two.

416 The nursing staff had the same meal as was served to the

patients. All grades of staff, including the matron, took the meal together, served at tables for four. It was quite a good meal.

417 Staff meals and patients' meals were cooked together in the same pots. Unserved food left over from the patients is sent to the staff meal.

418 The staff had the same meals as patients. The night staff cooked their own meals. They were not re-heated dishes. They had time to cook them properly.

419 The staff lunch was the same as that given to the patients, but mince was given as an alternative to the main dish. It was quite a good meal.

420 Usable left-overs are taken over for the staff meals. The matron discussed difficulties of accounting for meals, and difficulties with the rules about outside staff. A part-time nurse working four days per week or less is entitled to food in the hospital. If she works more than four days, she becomes full-time, and the cost of meals must be deducted from pay. This leads to resentment and to a more or less open disregard of regulations, as staff handling food tend to expect to be fed. This can lead to over-estimation of food requirements, so that sufficient food is available for ward supply to provide something for the staff. Regulations of this sort seem to bear little relation to real life in the kitchens and wards.

421 Nursing staff complained about the quality of food served in their dining room.

Chronic—1–100 *beds*

422 The nursing staff, like the patients, never have a cooked breakfast, always cornflakes, bread and butter and marmalade.

423 The food served to the staff, which was the same as that served to the patients and cooked at the same time, was very dull and unappetising.

424 Staff meals are the same as patients' meals, but they are not given the same menus on the same day.

Mental—1–100 *beds*

425 Staff had exactly the same midday meal as the patients, but because it was a Sunday there was no pudding or sweet at the midday meal.

Acute—101–300 *beds*

426 The evening meal to the patients was well prepared, but the staff meal, which was a separate menu, was poor. The staff dining room was dirty and untidy, and the meal service to the staff was bad. The waitresses were not well trained, and did not get on well with the nursing staff.

427 The midday meal provided for medical staff was very good. Private patients and all staff had separate menus. There was a separate cook for the night staff.

428 The staff at their meal were served with the same fat pork that was refused by the sampled patient, and which the nursing staff had sent back to the kitchen from the ward. They refused to eat this pork, and complained. The food sampler took a sausage for breakfast, which tasted bad. She suffered afterwards from dyspepsia, apparently due to mild food poisoning.

429 Arrangements were made for night staff to have breakfast in bed when they wish to do so when on night duty, or if they start duty at 10 or 11 o'clock in the morning. Nursing staff were weighed every three months.

430 The food sampler took a staff meal, which was horrible. Very dry Cornish pasties, very hard small white beans, and a sticky, gluey sago pudding. The sampler was unable to eat this meal, and was sorry for the nursing staff.

431 The staff meal was palatable but uninteresting

432 There was a newspaper report that staff had refused meals in this hospital not long ago, before the appointment of the present catering officer. There was an enquiry about the bad quality of nurses' meals.

433 Staff meals were sent to the nurses' hostel in insulated boxes, which were not heated. The nurses' hostel is some 300 yards away. The meals were cooked in the same kitchen that has been described in notes 30 and 83.

434 Selective menus allowing for a choice of dishes for all grades of staff had been in operation for two or three months. This arrangement had proved to be very popular with the staff. Meals served were very good and very appetising.

435 Good staff meals were well served in a very well run dining room. They were appetising, except as usual for the cabbage, and were better than the meals served to the patients.

Chronic—101–300 *beds*

436 Staff meals were good, and very much better than the indifferent meals described in Note 187 which were served to the patients.

Mental—101–300 *beds*

437 See Note 249 which refers to staff meals.

Acute—over 300 *beds*

438 The meals for resident staff were different and had a different menu to those for patients. There were separate canteen meals for non-residents. All these were cooked in the same kitchen, under the supervision of the catering officer. Night nursing staff had meals in batches, and the batches were separately cooked and served. The menu for these meals was the same as that used in the preceding day, but all the food was freshly cooked and was made up according to requisitions for batches received from the wards. When first appointed the catering officer had found that left-overs of yesterday's dinners were being served, but he had stopped this, and all night meals were now properly ordered and cooked.

439 The standards for all meals were very low indeed. Nurses and others on the staff fed in a staff canteen about ten minutes' walk away from the sample ward. The food served in this staff canteen, which was a very poor one, was worse than the food served to the patients, which in itself was bad enough. Meat was tough and cold, and soup and the main dish and sweet were all served at the same time. By the time the soup was finished, the rest of the meal was cold. The poor service in this staff canteen may account for some of the practices in this hospital referred to in Note 476.

