NUFFIELD PROVINCIAL HOSPITALS TRUST

REPORT OF AN EXPERIMENT IN HOSPITAL COSTING

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Foreword

THIS interim report deals with an experiment that has been conducted in partnership by officers of the Nuffield Provincial Hospitals Trust and officers of the following hospital groups:

Aylesbury and District Hospital Management Committee
Banbury and District Hospital Management Committee
The United Bristol Hospitals
Cheltenham Hospital Group Management Committee
Huddersfield Hospital Management Committee
The United Manchester Hospitals
Pewsey Hospital Management Committee
Reading and District Hospital Management Committee
South Manchester Hospital Management Committee

Under the general supervision of the Secretary of the Trust (Mr. L. Farrer-Brown) the experiment was planned and has been directed by Miss D. M. Livock, A.C.A. (Accountant of the Trust).

The Trust wishes to record its appreciation of the help it has received from all concerned in the co-operating hospital groups. Had it not been for the untiring energy of the finance officers and their staffs in producing the cost statements in the minimum time this report must have been considerably delayed. The secretaries and administrative staffs, who had to provide information on the services given by many departments, have given invaluable help. To the experts in the various fields of the hospital world the Trust is indebted for advice and encouragement. The work of the experiment has served to demonstrate the real interest of all in the hospitals in the welfare of the service. It has been conducted throughout in a spirit of co-operation and goodwill without which much of its value would have been lost. The Trust feels that the willingness of those concerned to continue the experiment voluntarily for another year is the best indication of the interest which they have taken in it.

The Trust welcomed the following statement which was made during a meeting held to discuss the draft of this report:

'The Senior Officers of all the Hospitals which have had the privilege

of co-operating with the Trust in the experiment which results in this Report desire to express their appreciation of the opportunity given them to contribute to its conduct their varied experience in both the administrative and financial fields.

'They endorse the conclusions embodied in the Report, which they trust will commend themselves not only to their Boards and Committees but also to the Minister of Health. In this event they also hope that the Trust will feel able to continue to advise during any wider introduction of the system of cost accounting here advocated.'

July 1952

This report, and that of the King Edward's Hospital Fund for London, was submitted to the Minister of Health on 1st September 1952 together with a joint statement by the Fund and the Trust. This statement is now included in the report as Appendix VII. The two reports are being published at the request of the Minister.

October 1952

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TABLES, DIAGRAM AND APPENDIXES

1. Terms of reference

On 2nd May 1950 the Trust received the following letter from the Ministry of Health:

I am directed by the Minister of Health to say that he has received a recommendation from the Central Health Services Council set up under Section 2 of the National Health Services Act, 1946, in the following terms:—

'The Minister should invite the King Edward's Fund and the Nuffield Trust to undertake a complete unit costing of a small number of representative London and provincial hospitals and the results of the analysis should be the subject of a joint report by the two bodies',

and he has informed the Council that he accepts the recommendation.

The Minister wishes me to say that he would welcome the assistance of the Nuffield Provincial Hospitals Trust in making such an investigation and I am accordingly to ask the Trustees whether they will be good enough to undertake, in conjunction with the representatives appointed by the King Edward's Fund, an investigation in a selection of hospitals within the National Health Service.

After consideration by the trustees the Trust accepted the invitation to co-operate in an experiment in hospital costing subject to the following conditions, which were set out in a letter of 14th June 1950:

1. The part of the investigation to be operated by the Trust is based on the principle of 'standard' costing set out in the paper submitted by the Trust to the Central Health Services Council in November 1949.

   It appears from the preliminary discussions that the approach to the study by the King's Fund may be somewhat different from that of the Trust; the Fund wishes to examine the accounts and information available in several hospitals before arriving at the system to be used. The Trust for the past year has had an experiment in standard costing in operation at the Radcliffe Infirmary, Oxford. From the experience already gained from this experiment the Trust considers that it will make the most helpful contribution by beginning with a study of the applicability and effectiveness of this system in various types of hospitals.

   The Fund and the Trust intend to keep in close touch through-

out the inquiry and will submit a joint report to the Ministry, this report to contain a joint agreed assessment of the results, or, failing agreement, a reasoned analysis of the opposing views, and also joint agreed recommendations as far as is possible.

2. The Fund and the Trust should work independently in the hospitals allocated to each of them as a result of discussion between the officers of the Ministry and the representatives of the King's Fund and the Trust.
3. The Ministry will ensure that all necessary facilities for the experiment are provided, in the selected hospitals.
4. The Trust and the Fund will meet the expenses and salaries of the officers appointed by them for the conduct of the investigation.
5. The Trust and the Fund will be given complete freedom in carrying out the inquiry with the co-operation of the hospitals concerned.
6. If the Minister should not publish the joint report submitted to him, the Trust and the Fund jointly or severally shall be free to publish a report dealing with the results of the inquiry so far as principles and methods only are concerned; no information would be included about the finance of any hospital.
7. Since the Trust submitted its memorandum on standard costing to the Administrative Sub-Committee of the Central Health Services Council in November 1949, it has made preliminary approaches to hospital authorities in Scotland and Northern Ireland. It must, therefore, reserve the right to continue these discussions and to arrange for other investigations to be made in other parts of the United Kingdom independently of the studies carried out in England in co-operation with the King's Fund.

Following the acceptance of the Minister's invitation by the Fund and the Trust, discussions took place as to the number of hospital groups to be included in the experiment, and it was agreed that in London and in the provinces two teaching hospital groups, three non-teaching hospital groups, a mental hospital, and a mental deficiency hospital should be invited to co-operate. Invitations were issued, and the following groups in the provinces agreed to co-operate with the Trust by introducing functional costing for a period of one year from 1st April 1951.

Teaching hospital groups:

The United Bristol Hospitals
The United Manchester Hospitals

Non-teaching hospital groups:

Cheltenham Hospital Group Management Committee
Huddersfield Hospital Management Committee
Reading and District Hospital Management Committee

Mental and mental deficiency hospitals:

Aylesbury and District Hospital Management Committee (St. John's Hospital, Stone)
Pewsey Hospital Management Committee

2. Objects of the experiment

THE Trust's interest in hospital costs had been aroused by the need for information to assist a research team which had been set up to study the functions and design of hospitals. The Accountant to the Trust (Miss D. M. Livock) was a member of the team and had been charged with the task of making a study of the economic results of the team's suggestions for hospital design. The information necessary for this study could be obtained only by an intensive examination of hospital costs.

A system of departmental costing had been instituted at the Radcliffe Infirmary, Oxford, in 1937 by Miss Livock, and it was therefore to the Infirmary that she turned for help, and as a result of further discussion the Infirmary agreed to extend their system by introducing standards as a basis of control of expenditure for a period of one year. The result of this experiment was set out in a paper prepared for the Central Health Services Advisory Council at the end of 1949, and from it the Ministry's invitation to the Trust arose.

From the experience gained at the Radcliffe Infirmary it was thought that cost accounting might improve the financial control of hospitals in the following ways:

(*a*) If the pattern of the accounting system follows the pattern of the administration of a hospital, each responsible member of the staff is made aware of expenditure incurred by him for his department and of variations in that expenditure which are within his control.

(*b*) The finance committee can see clearly the reason for increases in expenditure and where they have occurred and can quickly take necessary action.

(*c*) When standards are adopted the reasons for changes in expenditure are more clearly analysed into those which are unavoidable through changes in prices and wage-scales, those which are due to increases or decreases in output, and those which are avoidable, that is, increases in consumption of materials or man-power.

(*d*) A comparison with other hospitals of the same type can be

made. If the cost of special departments is separated, the expenditure incurred in housing a patient remains, that is, the cost of feeding the patient, of the cleaning and maintenance of the ward, and of nursing care. These items of cost should, it is thought, not vary much between hospitals of a similar kind and might not vary to any great extent between all hospitals doing acute work. An attempt could be made to build up a standard cost by adding to the basic patient-maintenance cost the estimated expenditure on the special departments based on the unit of cost of their normal output.

(*e*) This standard should give to hospital management committees, regional hospital boards, and the Ministry a basis on which they would be able to judge of the financial position of the hospitals under their control and to make global allocations to meet the expenditure of those hospitals.

After some pilot experiments the Trust came to the conclusion that it would be useful if further practical experience could be gained, and it therefore welcomed the opportunity of engaging in the experiment at the invitation of the Minister of Health.

The questions to which, by practical experience, the Trust wanted to obtain answers were:

(i) whether some system of departmental costing in hospitals would be a valuable aid in financial control;

(ii) whether the cost of running a costing system in hospitals would be justified;

(iii) whether departmental costing would afford a method for the allocation of funds on a block-grant system by the Ministry or by regional hospital boards;

(iv) the extent to which the technique of standard costing as used in industry would have to be modified to suit hospital conditions.

3. The number and types of hospitals in the experiment

THE hospital groups which were invited to co-operate in the experiment have been listed on page 9. In addition the Banbury and District Hospital Management Committee intimated their willingness to co-operate and started departmental costing as from 1st October 1951. In the meantime Glasgow Royal Infirmary had, at the request of the Department of Health for Scotland and the Western Regional Hospital Board, instituted an experiment in departmental costing, and discussions took place as to the possibility of the adoption in Scotland of the same basis of allocation of expenditure and units of cost as were being used by the Trust in the provinces. The United Oxford Hospitals were also invited to co-operate.

In the tables attached to this report figures of cost from Glasgow and Oxford have not been included because the final system used in the experiment differed somewhat from their existing methods, but during the year their costs were shown in quarterly summaries which were prepared for the purpose of determining the degree of uniformity which had been attained.

It was realized early in the experiment that there was a need for more information about radiotherapy departments, because in Manchester all radiotherapy was carried out at the Christie Hospital, which was not a part of the teaching group. The South Manchester Hospital Management Committee accepted an invitation to help by providing figures of the cost of treatment at the Christie Hospital.

The number and types of hospitals which were finally included in the experiment are shown opposite.

From the table below it can be seen that the hospitals covered by the seven groups concerned in the experiment contain a wide sample of all types of hospitals; their geographical distribution also covers a wide area, although there are slightly more in the south than in the north of England. Of the two teaching hospital groups only the main hospitals were included, but in the three non-teach-

ing hospital groups all hospitals were brought in, although in the case of Huddersfield the Infirmary was not included until 1st October 1951.