440 The catering officer said that as patients were only a few days in hospital, they did not require much ascorbic acid, but he provides fresh fruits and salad every day to the staff, as they have to live on hospital food for long periods. As noted earlier, he intends to arrange for food service to be under his own control, and done by his own supervisors, so relieving nursing staff of this duty. He

hoped that if food service were taken over by his own staff, then nursing staff could be sent to the dining room in small batches of about six for their own meal, and they would have more time to have their own meals at more leisure. He considered that this question of time for staff meals was important, particularly with the increasing pressure of duties.

441 Steak served in the staff canteen was of very poor quality, as was the meat served in the patients' meal. Resident nursing staff are fed by the deputy matron. The catering officer ran a separate canteen for other staff from an entirely separate kitchen and store. He was solely responsible, and it was not financed by the hospital committee. The staff kitchen for resident nursing staff had been separated from the main hospital kitchen, and its costs were separately accounted for. Since this had been done, it had been found that the resident staff meals cost less than the patients' meals, and this was not the finding that was expected. It is a finding that suggests that a deputy matron catering for a nurses' hostel is able to manage her catering more efficiently than can be managed in a vast hospital of the kind described in previous notes, with all the difficulties of distribution. This is a finding that would certainly be expected from the results of this survey. The hospital secretary remarked that young nurses in training would eat anything, would eat quantity rather than quality. More senior nurses, sisters, and the like, were much more selective and less omnivorous.

Chronic—over 300 *beds*

442 West Indian nurses were allowed to cook their own food and were provided with rice and the sort of foods which they want. Non-resident nurses could either bring their own food, or purchase meal tickets. This seemed to be an unusual facility. All the staff ate their meals together—sisters, cleaners, orderlies, etc.—at the same tables. There were not distinctions of class or rank. The same freedom of relations was observed in the wards, and ward sisters would take part in any ward duties, however humble, such as cleaning or washing up. This lack of rigid formality appeared to make for a pleasant atmosphere in the hospital, without loss of efficiency.

443 Good meals were served in a well run staff restaurant.

444 Reference to staff meals is made in Note 334

445 A very good restaurant was used by all staff.

446 Non-residents did not officially take meals in the hospital, but one nurse fed on the wards.

447 The staff meals, prepared from different menus to those for patients, were excellent.

448 The large kitchen was divided into two sections, one for patients and one for staff, with a kitchen superintendent in charge of each. The staff kitchen also catered for the special diets, for which the kitchen superintendent prepared diet sheets. He had attended the King's Fund course for head cooks. The staff meal sampled was very good indeed, but the type of food served to the staff was of a very different standard to that given to the patients.

449 Staff meals are referred to in Note 339.

WASTE

Acute—1–100 beds

450 No unserved food was thrown away, because all meals for both patients and staff were served from the kitchen from the same containers. The matron frequently changed or modified menus in the evening, so that any food left over at midday could be used up.

451 No unserved food was wasted. All food left over from the midday meal was offered as an alternative to the supper dish, or was used as an ingredient to make up a supper dish. Mince served for the main meal in the morning was made into shepherd's pie for the evening, and the remains of the milk pudding were also served for supper.

452 The unserved remainder of the most unappetising cottage pie (see Note 281) was kept for the use of the night staff, but they did not eat it, and it was seen to be in the waste bin at 7 a.m. on the following day.

453 The matron said that all left-overs were thrown to the birds, as there was too little to interest a swill contractor. The staff knew all their patients, and they were therefore able to judge the portions with great accuracy.

454 Food not served and left over at the patients' meal was sent for the staff meal.

455 Left-over food was normally returned to the kitchen, to be used again in another meal.

456 Usable left-overs were taken over for staff meals. (See Note 420 about possible over-estimates for food.)

457 See Note 289 on the strict control of quantities for catering. All food left over went back to the kitchen to be used again. At the meal sampled, very little was left over, but there was appreciable plate waste at all meals.

Chronic—1–100 *beds*

458 At breakfast the food sampler was waiting to weigh unused food left over in the ward kitchen, but found that outside staff were eating it themselves. Food left over was normally returned to the kitchen, but the casual way in which the food for the ward was ordered, referred to in Notes 215 and 295, with excessive amounts of food left over, left some doubt as to its ultimate fate.