Hospitals of over 50 beds

Undergraduate teaching hospitals:		
General	4	
Special	2	
Non-teaching hospitals:		
General	5	
Special	1	
General, chronic, or mixed	2	
Mainly chronic	6	
Tuberculosis sanatoria	2	
Isolation	1	
Mental	1	
Mental deficiency	1	
	—	25

Hospitals of under 50 beds

Non-teaching hospitals:		
General or cottage	6	
Maternity	5	
Chronic	3	
Children's long-stay	1	
Mental deficiency	1	
Isolation	1	
Convalescent	1	
Tuberculosis sanatorium	1	
	—	19
		44

4. The system used

THE aim of the experiment has been to produce a method of costing which would provide for each hospital or hospital group:

(i) A scientific basis for annual estimates which would enable a system of budgetary control to be instituted.

(ii) Internal financial control, so that the management committee can easily see the reason for and cause of increased expenditure of any department, and departmental heads can see how their cost has varied and the results of any changes they may make.

(iii) Information for determining the financial effect of proposed extensions or changes in the work of a hospital as a whole, or of any one of its departments.

(iv) Costs required for different purposes at different times. For example, when new ideas or new techniques are considered it should be possible to estimate their effect on cost and, if they are adopted, to tell what the effect has been.

It must also give at regional and national level:

(v) A basis for comparison of hospital cost, both as a method of control and to enable the relative economic factors to be known when consideration is given to variations in type of service and building. Although cost should not be the prime factor, the effect on cost of any proposed changes or extensions should be known.

(vi) A method of control of hospital estimates. This is essential if any system of financing the service by block grants is to be possible.

It was not the intention or the wish of the Trust to evolve a book-keeping system, but rather to arrive at basic principles of allocation of cost and appropriate cost units. The Trust is not convinced that a uniform accounting system, at least for some time to come, would be a good thing; in fact, variation is probably inevitable. Groups are of different sizes; the degree of centralization possible must depend on the distance of the hospitals in the group from the centre. For a large group mechanization is possible, for a small one manual methods have to be retained. Some groups have a central store, and in others the stores are spread over the larger hospitals. Variations

must occur. The efficiency of the financial system can be measured by its cost related to the results it produces. *What must be uniform is the basis of allocation of expenditure to departments, the unit of cost, and the basis of counting the units.*

Cost accounting does not by itself effect economies; it is an instrument that may help in the diagnosis of wastage or inefficiency and may indicate differences in standards of service by showing variation above or below a national or regional norm. It is therefore important to use a method which will give comparable results between hospital and hospital, group and group, and between one financial period and another. This should be possible when only departmental prime cost is considered and when there is uniformity in the basis of allocation and measurement of output. Uniform costing provides a starting-point for cost studies which will then be carried out only where there is an apparent need. It also assists in operational research because the effect of the results of the research on cost are more readily ascertainable.

Unless the cost of costing is to be formidable, the system to be used must be simple. It must bring home to the individual his responsibility for expenditure, and must give broad pointers to abnormalities in cost, or, when standards have been evolved, deviations from the standard, and must show where such deviations arise. This can be done by a slightly more detailed analysis of hospital expenditure and by comparing that expenditure with statistics of work done, which in many cases are already available. If it is not simple, costing will be a waste of time and money. To quote from *Notes on the Allocation of Expense* issued by the Council of the Institute of Chartered Accountants in England and Wales,

> it is essential that figures laid before the Management should be in the simplest possible form so that vital figures may have emphasis and be acted upon. While the basis of allocation of expense should always be appropriate, it is a waste of effort to make elaborate calculations, perhaps to several places of decimals, if their results do not differ materially, for the purpose in view, from the results of approximate calculations. It is worth stressing that the achievement of meticulous accuracy at the cost of disproportionate expense in time and money can be a serious fault, particularly where it results in delay in presenting figures which are important and whose value diminishes with time.

Before any system of departmental costing could be introduced, it was necessary to decide answers to the following main questions:

(*a*) What was the size of a hospital below which departmental costing became impracticable or too costly in labour.
(*b*) Which departments should be separated for costing purposes in the various types of hospitals.
(*c*) What expenditure should be included in departmental cost to give a basis of comparison and provide a method of financial control.
(*d*) How the work of each department could be measured.
(*e*) To what extent it was necessary to spread the cost of departments over wards and out-patient departments.
(*f*) What simplifications were possible.
(*g*) What method should be used for the small hospital.
(*h*) Whether depreciation should be included in hospital accounts.

i. *The size of hospitals to be subject to departmental costing*

During the discussions as to which hospitals in the groups should be costed it was agreed that, except for any special cases, those with under 50 beds should be excluded and treated as single-purpose hospitals. It was hoped that by using broad subjective headings of expenditure it would be possible to compare the cost of the smaller hospitals without further analysis. It would in fact be an almost impossible task to institute departmental costing in these hospitals. Nearly every member of their comparatively small staffs has necessarily to deal with many jobs which are the work of a separate department in a larger hospital. Moreover, the total expenditure on these hospitals is not great when considered in relation to the total for a group. They have therefore been studied as a separate problem and are dealt with in a later section.

It was found that there were few hospitals in the groups co-operating in the experiment with between 50 and 150 beds. Hospitals with 150 beds and over, even if for chronic cases, would most probably have a number of clearly defined departments. An examination of the system used for the smaller hospitals has shown that it could be adapted for hospitals of up to 100–150 beds if they deal with only one medical specialty.

ii. *Departments to be costed*

When the experiment began, every department and function providing a different type of service was separately costed in all

the hospitals of over 50 beds. It was hoped that this would prove to be an over-elaboration as it was likely that the expenditure incurred by some departments would be so small a percentage of the total for the hospital that they could be grouped together for costing purposes. In the case of wards it was thought that, as a simplification, individual wards should not be costed but that they should be grouped under the main medical specialties.

It must be realized, however, that for costing to have its full value each departmental head should be made aware of those items of expenditure which are within his or her control. Thus each ward sister should know the cost of stores of all kinds which are used in the ward. This can be done without making it an essential part of the costing system.

Table I shows the departmental expenditure as a percentage of total expenditure in the various main types of hospitals and some of these results are again presented in Diagram I.

It is clear that a general teaching hospital is the most complicated structure and that a hospital mainly for chronic cases is the most simple. For purposes of inter-hospital comparison, and of regional and national standards and control, it will be sufficient for fewer departments to be separately considered and the full range need only be used for purposes of internal financial and budgetary control. Departments may not always be a physical entity, but may represent a clearly defined function.

The following lists of departments include those which will generally need to be separately costed, divided into medical departments (that is, those dealing directly with patients) and service departments (those which give overhead services without which the medical departments could not function). As would be expected, the service departments to be costed vary little with different types of hospitals, but the medical departments are many more in an acute general hospital than in any type of special or single-purpose hospital. During the second year of the experiment the effect on cost of teaching and research will be studied.

General Hospitals (teaching and non-teaching)

Medical departments:

Wards: Medical

Surgical and gynaecological and other surgical specialties except those shown below

- Ear, nose, and throat
- Maternity
- Neuro-surgery
- Plastic surgery

Out-patients, including casualty
Operating theatres
Diagnostic radiology
Radiotherapy
Laboratories
Physiotherapy
Dispensary
Almoners
Records
Other diagnostic and therapeutic departments (unless in exceptional cases their expenditure exceeds 25 per cent. of the total). This will include occupational therapy, medical photography, electrocardiography, and electroencephalography
Research and teaching (where the separate cost can be arrived at).

Service departments

Works and maintenance
Rent and rates
Boiler house
Gas, water, electricity
Porterage
Cleaning services
Own transport
Laundry
Catering
Residences
Nursing training (including Preliminary Training School)
General services (outside transport, Chaplain, telephone, barber, &c.)
Nursing administration
General administration
Trading accounts: Sewing room
Farms and gardens
Canteens and shops.

Special hospitals of over 50 beds (Eye, Children's, Maternity, Tuberculosis, Chronic Sick, &c.)

Medical departments:

Wards: These need not be separated unless the hospital contains more than one specialty.

Out-patients: When this is a very minor part of the hospital's work it may not justify direct allocation of expenditure, but a periodic estimate of the cost of salaries and wages can be made and deducted from the ward total.

Operating theatre: Unless kept solely for emergency use.

Diagnostic radiology (if any)
Laboratories (if any)
Physiotherapy (if any)
} These services may be supplied by another hospital and can then be omitted.

Dispensary: If this consists only of the cost of drugs and there is only a small out-patient department it can be included with ward cost.

Other patient-care: (This need not be separated unless it accounts for over 1 per cent. of expenditure.) It would include almoners, occupational therapy, &c.

Service departments:

Works and maintenance
Rent and rates
Boiler house
Gas, water, electricity
Porterage
Cleaning
Own transport
Laundry
Catering
Nursing training (including Preliminary Training School if any)
Residences
General services
Nursing administration
General administration
Trading accounts: Sewing-room
Farms and gardens
Canteens and shops.

Mental and mental deficiency hospitals

In the case of mental and mental deficiency hospitals, consideration is now being given to the need to break down ward cost according to the type of patient treated. Until more of these hospitals are providing figures of departmental cost it is not possible to come to a final conclusion. For the ensuing year wards in mental hospitals are being divided into the following categories:

1. Those with a higher nursing or maintenance cost, being:
   Admission and treatment wards
   Wards for disturbed and epileptic patients
   Wards for sick and infirm patients
   Wards for the treatment of neurosis.
2. Those with a lower nursing or maintenance cost, being:
   Wards for chronic patients.
3. Those with a very low nursing or maintenance cost, being:
   Open or parole wards for convalescent patients.

Apart from the wards, the departments listed for special hospitals will apply to mental and mental deficiency hospitals, but there are in addition departments which are provided for vocational or recreational therapy and should be separately costed (such departments as shoemaker, tailor, cinema, playing-fields, occupational-therapy, &c.).

iii. *The expenditure to be included in departmental cost*

The aim of the experiment at the outset was to evolve a system of departmental costing which could easily be grafted on to existing accounting systems and which would be as simple as possible. It was agreed that it should be based on the allocation of all expenditure to some department or function of the hospital, and that the departmental cost would consist in the first place only of 'prime cost', i.e. expenditure on salaries and wages of staff working in the department, and on materials used in the department.

Thus ward cost would include only medical salaries and the salaries of nurses and ward orderlies, and the cost of all materials used in the ward such as dressings, linen, crockery, &c. This is the simplest method of costing and is especially appropriate in hospitals where some 60 per cent. of expenditure is on salaries and wages. The other advantages of the system are:

(*a*) If the pattern of the costing system follows the pattern of the

administration of a hospital, each responsible member of the staff is made aware of expenditure incurred by him for his department and of variations in that expenditure which can be controlled by him. Cost over which he has no control is excluded.

(*b*) It enables the cost of any department to be built up from prime cost according to the purpose for which the figures are required. Costs can be compiled for a number of different purposes, and some items of expense will be required for one purpose but should be excluded for another.

(*c*) It shows the cost allocation of the total expenditure of a hospital in its simplest form and indicates in which department the bulk of the expenditure is incurred.

(*d*) If the allocation of expenditure is on a uniform basis it will provide uniform costing which affords easy comparisons between one financial period and another. If the cost is complicated by the spread of other departmental cost, the reasons for variations are so hidden that one of the objects of cost accounting is lost.

One of the essentials of any system which aims at uniform costing is that all expenditure charged to departments must be on the same basis, and thus it was necessary to set out definitions of the items to be charged to each department. These are set out in Appendix I and the reasons for their adoption are given in Appendix II.

iv. *The measurement of the work of each department*

It is necessary for cost-accounting purposes to decide upon a unit of cost for each function of a hospital. This means that the work done in each department has to be measured so that it can be related to the expenditure incurred. The unit of measurement should be one that is related to the main items of expense and thus can best demonstrate departmental efficiency, but it should also enable the work of the department to be related to the hospital as a whole and provide a basis of inter-hospital comparison, not only of the cost of a unit, but also of the variation in demand on the services of the department.

Each department was considered most carefully, and it was found necessary in a number of cases to ask for the help of

specialists and experts in various fields. The advice of radiologists, pathologists, physiotherapists, pharmacists, and engineers has been sought. In many cases it has been necessary to experiment with units devised by the experts, and for some departments these experiments are continuing. When the units of cost were being considered, regard was paid to the possibility of these units forming the basis of the spread of departmental expenditure, should this be required for any reason, and it is thought that in most cases they would provide a method of such allocation. The units in use at the end of the first year are dealt with in detail in Appendixes I and II.

One of the most important tasks undertaken during the experiment was the preparation of these definitions, and as will be seen from the detailed programme of the experiment (Appendix VI) constant amendment and changes were necessary. The final definitions have for the most part been in use for the second half of the year and it is hoped that little further alteration will be necessary.

One of the major problems in instituting a system of departmental costing for comparative purposes is to ensure uniformity. The first essential is to arrive at definitions of expenditure and units, but this will fail in its purpose unless the method of counting the units is reasonably accurate. Expenditure and its allocation are subject to audit; in some hospitals to internal audit; in all hospitals to audit by Government auditors. But at present there is no such audit of units. If departmental costing came to be part of the financial system of the service, some check would be necessary. At present when an internal auditor is employed he may be able to do test checks, but in all cases it is essential that the system should be examined before costing is introduced.

Those units relating to patients are based on the definitions in use for the statistical return required by the Ministry of Health (S.H. 3), but it is known that not all statistics presented on this form can be relied upon. There is a feeling that these statistics, relating to a different period from the financial accounts, are of little value and remain unused in Ministry filing-cabinets. Perhaps when it is realized that they can play their part in financial administration and control more care will be taken in their preparation.

When there is interest in departmental costs, and departmental heads are anxious to show a low unit-cost, there is a natural tendency to increase the number of units as much as possible. Until some check or test of units can be carried out as a routine pro-

cedure, costing must rely on the honesty and the reliability of those concerned with record-keeping in all sections of the hospital.

A superficial examination of the units used may give the impression that a great deal of additional work will be necessary for their production, but, in fact, this is not the case. Many of them are already in existence but have never been used for financial purposes. All the patient-statistics used for costing are required for the completion of other returns; meals have to be counted for food-office purposes, laundry has to be counted at some stage to ensure control of linen, the matron has to have records of nursing staff for the efficient administration of the wards. Area or the cubic measurement of departments may present a problem, but exact accuracy is not required and the calculations can often be done from existing plans. Moreover, it is a job which has to be done once only.

Probably the greatest amount of work is involved in counting the weighted units for the special medical departments. The first reaction may be that it would require the services of an extra clerk, but it has, in fact, been possible in every case to provide the necessary data without additional staff. With the co-operation of the departmental head the existing system of recording has been examined and it has been found possible, sometimes by a slight change in methods, to record the units, once a responsible member of the staff has indicated under which category the examination or treatment may fall. It is important in the early stages that the unit value of each investigation or treatment should be assessed by someone with a knowledge and appreciation of the purposes of the experiment and not as a routine by a junior clerk.

It is hoped during the second year, when the units have been tried out and stabilized, that it will be possible for a special study to be made of the various methods of counting. In this way advice could be given to other hospitals, which were considering departmental costing, on an accurate and simple method of providing the necessary data.

v. *The necessity to spread the cost of departments over in-patient and out-patient departments*

Before the introduction of the National Health Service it was customary for inter-hospital comparison to be based on the cost of an in-patient week and of an out-patient attendance, both

analysed under a few subjective headings. The Ministry of Health Costing Returns still follow this pattern, although the number of headings under which expenditure is analysed has been increased. The use, therefore, of the cost of an in-patient week and of an out-patient attendance as the basis of inter-hospital comparison has in the course of years become accepted and is now in official use. It is, however, generally agreed that on this basis no useful comparison can in fact be made, for the following reasons:

(*a*) There is nothing to show what service the hospital is giving and what special departments are in existence.
(*b*) There is no very useful pointer as to where differences in cost occur, and so investigation of the causes of variation in total cost is not easy.
(*c*) No account is taken of variation in bed-occupation.
(*d*) That part of the cost which is mainly affected by age, type, and layout of buildings is not separated.
(*e*) That part of the cost which varies with the demands on the hospital cannot be assessed.
(*f*) There is no guide to future hospital planning or the optimum or minimum size of departments, or to the effect on cost of changes in design or organization.

Moreover, without departmental costing the separation of out-patient expenditure from the total has necessarily to rely on estimation and there is no way of ensuring either that all expenditure relating to out-patients is included in the estimate or that the basis on which the estimates are prepared is comparable.

It has always been said that no two hospitals are alike and so they cannot be comparable for purposes of cost, and this is certainly true when cost is considered on the basis of patients. It is even more true under the present organization of the hospital service when, within groups, departments in one hospital may be serving others, and to relate their services solely to the patients in their own hospital would give a most unreliable and unfair comparison. If, therefore, the cost of an in-patient and an out-patient is used for budgetary allocations and inter-hospital comparison by individual hospital management committees and boards of governors, the results may well be both fallacious and misleading.

Departmental costing on a prime-cost basis does not, without a further process, automatically provide the total cost of an in-

patient and an out-patient. It shows only the direct cost of treatment of a patient in a ward or out-patient department and the direct cost of the other departments of a hospital, and this alone is sufficient to provide all that is needed for the financial administration of hospital management committees and boards of governors and meets, as shown below, all the objections set out above:

(*a*) When the expenditure of a hospital is analysed departmentally it shows clearly what services are given and what special departments there may be.

(*b*) It provides a pointer to differences in cost from which detailed cost-investigation can begin, should it seem to be needed.

(*c*) Account can be taken of the effect of bed-usage by relating it to that part of the cost of a ward which is directly affected.

(*d*) That part of the expenditure of a hospital (such as maintenance, portering, cleaning, &c.) which is affected by age, type, and layout of buildings is automatically segregated.

(*e*) That part of cost which varies with demands on the hospital can easily be assessed as there is a detailed analysis of the cost of each department.

(*f*) For the purpose of hospital planning or for the study of the financial effect of change in design or organization, the cost of any department can be built up to any stage which may be required.

It is, however, possible when departmental costing has been instituted to arrive at a more accurate estimate of the total cost of an in-patient week and an out-patient attendance. As has been stated already, the direct cost of a patient will be shown under the headings of wards, out-patients, and casualty departments. To this has to be added a proportion of the cost of every other department in a hospital. Thus, although more accurate, the average cost of the treatment of a patient has still to be based on a succession of arbitrary allocations, and the data necessary for the calculation of such allocations has to be collected from many sources. Moreover, if any comparison is made between in- and out-patient cost arrived at on this basis it is necessary to refer back to details of departmental cost before the reason for variations can be seen.

Before, therefore, advocating a process which is at best an intelligent estimation and which requires much additional work, not only in the accounts department, but in many other departments,

it is necessary to examine the necessity for the building up of figures of in- and out-patient cost.

In *Notes on the Allocation of Expense*, issued by the Council of the Institute of Chartered Accountants previously referred to, the problem of the interrelationship of the costs of departments is specifically dealt with in the following sentence: 'Normally there is little to be gained by complicated arithmetical solutions to the problem of interrelation between service departments, because results of intricate calculations cannot effectively be brought home to the management or to those responsible for the expenditure concerned.' The system used in the experiment, based on departmental prime cost, has been devised with the purpose of providing departmental heads and hospital management committees with the information necessary for the internal financial control of the hospital. As has been shown above and elsewhere in this report, not only does it provide the figures required for the management of a hospital, but also those which must be considered by regional hospital boards and the Ministry of Health when they are making allocations of funds to individual groups. The total cost of an in-patient and an out-patient is therefore not required for any of those purposes.

The reasons for which it may be needed are:

(*a*) as a guide to the Ministry of Health in making global allocations to regional hospital boards;
(*b*) for the purpose of answering parliamentary questions, for the fixing of fees for private patients' accommodation, and for road-accident claims.

Of these the first is obviously of greater importance.