Acute—101–300 *beds*

459 The assistant matron, who was in charge of catering, was a fairly new appointment, and had introduced a daily requirement sheet to be rendered to the kitchen by each ward. She personally checked swill bins daily to see if waste was excessive. Despite this allocation system, there appeared to be considerable waste on the day of survey. The food was of poor quality. For example, a poached egg at supper looked brown and unpleasant, and nurses frequently returned to the ward kitchen with full untouched plates of food which patients did not want. Too much meat was sent to the ward. Soup was apparently forgotten, as none was served. Boiled fish sent for special diets was all wasted, and the patients preferred and took minced meat instead. Five portions of bakewell tart left over were eaten by the staff, but in the middle of meal service extra carrots had to be asked for from the kitchen.

460 Four boiled eggs out of a total of 18 supplied for 15 patients were left over and eaten by the staff.

461 At all three meals sampled, food left over on the trolley was returned to the kitchen. It seemed doubtful if this was the usual practice, as the staff nurse stopped a maid who was about to empty the food container into the swill bin and told her to return the food to the kitchen.

462 An orderly ate the remains of the bread pudding.

463 Unused food left over was put into the swill bin in the ward, and of some items this formed an appreciable amount: one-fifth of the bacon, one-fifth of the joint, and four-fifths of an egg custard.

464 Brown sugar was used, and was said by the nursing staff to be of greater nutritional value. Sweets left over from the midday meal special diets were served at the evening meal. Gravy left over from the midday meal was added to the soup before serving at the evening meal. This addition was made by staff in the ward kitchen, unknown to the catering staff.

465 Some items of food, for example lettuce and tomatoes at the evening meal, bacon, eggs and tomatoes at breakfast, had been saved from previous meals in the ward kitchen, and were served. They were not on the menu. They had been kept in the ward kitchen refrigerator. Washing up was not done in the ward kitchen, and left-overs on the trolley were returned to the main kitchen for disposal.

466 At the midday meal the staff nurse commented that more food was left over than usual. There had been four discharges of patients during the morning. There was a rule that left-overs should be emptied and containers washed up before returning them to the main kitchen, but on this occasion the left-overs were sent back to the main-kitchen, but they had been treated in such a way that they could not have been re-used.

467 The food trolley containers were washed up in the ward kitchen, and food left over disposed of to swill before washing up. The trolley was then returned to the main kitchen.

Chronic—101–300 *beds*

468 Waste at the evening meal was supposed to be returned to the kitchen. It was seen on the ward kitchen table at 9.30 a.m. the following day, and was then put into pig-swill.

469 Most of the staff lived out and therefore were not issued with meals on duty. At all three of the meals sampled, as soon as the meals

had been served in the ward the staff helped themselves from the food left over on the trolley. They took no notice of the sampler, who required to weigh left-over food, except to offer her some. They thought of one member of the staff who was due to arrive half an hour later after breakfast, and put a plateful of food aside in the oven for her. All this was done in the presence of the ward sister, and was apparently accepted procedure.

470 Cheese put into the ward refrigerator at tea time was seen in the pig swill the following morning.

471 Most of the food was wasted in the evening, it was very dry and looked dull.

Mental—101–300 *beds*

472 Food in excess of requirements left over on the ward had to be disposed of in the ward. The cook did not allow left over food to be returned to the kitchen. The cook said that he allowed for second helpings in his issues of food to the ward, it seemed likely therefore that a good deal of food would be left over and wasted in the ward, in fact on the day of survey these regulations appeared to have been broken, for breakfast porridge and bacon which were in excess of requirements, and left over, were sent back to the kitchen from the sampled ward.

473 The sampled patient refused to eat the eggs at breakfast, he objected to eggs because of some delusion.

474 See Note 249 which refers to waste at this hospital.

Acute—over 300 *beds*

475 References to waste are made in the Notes 148 and 254.

At breakfast no patients were asked if they wanted bacon and tomatoes and all of this dish was about to be put to swill when one patient asked if there was anything else for breakfast, she was then given bacon and tomatoes and then another two patients asked for it and they were also served. Five hundred gms. of a total 600 gms. of bacon and 1350 gms. of a total of 1450 gms. of tomatoes were left over and went to swill. At lunch patients were never asked whether they liked fish and chips, the dish inevitably served on Friday; many

did not and there was a lot of plate waste, also 1000 gms. of a total of 1700 gms. of fish, 990 gms. of 1150 gms. of chips and 1100 gms. of 1300 gms. of milk pudding were left over and went to swill, this is referred to in Note 148.