It is thought that the information produced by departmental costing will be too detailed for use by the Ministry when it is considering the financial requirements of regional boards. What is needed for this is an assessment of the hospital demands of the population in each region and a broad method of measuring how much money should be allocated to meet these demands. This can be provided by arriving at the national average of the total cost of an in-patient day for each category of hospital bed and of an out-patient attendance. It will only be necessary to separate those categories of beds in respect of which it is known that there is a substantial variation in cost. These categories might be:

(*a*) general acute beds
(*b*) special acute beds (neuro-surgery, plastic surgery, radiotherapy, and any other specialty which is known to be expensive in materials and staff)
(*c*) beds in special hospitals (eye, dental, &c.)
(*d*) obstetrics
(*e*) chronic sick
(*f*) paediatrics
(*g*) infectious diseases
(*h*) tuberculosis with thoracic surgery
(*i*) tuberculosis without thoracic surgery
(*j*) cottage hospitals, to be further divided according to the services given by each
(*k*) mental
(*l*) mental deficiency
(*m*) continuation (recovery and convalescent homes)
(*n*) private beds where they are contained in a separate block.

The number of beds of each type is known and it would be possible to build up the financial needs of a region on the basis of the national average cost of the various categories of in-patients and of the national average of the cost of an out-patient attendance. It will then be necessary for the Ministry to adjust the total in respect of factors arising from other causes such as locality and the differences from district to district in the wage-rates agreed by the Whitley Council.

It would therefore seem necessary *for Ministry purposes only* to produce, as accurately as possible, the total cost of an in-patient and an out-patient despite the additional work in collecting data for the apportioning of the expenditure of the service departments, and the approximate nature of the result. It must, however, be emphasized again that the figure of total cost provided for the use of the Ministry in making global allocations must not be so used by regional hospital boards, who need to make a much more detailed assessment of the needs of each group, nor must they be used as a basis of inter-hospital comparisons. Similarly a more detailed assessment is required by the Ministry for making allocations to boards of governors.

It is hoped that when the Ministry and the regional hospital boards have, with the aids provided by departmental costing, arrived at the amount of the allocation to be made to each hospital

they will be content to regard it as a block allocation for the whole year as is envisaged in a recent memorandum from the Department of Health for Scotland. If regional reserves are built up they would be of great value as a source of supplement to the block grant of the hospital management committee which can prove that a noticeable increase in the work of any department has seriously affected the budgetary position.

The system of departmental costing outlined in this report is the first step towards arriving at the total cost of in- and out-patients. What is then necessary is an arithmetical calculation of the spread of the direct expenditure of each department over other departments served by it. This process would be continued until all cost was related to in- and out-patients. The basis of the allocation would be the average demand made on departments by others on the bases shown below. It is a simplification if in-patient expenditure is considered as one total without a split by medical category (such as general medical, general surgical, and other specialties); but, if this is to be done, the collection of the data necessary for the spread or building up of cost will entail quite a considerable amount of work unless the necessary data is obtained by the analysis of units for test periods only. If the units of service as well as the cost are shown in the resulting statement, differences in demand as well as differences in annual cost are indicated. This would be done annually, not as a routine part of the costing system, but on a separate allocation form, a sample of which is given in Appendix IV.

Earlier in this report the necessity has been pointed out for building up departmental cost to various levels for various purposes, and it is therefore necessary to show the order in which departmental cost has to be allocated so that as far as possible the cost of the department least dependent on the others is first dealt with and all expenditure is finally related to the service to the patient. The basis of allocation set out below is given in the order in which the cost should be dealt with.

The difficulties in arriving at a reasonable degree of uniformity when dealing with departmental prime cost have been considerable and, if this is to be carried a stage farther, then even more care is necessary because the basis of the spread of departmental cost must not be left to the personal estimation of the administrative staff of any one hospital or any one department. For each department the following basis can be used:

Department or functional head of expenditure	*Basis of allocation*
Water	Metered consumption where available, otherwise by estimated consumption of equipment in use in special departments or number of taps in general departments
Rent and rates	Area of buildings
Works department	All major items of expenditure should be allocated by job. General maintenance can be allocated according to cubic capacity of buildings
Boiler house, gas, and electricity	For the main user departments, such as laundry and kitchen, special allocation is necessary on the basis of estimated consumption by the equipment in use. The remaining cost should be allocated on an estimated percentage based on the Ministry of Fuel units used by each department
Porterage	Area of hospital buildings
General services	It must be assumed that these all arise in respect of in-patients as it would be extremely difficult to find what proportion (which would in any case be small) applied to out-patients
Cleaning services	Area of buildings cleaned
Own transport	Mileage
Laundry	Number of pieces
Catering	Number of meals, on a weighted basis
Nursing training	Number of student nurses on establishment
Dispensary	Expensive drugs charged direct, balance of cost on basis of number of prescriptions
Almoners	Number of new patients
Records	Number of in-patient admissions and discharges and number of new out-patients and out-patient attendances, on a weighted basis
Nursing administration	Nursing staff complement
Operating theatres	Operating hours
Diagnostic radiology	Number of examinations, on a weighted basis
Radiotherapy	X-ray and teleradium, number of röntgens. Radium, number of completed courses of treatment
Laboratories	Number of investigations, on a weighted basis
Physiotherapy	Number of treatments, on a weighted basis
Other diagnostic or therapeutic departments	Number of investigations or treatments
Excess of expenditure over income for:	
Staff residence	Staff complement in wards and out-patient departments

Department or functional head of expenditure	*Basis of allocation*
Sewing room . . .	Percentage of total expenditure on in- and out-patients
Occupational therapy .	In-patient days
Postage and telephone General administration	Percentage of total expenditure on in- and out-patients

In the case of small single-purpose hospitals with up to 100 beds and with no large separate ancillary services the form shown as Form D in Appendix IV gives a reasonable cost of an out-patient attendance and an in-patient day, based on an arbitrary assessment of the medical and nursing care devoted to out-patients. Where larger hospitals have a very small out-patient department it would suffice for data relating to out-patients to be specially indicated. Alternatively an estimate of the medical and nursing care devoted to out-patients could be made as for small single-purpose hospitals with up to 100 beds.

Where the out-patient department in a small hospital is comparatively large it may be necessary to allocate some of the household and building expenses to the out-patient department and also some of the other expenses.

vi. *Simplification of the Radcliffe Infirmary system*

It was felt that it was important to consider any simplification which could be made in the Radcliffe Infirmary system. This system was introduced when, for a special purpose, it was necessary to arrive at the total cost of certain wards. This reason does not now apply and so consideration was first given to the inter-departmental spread of expenditure, and this has been dealt with above.

Another method of saving a certain amount of labour was to cost wards under the chief medical specialties rather than individually, but the main change that was made was the setting up of certain general departments with the object of avoiding detailed analyses of weekly wages.

Departments called portering services and cleaning services have been used to which are charged respectively all wages of general porters and daily cleaners and the cost of cleaning materials used by them. There has been some difficulty in arriving at a definition of the staff to be charged to these departments because designation by occupation does not always give a clear indication of the work

actually done by a member of the hospital staff. It is hoped, however, that the present definitions will meet the case, as this method of dealing with the cost of cleaning and portering has saved a considerable effort not only by avoiding the detailed analysis of weekly wages but also by making unnecessary the keeping of detailed time-records by the staff concerned.

When standards were introduced at the Radcliffe Infirmary, the experiment was run for a limited period only and the standards did not become an integral part of the accounts. It has been possible in this experiment to determine the usefulness of a method of standard pricing for stores accounts because it was adopted by the United Manchester Hospitals for the purpose of the experiment and was already in use in Cheltenham. (Details of the individual systems are given in Appendix VI.) By this arrangement all stores issued to departments are charged at the same price throughout the year and thus differences arising from price-changes are kept out of the departmental accounts and variations in expenditure are caused solely by the amount of goods consumed. The difference between the buying price and the standard is segregated and shows how price fluctuations are affecting expenditure. It can be said that it has proved a useful technique for the keeping of hospital stores accounts and, far from adding to accounting work, seems to result in some saving of time. It was feared that the price-variance would be large and might provide an accounting problem. It has been found, however, that during the first year price-variations have been comparatively small in most of the stores sections. In one of the groups working with a standard price each of the hospitals in the group has a separate buying department. For those commodities in which there can be no question of a difference in quality, the use of this method has shown the variation in price paid for the goods at the various hospitals in the group, and an attempt is being made to reduce all prices to the lowest level.

It is hoped that it may be possible to introduce still more ways of simplifying cost accounting in hospitals. First, as has been stated in an earlier section, it will not be necessary, at least for the purpose of inter-hospital comparison, to separate the cost of those departments in which the expenditure is a very small proportion of the whole. Secondly, a study of the materials charged to departments shows that for each section of the stores there are a number of main users and that the value of goods issued to other depart-

ments amounts during the quarter to only a few pounds and sometimes only a few shillings. It is suggested that for each section of stores the main users should be determined on the basis of the cost of the first year and that issues to these departments should be separately evaluated. The difference between the total cost of issues and the issues to these main user departments should be spread over the other departments on the basis of a test week or a test month. Another way of saving time and labour in the stores department would be a method of standard issues or of the making up of ward and departmental stocks on an imprest system.

In order to save the detailed pricing of issues from provision stores to wards, and to avoid the problem of the allocation of the cost of patients' meals to wards, all provisions have been charged to the catering department and the cost per diet-day used as the unit.

vii. *The system for the small hospital*

As has been stated earlier, no attempt has been made to provide departmental costs for hospitals of under 50 beds. A table was compiled of the expenditure on a number of these hospitals in the form used for the present Ministry of Health accounts. This showed clearly that the detailed subjective analysis required by the Ministry for all hospitals was not really necessary for the small ones and that a very simple analysis would provide the requisite material.

What was necessary was to take out of the total expenditure the estimated cost of any out-patients, to segregate the cost of catering (including provisions and kitchen staff), and to show as a patient-day cost the remaining expenditure. This was analysed under:

(*a*) Medical and nursing care including medical salaries, nursing salaries, and the cost of medical supplies such as drugs, dressings, and instruments, and the cost of uniforms.

(*b*) Household and building costs including laundry, domestic renewals and repairs, fuel and light and water, building maintenance, expenditure on the garden, and rent and rates.

(*c*) Sundry expenses including professional and technical, administrative and clerical salaries, printing, stationery, and postages, and any other items not included above.

(*d*) Other salaries and wages (which are mainly those of the domestic staff).

(*e*) Payments for staff board and lodging were deducted from the total.

Detailed statistics were obtained of bed-usage, of the number of resident staff, of the number of meals provided, of the number of out-patient attendances, radiological or pathological examinations, and of operating-theatre hours. This gave an idea of the service given.

It was hoped that if this method gave sufficient information for a hospital of under 50 beds it would prove capable of expansion for use in single-purpose hospitals of a larger size.

viii. *The inclusion of depreciation in hospital accounts*

A charge for depreciation has for long been generally accepted as good commercial accounting practice, and the following reasons show why it should also be accepted for the purpose of hospital accounting, especially when this is on a functional basis.

1. Hospital property in common with all other property does wear out, or in other words depreciates; therefore, depreciation in the value of buildings and equipment represents a real cost of the hospital service.
2. It is impossible to make a comparison between the cost of hospitals where one hospital has installed labour-saving equipment, unless depreciation on this equipment is included in the hospital costs. If in one hospital manual labour is being used, and in another the number of employees has been reduced by the substitution of mechanical equipment, unless the capital cost of equipment as well as the cost of direct wages and supplies is taken into account, there is no true comparison of cost. It might be shown that in effect little economy had resulted, for example:

   (*a*) To compare the cost of a manual accounting system at one hospital and a machine system at another, the hospital with the machine system should allow for depreciation (and possibly for interest on the capital cost of the machine). Without these factors the cost of the mechanical system will be incorrect inasmuch as it will not include the amount to be set aside each year to replace the machine at the end of its useful life.

   (*b*) One laundry may do all its ironing by hand, whereas another

laundry may have ironing-presses, sleevers, &c., which are initially expensive, but save an appreciable amount of labour.

3. For the purpose of comparison of relative efficiency as between hospital services such as laundry and equivalent commercial services, it is essential to arrive at the total cost, which, as in the case of commercial laundries, must include depreciation.
4. In order to ascertain the total cost of the hospital services for private patients or outside authorities who are liable for a charge for services rendered, it is obvious that, if the charges do not include depreciation either for buildings or valuable equipment, the State might in certain instances be subsidizing those who are supposed to be paying full cost. For example, in respect of road-accident cases, if the total cost including depreciation is not charged, the Government and, in fact, the individual taxpayer may be subsidizing the insurance companies by undercharging for services rendered by the hospitals.
5. A charge for depreciation on buildings may help to eliminate the effect on cost of property owned by the hospital as compared with property for which the hospital has to pay a rent.
6. The inclusion of depreciation as a part of, or as a note to, the accounts of a hospital will serve to emphasize the importance of a study of economics when a proposal to incur capital expenditure in the form of buildings or equipment is being discussed.
7. When the cost of replacement of major items of equipment is charged to maintenance, it results in the expenditure for the year of replacement being unduly increased and thus makes it more difficult to arrive at a comparison of unit costs as between one period and another and as between one hospital and another.
8. It is interesting to examine the definition of capital expenditure as at present laid down by the Ministry of Health in S.I. 1414 and RHB (50)50. From this definition it would appear to be the intention of the Ministry that replacements of furniture and equipment (except fixed equipment) are to be treated as maintenance. The general distinction is important from the point of view of the cost accounts and also of the fact that separate estimates are approved by the Treasury for maintenance and capital expenditure. Should any system of block grants be introduced, it would be necessary, if the Ministry is to retain control of expenditure through unit costs, for the cost of replacement of major equipment to be spread over the years of its estimated life.

On the other hand, there are many difficulties to be overcome before depreciation could be treated in hospital accounts on the same basis as it is used in commerce, for example:

1. In many cases the buildings and plant still in use in hospitals are of such an age that, had depreciation been charged in the past, their value would have already disappeared from the hospital balance-sheet.
2. At the present time the value of some of the equipment of a hospital tends to appreciate rather than to depreciate.
3. Owing to the lack of records in the past, and also to the age of some of the equipment, it would be impossible to arrive at its original cost and to know the amount of depreciation which should have been charged in the past and thus its present depreciated cost value.
4. It is possible that the problem of obsolescence may affect the depreciation rates which ought to be charged in respect of hospital equipment more than is the case in industry.
5. The present accounting system for hospitals is closely linked with Treasury practice and, therefore, no balance-sheet, in the commercial sense, is prepared. If depreciation is to be included in hospital accounting it would be necessary to prepare a balance-sheet showing the written-down values of the buildings and equipment and the amount of the depreciation funds which had been raised. Moreover, it would be good financial practice for these funds to be invested in order to provide the monies needed for the eventual replacement of the asset. There is at the moment no way in which this could be done.
6. Should it be decided that depreciation should be included in hospital accounts it would be impracticable to depreciate all the equipment of a hospital. Some dividing line would have to be drawn between major and minor items of equipment and this might present difficulties. (An attempt to do this has, however, been made in the U.S.A.)
7. Even if only the larger pieces of equipment are considered for the purposes of depreciation, the preparation of the records necessary for the calculation of the depreciation would be extensive and it is necessary to decide whether the problem is sufficiently important, or of sufficient value, to warrant the necessary expenditure of time and money.

8. It has been said that it would be almost impossible to arrive at the estimated life of the equipment of a hospital and that an attempt to do this would be a difficult task. (In Section 1 of the *Handbook on Accounting, Statistics and Business Office Procedures for Hospitals*, prepared by the American Hospital Association, there is a section dealing with this problem which is based on the American system of fund accounting. A list of plant, with its estimated life in years, is given.)

Despite the many and cogent reasons put forward against the inclusion of depreciation in hospital accounts, it would seem that some experimentation would be of use and interest where it can be carried out without undue expenditure in labour and by using existing records. A way in which this might be done would be by the use of hospital inventories which are gradually being built up and would form a natural source of plant-records.

In *Some Accounting Terms and Concepts*—a report of a Joint Exploratory Committee appointed by the Institute of Chartered Accountants in England and Wales and by the National Institute of Economic and Social Research—it is said that:

> The economist argues that it is the productive capacity of an enterprise that must be maintained intact, and that this position could be achieved by calculating the depreciation provisions on the basis of original cost only if price-levels were stable. Since such stable price-levels are most unusual, economists consider that the maintenance of productive capacity (or, in other words, the keeping of 'real' capital intact) is more likely to be achieved if depreciation provisions are calculated by reference to replacement rather than to original cost of fixed assets.

Mr. A. H. Taylor, in an article under the title of 'Costing for Inflation', also makes this point:

> If accountancy is to fulfil its function as a really effective tool of management, and not merely a system of recording debit and credit, a realistic and generally acceptable method of costing for replacement values must be adopted; for there are indications that business leaders are beginning to regard conventional accountancy with suspicion.

Some hospitals have already ascertained what it would cost at present prices to renew certain apparatus, and where this has been done it might provide a starting basis for the trial of a system of plant and depreciation records which, although not forming part

of the accounting system of the hospital, would be invaluable as a memorandum when any attempt was being made to arrive at departmental cost or to assess the effects of a proposal for replacement of, or additions to, existing equipment.

It is important that in the future as much information as possible should be available for the help of those who are administering the hospital services, and it is clearly to the finance officer that the administrator must turn for advice on the financial aspect of any proposals. To give this advice he must have the information necessary to make an assessment of the relationship between capital and maintenance expenditure. He must know whether the spread-over capital cost will be offset by savings in the cost of labour or materials and for this purpose a memorandum plant-record would be invaluable.

In the present experiment departmental costs are based on prime cost only and all items of expense are, therefore, not necessarily included in the departmental cost; but it will be possible to build up the cost of any department for any purpose, including some items of additional expense where the cost is required for one purpose, and excluding them where the cost is required for another purpose. It is clear that in building up departmental costs to provide information for any specified reason it will often be necessary to make an estimation of the depreciation of the equipment used in any department.

The problem has been discussed with the finance officers co-operating in the experiment. They unanimously came to the conclusion that—in view particularly of the cost in time and labour which the necessary plant-records would require, for a full and detailed scheme—it would be inopportune to institute it at the present time. They felt, nevertheless, that the whole subject of depreciation was one of great importance and should be further examined, and that wherever possible experiments should be conducted.

5. The results of the experiment

THIS experiment has formed a part of a series of studies, which the Trust has undertaken or has financed, into the organization of hospitals and the health service. There is a research team investigating the functions and design of hospitals; a job-analysis of the nurse's work is nearing completion; experiments in health-centres of three types have been financed; and the Department of Human Ecology in the University of Cambridge is, with Trust funds, engaged on a study of the health services of a region. The financial organization of the health service is fundamental to many of these problems and, therefore, the Trust felt that more practical experience in functional costing in hospitals was desirable.

In the first section of the report are set out the questions which it was especially desired to study. During the year of the experiment the Trust, working on the basis described in Section 4, has been able to complete some part of the necessary work. The organization of departmental accounting has been completed in the groups in the experiment. The bases of allocation of expenditure have been defined. Methods of measurement of the work of each department have been discussed and agreed with many of the specialists concerned and all have been defined. The methods of counting these units have been examined. The resulting unit-costs have been studied. But much remains to be done and the Trust is glad that the hospital groups concerned are willing to continue to co-operate with it for another year. Before it is possible to demonstrate the full use of costing it is necessary for it to form the basis of budgetary control and the basis on which estimates are built up. Standards of work and expense have to be evolved and this may need the advice and help of technical experts in various fields. By the end of the second year more valuable information will be available and the Ministry's decision on the adoption of costing generally may be known. This must necessarily affect the future to a considerable extent. At present, expenditure has to be analysed intensively under departments and also under the subjective headings required by Ministry regulations. If the latter analysis could be discarded and the departmental analysis become the basis of financial estimates and accounts, the cost of costing would be negligible,

financial control would be improved, and an attempt to provide national and regional standards could be made.

As a result of the work of the first year of the experiment the Trust is able to recommend a system of departmental costing which it has proved is not costly to introduce and which it believes would result in an improvement in the existing accounting system.

In the preamble to Section 4 of the report the objects of a costing system are listed and emphasis is laid on the two principles of uniformity and simplicity on which the system must be based. By adopting a system of uniform costing and by allocating only prime cost to departments, uniformity and simplicity have been obtained. It remains to see to what extent the results of the system meet the requirements laid down for it.

i. *A basis for annual estimates and budgetary control for a hospital*

Table II shows the summary of departmental costs for one hospital. This summary shows clearly where the total expenditure of a hospital is incurred. It gives at a glance a departmental analysis of medical and nursing salaries which, although they account for 32 per cent. of expenditure, form part of the cost of comparatively few departments. The departmental analysis of other salaries accounting for 33 per cent. of expenditure renders unnecessary their partial analysis by occupation as is at present done. The heading of materials covers all expenditure other than that on salaries and wages, and again by a departmental analysis more information is shown as to the source of this expenditure than can ever be possible by a subjective break-down.