476 After the ward meal, the nursing staff and ward servant ate not only from left over dishes on the food trolley but from plates of food that had actually been served to patients but which some of them had refused and had not touched. This behaviour may have been related to the bad quality of the meals served in the staff canteen referred to in Note 429. The newly appointed catering officer had only just arrived in this hospital a few days before.

477 All food left over in the ward had to be returned to the kitchen and if the amounts returned were excessive the catering officer enquired into it. A close watch was kept on the amount of swill.

478 All washing up was done in the ward kitchen which was equipped with a dish washing machine and the catering officer did not permit any food to be returned to the kitchen; orderlies had strict orders about this. This meant that all left over food was put down the sink disposal unit which was fitted. The amounts wasted were excessive due to faulty estimation (see Note 352.)

479 Far too much food was sent to the ward. Numbers were sent to the kitchen for ordinary and special diets but it appeared that ordering might be excessive. At lunch 500 gms. of minced meat were sent for special diets but only 2 tablespoonsful were used, a plate of salad, tomatoes and lettuce was not touched and only half of the ham was used. The catering officer appeared to have no control of the food after it left the kitchen and the food left over was disposed of in the ward, mostly to swill, but there seemed to be some doubt about the ultimate destination of some of it.

480 At the midday meal five sets of special diets were sent to the sampled ward which apparently had never been ordered by the sister. All this food was sent back to the kitchen after the meal.

Mental—over 300 *beds*

481 There was a rule that food left over, if excessive, should be returned to the main kitchen but on the day of sample a considerable amount of food sent in excess was put into swill in the ward.

482 The medical superintendent was sceptical of the possibilities

of improvement in the quality of kitchen staff in an industrial area with full employment. On a recent inspection he had noticed a considerable amount of food in swill bins; this was sausage meat and he had been told by the catering staff that sausage meat was being ordered in bulk and was being cooked instead of sausages, as without the skins the sausage meat was cheaper and the food practically the same: but the stuff had been cooked in bulk so that it was practically raw and was quite uneatable. He had reported this incident to his committee as an example of false economy, but the only result had been that the committee repeatedly referred to this report as an example of waste which was the cause of the high catering costs which should be reduced, his point about inefficient bad cooking was forgotten, and he was under continual pressure from the committee to reduce costs.

483 7 cwt. of swill is used daily for 300 pigs on a hospital farm.

Appendix 1

Analytical Methods

Collection and Transport

(*a*) *Meals*

The meals were collected into labelled plastic boxes ($7'' \times 4\frac{1}{2}'' \times 1\frac{1}{2}''$) which were transferred to insulated containers, together with dry ice. Plate wastes were also collected when these were in excess of 10% of the original wet weight. The containers were transported by road or rail to the laboratory, where the still frozen meals were transferred to a deep freeze locker (—20°C.) and were stored until ready for analysis.

(*b*) *Vegetables for Ascorbic Acid Analysis*

Known weights (*circa* 200 grammes) of freshly prepared metaphosphoric acid in weighed plastic containers were frozen and sent to the hospitals. Before use these were thawed, and samples of vegetable (*circa* 100 grammes) placed directly into the acid after cooling, care being taken that the samples were truly representative. The samples in acid were refrozen, sent to the laboratory, and transferred to the deep freeze locker as previously described for the meals.

Analytical Procedures

(*a*) *Meals*

Normally the meals were transferred from the deep freeze locker to the ordinary refrigerator and allowed to thaw overnight, although sometimes, when more convenient, they were allowed to thaw in the dark in a 37°C. incubator on the day of analysis. They were weighed

to the nearest gramme, and as an added check on labelling, etc., this weight and the observed composition of the meal were compared with the rough weight and menu data supplied by the sampler. The meals were then homogenized, using a conventional bottom drive laboratory homogenizer. Usually addition of water was not necessary, since the meals were sufficiently fluid, but where necessary known volumes of distilled water were added. Since riboflavin was to be assayed these operations were carried out in diffuse light.