If the estimates of a hospital were built up in this way it would provide a basis of budgetary control whereby increases in expenditure could be traced quickly to their cause and prompt action taken, and the effect of economies would be clearly shown.

ii. *A basis for internal financial control*

Table III shows what information is available in respect of each department by giving a sample cost statement of three departments, viz. a medical ward, a radiological department, and a laundry. These statements would be sent to each departmental head at the end of each quarterly period and would show them how

their expenditure and their cost per unit had varied. (The introduction of standards described in a later section would enable the reasons for these variations to be analysed.) If estimates are prepared departmentally an estimate in this form would be drawn up for each department and discussed with the departmental head concerned, who would then be able to compare actual with estimated expenditure. It is surprising what interest in cost does result from a knowledge of it. During the experiment discussions have taken place with many of the senior staff in the hospital service and all have shown great interest in the experiment and have been willing to help in finding methods of evaluating the work of their departments, and at a later stage have assisted in determining reasons for variations in departmental cost in inter-hospital comparisons.

iii. *Information required for determining the financial effect of extensions or changes in the work of a hospital*

Without a full knowledge of departmental cost it is difficult to assess the results of proposals which may affect in any way the work of a hospital. Departmental costing not only gives information on cost but also shows the demands on a department. For example, if a new ward is under consideration, not only will it be possible to assess the cost of medical and nursing care of so many extra patients and to know the additional expenditure on materials which the ward will use, but it will also show what will be the cost of the extra services which will be demanded from all other departments such as laundry and catering, costs which are apt to be overlooked when the extension only is being considered.

iv. *How the effect on cost of new techniques or of capital expenditure is shown*

When the prime cost only of a department is the basis of the costing system it enables other parts of a hospital's expenditure to be added to that cost for different purposes at different times. For example, if a new radiological technique is evolved, all that is necessary is to know its effect on expenditure on films and other materials used in the department, its relationship to the time of radiographers and radiologists, the cost of any new equipment, and the cost of maintenance of that equipment. It is then possible to estimate how the prime cost of the department is affected. If, on

the other hand, an extension to a radiological department is being planned, it is necessary to add on to the prime cost as shown in the cost accounts the cost of cleaning the department, the cost of power used by the equipment, and the cost of heating the building. Again, when the radiologist is considering the cost of his own department he likes to know the cost of all the staff who are working in the department including those engaged on keeping patients' records. On the other hand, when the hospital administrator is considering the cost of record-keeping in the hospital as a whole, it is necessary to add the cost of keeping radiological records to the cost of keeping other patient records. This can more easily be done when the costing is on a prime-cost basis.

It is also important when considering capital expenditure to assess its effect on maintenance. It may well be that capital expenditure of a few thousand pounds may save so much maintenance cost that it should be given priority in the capital budget. Without departmental costs it is more difficult to assess this relationship and any estimates made might overlook some factors and so be less accurate.

v. *A basis for comparison of hospital cost*

In the past information on departmental costs has been prepared in only a few hospitals and there was no way of ensuring that there was uniformity in the basis used in these hospitals, and the sample, mainly confined to teaching hospitals, was not large enough or wide enough to enable any attempt at inter-hospital comparison to be made. The only figures which have been readily available have been the cost per in-patient week and per out-patient, the latter often estimated on a purely arbitrary basis.

Table IV gives a summary of the unit-cost of each department of the hospitals in the experiment and in Appendix II comments on these costs are made.

During the year of the experiment quarterly summaries of costs have been prepared on the basis of Table IV. For the first two quarters it was realized that no regard should be paid to the results because there was still a lack of uniformity in the allocation of expenditure and in the counting of units. But despite this the finance officers of the hospitals concerned found the summaries of great interest. Not only were they able to study the costs of departments in their own hospitals, but they could examine them in the light of

the experience of other hospitals. When these hospitals were within one group the use made of the quarterly statements was even greater. In one group a cost investigation of the catering department of one of the hospitals was undertaken and resulted in definite savings. In another the laundry arrangements were examined and an expert called in to advise, with a resultant centralization of laundry services and a saving of money in the future.

The interest and use of this method of inter-hospital comparison was so great that the officers of the mental and mental deficiency hospitals expressed their disappointment that there was only one of each of these types of hospital in the experiment and that they were, therefore, lacking in any standard by which they could examine their own costs. At their request the Trust has invited two other mental hospitals and two mental deficiency hospitals to co-operate with them for the second year in order that inter-hospital comparison of departmental costs should be possible.

It is believed that inter-hospital comparison of the cost of medical departments can be made only between the same types of hospital, but that comparison between most service departments can be made between almost any type of hospital other than those for mental and mentally deficient patients. In the latter case the cost may be so upset by the use of patient-labour that no comparison is possible.

Another important factor in the examination of departmental costs is the determination of the scope of the service given by a department, and it may sometimes be necessary to consider a service on a group rather than on a hospital basis. Pathology provides a good example of this. When a department serves only one hospital, it can be treated as a hospital department; but, when a pathologist is in charge of more than one laboratory, in order to arrive at a comparable cost it is better to group all laboratories in his charge together than to attempt an arbitrary allocation of his salary.

This aspect of hospital economics needs further study, which will be given to it during the second year. It is of importance because the extent of the use of a department may affect expenditure as much as the unit cost of the work. There may be points at which the size of a department may make it uneconomic to run and either one department can serve more than one hospital or the establishment of a second department may be called for.

vi. *Control of hospital estimates at national and regional levels*

Before a system of block grants could be introduced there would naturally be a demand that the Ministry or the regional hospital boards should be able to assess that the grant given to any board of governors or hospital management committee was roughly in accord with its needs. Until there are some yardsticks by which hospital expenditure can be measured this is impossible.

In the early years of the Health Service estimates were based on the expenditure of the hospitals before the appointed day. This expenditure had varied according to the income of voluntary hospitals and to the policy and financial resources of the local authority, whose hospitals were to a large extent dependent on the product of a penny rate. Thus the hospitals which required more money to raise their standards to the level of others in the same region might in fact get less. Such factors as these are now recognized and can to some extent be taken into account when estimates are approved.

There is also a need to consider the demands of the population of each region. In the past the provision of hospital beds and the standard of public demand has varied considerably from area to area. The needs of a rural area may differ from those of an urban or an industrial one; special local conditions in some parts of the country may affect the cost of the provision of the hospital service.

All these factors have to be considered before it is possible to arrive at a fair basis for the distribution of the grants available for the maintenance of the hospitals. Obviously any knowledge which will contribute to the solution of this problem and will provide yardsticks by which to measure expenditure would be welcome and of use.

Before these yardsticks can be worked out much more needs to be known about hospital cost and the factors which cause variation. The summary of cost in Table IV will help to point to some of these factors, but until information is available for a much larger sample it will not be possible to draw any final conclusions. Cost may vary geographically, as, for example, the cost of coal will affect the unit cost of a boiler house. Cost may vary between urban and rural areas, or between London and the provinces. But each of these factors may not affect every department in the same way. When more is known of the many facets of this problem, and studies have been made of the basis on which departmental

estimates can be drawn up, it should be possible for a broad standard to be arrived at for each department which can be varied to meet local conditions.

If hospital estimates are built up departmentally as described in an earlier section of the report it will enable inter-hospital comparison to be made which will show the influence of local conditions on cost and will indicate those hospitals whose standards may be lower than the local average. It will provide regional boards with knowledge of some of the factors which should be taken into account when allocation of regional funds is made. It will also make available to hospital management committees data on which to base their claims on regional funds. When global allocations have been made to regional boards it may be possible for boards to make them to hospital management committees. It is thought, therefore, that a system of departmental cost would be of value to regional boards in assisting them to arrive at the proper allocation to be made to hospital management committees and as a method of internal financial control.

The use by the Ministry of Health of a national average of patient cost is discussed in Section 4 (v). The factors which will have to be taken into account in adjusting the national average to a regional basis can only be known as a result of departmental costing.

vii. *The value of cost accounting for hospital administration*

It has been shown above how the system of departmental costing evolved by the Trust could be used for financial control. Whether it will in practice be so used remains to be seen.

It is not possible in this report to give the final result of the experiment, or to deal conclusively with this question. In the programme of the experiment outlined in Appendix VI, it will be seen that during the first six months, although the system was working, constant adjustments and changes in the bases used had to be made. In industry, the installation of a costing system is often a long and arduous task, and there are few factories which have the inherent complications of a hospital with its many, almost unrelated, departments. It is indeed gratifying that it has been possible to present figures for the second six months of the year which, it is thought, are moderately reliable.

This report tells the story of the experiment—it shows the

difficulties and the problems met with in each department—it gives figures of departmental and hospital cost of forty-four hospitals for a period of six months—it sets out the final basis of allocation of expenditure and the definition of the units by which the work of each department has been measured, and it gives the accounting basis which has been used. There has not been time to assess the extent to which the system may be of value to the hospital authorities themselves, and how it may help in the administration of the hospitals. Figures are dangerous things unless they are accurate, are understood, and are used wisely. The results of the December quarter were the first upon which it was felt that any reliance should be placed, and it was not until these were ready at the end of February that it was possible to present any results to management committees or boards of governors. It will not be until these bodies have had costs for at least a year that they will be able to know how useful the method may be. Even then it will not be possible to demonstrate its full use until it has become an integral part of a system of budgetary control.

Despite this, one hospital management committee has already found that the broad pointers provided by the system have led them to undertake detailed investigations of some of the laundry and catering departments in the group resulting in a saving of several thousand pounds in their annual expenditure.

In other groups, also, the system has already led to action, and the Trust has itself undertaken several studies to assist the hospitals in their own investigations. A member of the Trust's staff has drawn up the basis of cost studies of catering and laundries. A time-and-motion engineer has done an intensive study of the preparation and payment of wages and salaries. A specialist in management accounting has considered the use of punched cards for stores accounting in hospitals and the integration of cost and financial accounts with the object of financial control. Details of these studies are given in Appendix V.

viii. *The cost of costing*

Much has been said about the cost of costing, and it has been used as one of the main arguments against the introduction of a costing system. The Trust is, therefore, glad to report that during the experiment it has been found that the cost of costing is not so high as is generally thought. In fact, it is so low that the Trust

feels confident that the introduction of costing should easily save more than its cost.

The following observations on this cost are based on the assumption that a system of stores accounts is regarded as an essential of good accounting even though its existence is a fundamental requirement of a costing system. The cost of stores accounts as such is, therefore, not regarded as part of the cost of costing. They are in existence now in most hospitals in the country and costing only calls for an extension of the system.

On the average the additional staff appointed in each of the seven groups co-operating in the experiment is not more than one full-time senior member of the finance officer's staff. In some groups, by a reorganization of the existing system, no additional appointment has been made, and in others costing was begun at the same time as a new or improved system of stores accounting, and it was difficult to separate the cost of stores accounting from the cost of costing. It must be remembered that during the experimental year various additional factors have to be taken into account:

1. The problems met in organizing a completely new and untried technique were considerable and time-consuming.
2. Statements of cost have been submitted to the Trust each quarter.
3. Cost accounting has been carried on as an additional process to the subjective accounting-system required by the Ministry. If the financial accounts of the hospitals were based on a departmental analysis duplication would be avoided and time saved. The cost of costing would then be even less.

It has been found, however, that it is almost essential for one senior member of the finance department to be in charge of cost accounting under the supervision of the finance officer. There is not only the additional accounting work involved, but the integration of departmental records with financial records and the necessary liaison with departmental heads to whom it is often necessary to give assistance and advice on the counting of units and with whom consultation on the resulting costs is most desirable. Moreover, unless costing is in the charge of one person not concerned with the Ministry accounts, it is apt to take the last place in the programme of work. Annual accounts, estimates, and revised estimates must take precedence, at least while cost accounting is

an additional process. If this is allowed to happen much of the value of departmental costing will be lost. Cost reports, if they are to be of any use for administration, must be furnished promptly.

ix. *The need for further study*

In several of the preceding sections of this report the need for further study has been emphasized. In some cases it has not been possible within the year to give the experts, whose advice was sought, time to consider their respective problems, nor to make available to them data for a sufficiently long period to demonstrate the usefulness of their suggestions. This especially applies to the problem of the dispensary, of radiology, and of physiotherapy, and a basis for the allocation over departments of the cost of water, steam, gas and electricity, building and maintenance, still has to be found.

Moreover, it has not been possible within the programme of the experiment to look at the reasons for differences in cost. The next stage will be an examination of the cost of each of the departments to ascertain the factors which affect cost and the technique of cost investigation.

During the second year of the experiment it may be possible to assess the use of information obtained by departmental costing for hospital planning. The accountant who has been in charge of this investigation also serves as a member of the Trust's team investigating the functions and design of hospitals. During the past two years the team has studied intensively wards and out-patient departments. During the next year it will study the other special departments and their integration into the hospital as a whole. It will need to know the optimum and minimum size of these departments and their demand one upon another. The team realizes that the needs of the patient and the medical and nursing staff come first; but when it is possible to satisfy these needs in more than one way the economics of the various methods have to be considered, and it will be of interest to see how a better knowledge of the cost content of each department may help. It should assist, for example, in assessing whether the capital cost of some mechanical installation would be offset by a reduction in labour and/or material expense, or whether a scheme for the centralization of some services is economically desirable. Moreover, an experimental ward-unit on the Trust's plans is being built in Greenock and

it is hoped that it will be possible to experiment in methods of organization within this unit, and to measure the economic effects of these experiments and of the running of the new unit as compared with existing wards by a system of intensive costing based on the lines of this report.

Much further knowledge is also needed of the costs of mental hospitals. When, in the second year of the experiment, it is possible to have an inter-hospital comparison of cost it will be possible to work out a system which will take into account their special problems.

But it is in the fundamental application of the system that most remains to be done. Now that the routine has been established, there will be time to consider future developments. The most important of these is the building up of estimates on a departmental basis. It is hoped that at least one of the groups co-operating in the experiment will be willing to work with the Trust for a further two years on the use of departmental costing as a basis of budgetary control. It will be necessary for the estimates which have to be prepared in 1952/3 for use in 1953/4 to be built up on a departmental basis after full discussion with all departmental heads. Then in 1953/4 each department will be given a quarterly statement showing the actual results as compared with the estimate. So far as possible the estimates should be based on agreed standards of staff and materials needed to produce the estimated number of units of work. When the results are presented to the department it will be necessary to show clearly, by the method of standard costing outlined below, the reasons for the differences between actual and estimated cost. In this way it would be possible within two years to introduce the basis of standards into hospital estimates, and to show whether, by making available to all concerned in the hospital the data necessary for financial control, economies can be made. Dramatic economy will never be possible; there is no dramatic waste to be cured; it is only by eliminating every source of wastage and inefficiency and by making all within the service conscious of cost that the limited funds available for the hospitals will be spent in the best way.

In another hospital group it is hoped it may be possible for a similar experiment to run without the introduction of standards. This would be valuable because it would show by comparison how the use of standards increased the work involved, and whether by

showing the simple difference between actual and estimated costs it would be possible to keep the interest of all concerned and to ensure control.

x. *The introduction of standard costing*

It was part of the Trust's object in undertaking this experiment to find out to what extent standard costing as used in industry could be applied to hospitals. Standard costing is an accounting technique whereby the cost of any enterprise can be compared with a fixed measure—the standard cost—and the reasons for any deviation from that standard are shown up in relation to all components of the cost. It combines the usual financial accounting with the standard cost and shows clearly the reasons for the difference between current cost and the standard. In the past, standard costing has been applied in this country solely in industry and has been found of great value to management as a method of control.

In hospitals it may not be possible to use the standard cost as part of the financial accounting system, but it should be possible to use standards as the basis of estimates and so of budgetary control. If estimates are based on what labour and materials are needed to produce a given amount of work (that is, the standard cost), then when changes take place in national salary-scales or in price-levels, the estimates can be adjusted so that when actual cost is compared with them the differences will still represent an increase or a decrease in the use of man-power or materials. Again some part of the cost of each department will vary with the amount of work the department does. When the volume of work changes, that part of the cost which directly varies with the work done can be changed proportionately and the difference between estimates and current cost will still represent either over-expenditure through the use of more staff or materials, or under-expenditure representing real economy. One then has the original estimate and the changes in the estimate due to changes in salary-scales, price-variations, and differences in volume of work. Only in this way can expenditure be fully controlled.

There is another sense in which standards are necessary and that is in the interrelationship between departments. It is one part of the problem to know that steam is being produced at the cheapest possible cost, but it is equally important to know that the steam is not being wasted when it has left the boiler house. It is

useful to know that a pathological investigation is done in an efficient yet economical way, but it would be equally useful to know whether the number of investigations done is above or below the average having regard to the types of patient treated, and it would be of even more use to know to what extent general practitioners were using the laboratory facilities of the hospital and the effect of this on the economics of the health service as a whole. It is hoped that with the co-operation of specialists in every field it might be possible to arrive at formulae which would give broad indications of the right usage of the many services which a hospital gives.

Once departmental costing is an established routine and estimates are also prepared on that basis, the introduction of standards is a simple matter; what is the larger problem is the working out of the standard. During the experimental year there has not been time for this to be done because more intensive study of each department is necessary. It is hoped that work done by research teams already set up by the Trust may help. It is possible that the report on the job-analysis of a nurse's work may assist in arriving at the nursing standards for the various types of wards. The Trust's team which is investigating the functions and design of hospitals has already carried out intensive time-studies in the out-patient department, and these may assist in arriving at a standard cost for out-patient work; the team will be carrying out similar studies in other medical departments and these may be of use for costing purposes. For such departments as the laundry and boiler house, standards exist and are used commercially. The Trust has already begun a study of the applicability of these standards to hospitals.

It is not the aim of these studies to arrive at a standard to be applied indiscriminately to all hospitals. What is required is knowledge about the factors which affect cost and the setting up of a national standard which can be varied in accordance with local conditions.

6. Summary

The basis of departmental costing (pages 14–37).

1. Departmental costing should be limited to hospitals of over 100 beds (page 16).
2. The departments to be costed in (*a*) general hospitals, (*b*) special hospitals, and (*c*) mental and mental deficiency hospitals are set out (pages 16–20).
3. The expenditure to be included in departmental cost should be on a 'prime cost' basis (pages 20–21). (Details of expenditure to be allocated to each department are given in Appendix I.)
4. The unit of measurement of the work of the departments must be related to the main items of expense. (Definitions of the units are given in Appendix I.) Departmental units need to be checked and the methods of counting them studied (pages 21–23).
5. A departmental analysis of expenditure would give better financial control than the present subjective analysis. The necessity for the allocation of differing levels of departmental cost when cost has to be built up for any purpose is discussed (pages 23–30).
6. Simplifications made in the system used as compared with that instituted at the Radcliffe Infirmary are described (pages 30–32).
7. The system to be used for small hospitals of under 100 beds is set out (page 32–33).
8. Although it would be good commercial accounting practice to include depreciation in hospital accounts, the cost in time and money of instituting the necessary plant-records makes it inopportune at the present time (pages 33–37).

Conclusions to be drawn from the experiment (pages 38–50).

1. That a departmental analysis of hospital expenditure in the form of Table II provides adequate information for purposes of control (page 39).
2. That the form of departmental cost statement shown in Table

III would enable departmental heads to control their expenditure (page 39–40).

3. That departmental cost gives the information required for determining the financial effect of extensions or changes in the work of a hospital (page 40).
4. That departmental cost on a 'prime cost' basis best enables the financial effect of new techniques or capital expenditure to be assessed (pages 40–41).
5. That inter-hospital comparison of cost on a departmental basis can be made. In the case of medical departments the comparison has to be made between similar types of hospitals but for the service departments it is thought that comparison can be made between most hospitals except those for mental or mentally deficient patients (pages 41–42). An inter-hospital comparison of the cost of all departments is given in Table IV.
6. That departmental standards can be evolved which, by their modification to meet local conditions, would provide a valuable aid in the allocation of funds to boards of governors or hospital management committees, but before this can be done much more needs to be known of the factors affecting cost. So that the necessary studies can be carried out departmental costing should be introduced into a much larger sample of hospitals (pages 43–44).
7. That there has not been time within the year to assess to what extent the managing bodies of the hospitals will wisely and efficiently use the results of departmental costing. In some groups something has already been done and the Trust is helping in investigations of catering, laundries, wages-preparation, and stores-accounting methods (pages 44–45).
8. That the cost of costing is not great and should be offset by resultant savings. The cost would be less if a departmental analysis took the place of the present subjective analysis of expenditure (pages 45–47).
9. That the experiment should continue for a another year to enable further study to be made of:

   (*a*) The use to which the results obtained by departmental costing may be used to effect economies or improve the administration of the hospitals.
   (*b*) The unit of cost for dispensary and physiotherapy.