Duplicate samples (*circa* 80 grammes) of the homogenate were dried overnight in aluminium dishes at 105°C., and the percentage dry weight was calculated. The dry material was ground to a powder, and was used for all the subsequent analyses except for riboflavin. For the riboflavin assay, 10–15 gramme aliquots of the wet homogenate were weighed into beakers, hydrolysed with acid, and assayed by procedures to be described later.

Nitrogen

A semi-micro Kjeldahl procedure was used,with copper sulphate, selenium oxide, sodium sulphate catalyst, followed by the titration of the ammonia collected in dilute boric acid with N/70 sulphuric acid, methylene blue-methyl red being used as an indicator (AOAC 1960).

Calories

The calorific value of the dried meals was determined by the ballistic bomb calorimeter of Miller and Payne (1959), the gross energy (G.E.) so obtained being converted into the metabolisable energy (M.E.) by means of the equation

$$\text{M.E./g} = (\text{G.E./g} \times 0{\cdot}95) - (\text{N}\% \times 0{\cdot}075)$$

Miller and Payne (1951)

Fat

For the first 350 meals fat was determined by petroleum ether extraction in a soxhlet apparatus, but inspection of the results showed (Pellett, 1961) that the fat percentage could be calculated from the bomb calorimeter data. Thus the approximate percentage of fat (F)

was calculated from the gross energy (G.E.) by the following equation

$$G.E. = 0{\cdot}051F + 4{\cdot}32 \text{ or } F\% = 19{\cdot}6 \text{ G.E.} - 84{\cdot}70$$

However, when the nitrogen content was very high and the simple equation above was not valid, or when the fat content differed significantly from the normal range, soxhlet extraction was used to confirm the calculated value.

Riboflavin

A microbiological assay technique (*Lactobacillus casei* ATCC 7469) was used, upon the original wet homogenate, essentially as described by the Association of Vitamin Chemists (1951). For convenience, use was made of Difco dehydrated culture media (Difco, 1953) supplemented with 0·1% V/V Tween 80. This considerably diminished the stimulatory effect of lipids and fatty acids in the assay sample.

Ascorbic Acid

The simple 26 dichlorophenolindophenol visual titration method (Association of Vitamin Chemists, 1951) was used for measuring non-reduced ascorbic acid.

Calculation of Results

The percentage solids found by overnight drying multiplied by the original wet weight of the meal gave the total dry weight of the meal. The percentage nitrogen as found by Kjeldahl digestion was used to calculate the metabolisable energy and also the total crude protein. Total Calories were calculated by multiplying metabolisable energy by total dry weight. The percentage of Calories as supplied by protein was calculated by multiplying total protein weight by four (i.e. protein supplies 4 Calories per gramme) and dividing by the total calorific value.

Riboflavin and nicotinic acid were expressed as milligrams of

vitamin per meal, i.e. calculated from the total wet weight of the meal, and the vitamin content in micrograms per gramme on a wet weight basis. These relationships are expressed below:

$$\text{Total dry weight} = \frac{\text{total wet weight} \times \text{percentage solids}}{100}$$

$$\text{Total crude protein} = \frac{\text{percentage nitrogen} \times 6{\cdot}25 \times \text{total dry weight}}{100}$$

Total calories = metabolisable energy cals/gramme × total dry weight

$$\text{Percentage calories from protein} = \frac{\text{total crude protein} \times 4 \times 100}{\text{total calories}} = \frac{\text{N}\% \times 25}{\text{M.E./g}}$$

Total riboflavin = riboflavin content in microgram per gramme wet weight basis × total wet weight of meal

Appendix 2

Calculation of weights of menu items served at meals per patient/day

The average weights of different foods served at meals per patient per day are shown in Table 13, and from this table calculations have been made of the approximate dietary intake of iron, calcium, and ascorbic acid, which were not directly determined by laboratory analysis. As described in Chapter 2, every dish sent for a meal was weighed before and after service; the difference in weights is therefore the total of all weights of food served to all patients in the ward. From these records, the total caloric value of each dish served at the different meals in different classes of hospital was calculated from the food tables of McCance and Widdowson (1960), and by addition the total weight of food served and its calorific value, and hence the weight in grammes per 1000 Calories.

The mean caloric values of meals in the three classes of hospital were:—

Mean calories per patient per day

	Acute	*Chronic*	*Mental*
Midday	550	425	707
Evening	465	330	530
Breakfast	460	390	505

From these average caloric intakes the mean total weight per patient per day was calculated, and so from the proportionate weight of each dish, obtained from the original weighings, the approximate weights served per patient per day given in Table 13.

As the riboflavin content of each meal was determined by laboratory assay it was possible to check the accuracy of these calculations by comparing the laboratory-determined values of riboflavin with the riboflavin content as calculated by applying values obtained from the food tables to the weights shown in Table 13. This comparison is shown in the following table.

COMPARISON OF RIBOFLAVIN VALUES IN MG/PATIENT/DAY

(a) as calculated from tables
(b) as determined by laboratory assay

	Acute				*Chronic*			*Mental*
	1−	101−	301+	T	1−	101+	T	T
No. of Hospitals	44	36	20	100	14	16	30	22
a	0·33	0·42	0·44	0·38	0·26	0·24	0·25	0·42
M b	0·54	0·43	0·51	0·46	0·28	0·34	0·31	0·44
Difference	−0·12	−0·01	−0·07	−0·08	−0·02	−0·10	−0·06	−0·02
a	0·33	0·34	0·43	0·35	0·18	0·18	0·18	0·22
E b	0·35	0·26	0·41	0·33	0·22	0·20	0·21	0·23
Difference	−0·02	+0·08	+0·02	+0·02	−0·04	−0·02	−0·03	−0·01
a	0·44	0·30	0·34	0·37	0·24	0·15	0·19	0·32
B b	0·37	0·37	0·43	0·38	0·32	0·25	0·28	0·39
Difference	+0·07	−0·07	−0·09	−0·01	−0·08	−0·10	−0·09	−0·07

In only 3 groups of meals does the difference exceed 0·1 mg/patient per day, the greatest difference being 0·12 mg. It appears that the weights given in Table 13 are sufficiently accurate for estimates of nutrient intake to be made from food tables.

Appendix 3

Additional nutrients supplied by medical prescription

Thirty eight of the *sampled patients*—one quarter of the total—received additional nutrients, chiefly vitamins, prescribed as a part of treatment. In both acute and chronic hospitals 27% of the *sampled patients* had prescribed supplements of this sort; or 16% of patients requiring 'recuperative diets' and 50% of those requiring 'maintenance diets'. There appeared to be a tendency in acute hospitals to treat patients with chronic diseases with vitamin supplements.

Details of the supplements given are as follows:—

Iron preparations were prescribed for 7 patients; ascorbic acid was prescribed with the iron for 3 patients

Ascorbic acid or vitamin C was prescribed specifically by name with dosage for 14 patients, for 3 patients it was prescribed with iron, for 3 patients with vitamin B complex and for 2 with multivitamin preparations. Doses were usually from 25–50 mg. per day, one patient had 250 mg. per day and one had 400 mg. per day.

Mixed B vitamins were prescribed for 8 patients.

Nicotinic acid and aneurin hydrochloride were prescribed for 2 patients.

Vitamin D+calcium was prescribed for 2 patients, for 1 of whom it was prescribed with vitamins C and B.

Multivitamin preparations were prescribed for 13 patients.

Thyroid or thyroxine was given to 3 patients.

Brandy ½ oz. twice daily for 1 patient.

Prescription of iron is, of course, essential in the treatment of hypochromic anaemia; the condition cannot be effectively treated by dietary improvements alone. The concurrent administration of ascorbic acid can assist the absorption of iron. The prescription of calcium and vitamin D, and of the specific B vitamins—nicotinic acid and aneurin hydrochloride—were also directed to the treatment of a particular condition of the patient.

The multivitamin preparations and much of the vitamin C appear to have been prescribed more as an insurance against possible defects in the diet than as remedial treatment for a diagnosed nutritional deficiency.

Appendix 4

USE OF DENTURES

For each sampled patients, a note was made on their use of dentures.

	Required no dentures			*Used dentures*			*Required dentures but did not use them*		
	M	*F*	*T*	*M*	*F*	*T*	*M*	*F*	*T*
15–	9	10	19	6	2	8		1	1
40–	7	7	14	12	17	29		1	1
60+	2	1	3	24	39	63	3	6	9
TOTAL	18	18	36	42	58	100	3	8	11

No record was obtained from 5 patients.

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