(*c*) The basis of allocation of the cost of water, steam, gas, electricity, and building maintenance.

(*d*) The use of information obtained by departmental costing for hospital planning.

(*e*) The special problems of mental and mental deficiency hospitals.

(*f*) The departmental build-up of hospital estimates with and without standard costs (pages 47–49).

10. That standard costs can be used in hospitals as the basis of the preparation of estimates. The estimates can then be adjusted for purposes of budgetary control when there is a change in national salary-scales, price-levels, or the work of a department. There is also a need to study the standard demand of one department upon the services of others. Much intensive study is necessary to arrive at the information required for the setting up of departmental standard costs (pages 49–50).

TABLE I

PERCENTAGE OF DEPARTMENTAL EXPENDITURE TO TOTAL EXPENDITURE IN VARIOUS TYPES OF HOSPITALS

Departments	*Teaching General*	*Non-Teaching General*	*General, Chronic and Mixed*	*Mainly Chronic*	*Tuberculosis Sanatoria*	*Mental Deficiency*	*Mental*
	%	%	%	%	%	%	%
Medical Departments							
Wards	19·14	21·77	34·73	34·00	30·97	28·89	34·18
Out-patients and casualty	7·52	9·66	1·31	0·25	0·26	..	0·15
Home treatment	..	..	..	..	0·66	..	..
Operating theatres	7·52	6·99	..	..	1·32	..	0·12
Electrocardiography	0·15	0·07	..	..	..	..	..
Radiology, diagnostic	3·64	4·32	1·08	..	1·34	..	..
Radiotherapy	0·20	0·89	..	..	..	..	..
Laboratories	4·17	3·09	..	0·25	..	..	..
Physiotherapy	1·34	1·79	1·45	0·75	0·53	1·61	..
Dispensaries	5·02	6·26	4·36	0·75	4·20	1·62	..
Almoners	0·76	0·46	0·56	..	0·33	..	0·44
Records	3·49	2·36	1·28	0·10	..	..	..
Occupational therapy	0·15	0·14	0·11	0·03	0·57	2·23	1·06
Recreational therapy	..	..	..	..	..	0·32	..
Total, medical departments	53·10	57·80	44·88	36·13	40·18	34·67	35·95

Non-Medical Departments							
Works and maintenance	5·02	3·99	4·68	5·56	9·26	7·33	8·94
Boiler house	4·46	4·02	5·54	7·78	10·33	7·92	4·44
Rent and rates	0·45	0·39	2·34	1·92	1·04	3·24	2·97
Gas, water, and electricity	1·76	1·46	2·13	2·72	2·66	2·16	..
General services	0·81	1·69	1·24	1·82	0·70	1·66	3·16
Portering services	2·76	2·09	4·16	2·00	0·93	..	..
Cleaning services	3·62	3·42	2·01	4·66	1·21	..	..
Own transport	0·54	0·13	0·42	0·17	0·92	1·46	1·09
Outside transport	0·32	0·34	0·38	0·57	0·47	0·39	0·15
Laundry	2·84	1·72	5·01	4·80	2·48	1·90	2·91
Catering, general	13·92	14·13	18·18	21·53	17·49	18·29	20·28
Residences	1·81	1·57	1·85	1·97	4·28	0·06	1·85
Nursing training schools, including P.T.S.	1·42	0·67	0·53	0·09	..	0·26	0·15
Nursing administration	1·02	1·59	0·52	0·18	0·54	3·11	2·59
Administration	4·43	3·90	2·66	2·50	3·73	8·75	6·35
Sundry payments to patients (including Part III, Vagrants)	..	..	..	0·80	..	2·64	1·34
Total, non-medical departments	45·18	41·11	51·65	59·07	56·04	59·17	56·22
Trading Accounts							
Sewing room	1·28	0·56	1·36	1·66	1·20	0·27	3·11
Farms and productive gardens	0·17	0·44	1·22	2·51	2·58	3·54	0·44
Canteen, shops, and buffets	0·27	0·09	0·89	0·63	..	2·35	4·28
Total, trading accounts	1·72	1·09	3·47	4·80	3·78	6·16	7·83
Total	100	100	100	100	100	100	100

TABLE II

SUMMARY OF DEPARTMENTAL COSTS FOR A HOSPITAL FOR THREE MONTHS ENDED 31ST DECEMBER 1951

Type: General Teaching — Number of Beds: 647

	Salaries and wages				Materials and other expenses	Total expenditure	Units	Unit cost	% of expenditure
	Medical	Nursing	Other	Total					
	£	£	£	£	£	£		£ s. d.	
Medical Departments ·									
Wards: Medical	6,170	6,957	938	14,065	1,873	15,938	21,847	14 7	8·1
Surgical	2,700	9,177	1,116	12,993	2,924	15,917	22,585	14 1	8·0
Aural with theatre	871	678	110	1,659	498	2,157	1,195	1 16 1	1·1
Out-patients: General	6,630	913	459	8,002	271	8,273	30,102	5 6	4·2
Psychiatry	1,043	..	168	1,211	21	1,232	712	1 14 7	0·6
V.D.	1,335	..	267	1,602	49	1,651	2,777	11 10	0·8
Casualty and emergency theatre	809	905	160	1,874	772	2,646	19,903	2 8	1·3
Operating theatres	6,767	2,602	354	9,723	2,657	12,380	2,063	6 0 0	6·2
Radiology, diagnostic	3,373	..	2,154	5,527	5,215	10,742	24,734	8 8	5·4
Laboratories, research	1,645	..	726	2,371	188	2,559	..	..	1·3
Laboratories and mortuary	3,516	..	3,173	6,689	725	7,414	58,223	2 7	3·7
Physiotherapy	716	..	2,732	3,448	252	3,700	1,421·1	2 11 11	1·9
Dispensaries	..	..	2,115	2,115	8,557	10,672	101,882	2 1	5·4
Almoners	..	..	1,513	1,513	95	1,608	22,646	1 5	0·8
Records	..	..	7,098	7,098	482	7,580	43,738	3 6	3·8
Medical photography	..	..	519	519	621	1,140	..	..	0·6
Electroencephalography	..	..	70	70	31	101	367	5 6	0·1
Electrocardiography	..	..	258	258	330	588	1,067	11 0	0·3

Non-Medical Departments									
Works and maintenance	..	..	8,168	8,168	5,803	13,971	5,181·3	2 13 11	7·0
Boiler house	..	..	1,508	1,508	7,188	8,696	..	..	4·4
Gas, water, and electricity	..	..	..	..	3,378	3,378	5,181·3	13 0	1·7
General services	..	..	719	719	888	1,607	45,627	8½	0·8
Rent and rates	..	..	..	..	675	675	5,181·3	2 7½	0·3
Portering services	..	..	4,970	4,970	208	5,178	505	9 14 1	2·6
Cleaning services	..	..	8,672	8,672	750	9,422	5,181·3	1 16 5	4·8
Own transport	..	..	198	198	100	298	3,142	1 10	0·2
Outside transport	..	..	..	..	386	386	456·3	16 11	0·2
Laundry	..	..	3,804	3,804	593	4,397	6,387·5	13 9	2·2
Catering: General	..	..	8,322	8,322	17,071	25,393	112,203	4 6	12·8
Dietetic	..	..	824	824	1,769	2,593	8,990	5 10	1·3
Residences	..	753	..	753	1,273	2,026	44,513	11	1·0
Nurses Training School including P.T.S.	..	3,161	..	3,161	877	4,038	206	19 12 1	2·0
Nursing administration	..	770	270	1,040	328	1,368	607	2 5 1	0·7
General administration	..	..	5,439	5,439	1,959	7,398	236,873	3·1%	3·7
Trading Accounts									
Sewing room	..	..	734	734	..	734	..	..	0·4
Buffet, patients	..	..	150	150	511	661	..	..	0·3
Total	35,575	25,916	67,708	129,199	69,318	198,517	..	..	100·0

TABLE III

SAMPLES OF DEPARTMENTAL COST STATEMENT

Departmental Cost Statement for Period 1.10.51 to 31.12.51

Group A
Hospital A

Department: Medical Wards
Unit of cost: In-Patient Days

Beds available	143	*Percentage occupancy*	89·64
Available in-patient days	13,156	*Patients admitted*	541
Actual in-patient days	11,794	*Average length of stay*	21·80

Expenditure headings	*Sub-total*	*Main total*	*Unit cost*
	£ s. d.	£ s. d.	£ s. d.
Salaries and Wages			
Medical			
Consultants	1,078 2 8		1 10
Registrars and S.H.O.s	578 15 4		1 0
Housemen	380 3 3		8
		2,037 1 3	3 6
Nursing (including ward orderlies)	..	5,910 15 2	10 0
Ward maids	..	499 19 9	10½
			14 4½
Stores Issues and Direct Purchases			
Dressings	..	360 2 6	7¼
Instruments and medical appliances	..	171 17 1	3½
Hardware and crockery	..	105 7 8	2
Printing and stationery	..	105 0 4	2
Furniture	..	180 15 0	3¾
Cleaning materials	49 10 3	..	..
Bedding and linen	1 19 0	..	..
Maintenance materials	12 0	..	1
		52 1 3	
Total		£9,423 0 0	16 0

TABLE III

SAMPLES OF DEPARTMENTAL COST STATEMENT

Departmental Cost Statement for Period 1.10.51 to 31.12.51

Group F — *Department*: Radiology
Hospital H — *Unit of cost*: Weighted points value of examinations

Total number of units 10,527
Total number of examinations as counted for S.H. 3 . . 5,554

Expenditure headings	*Sub-total* £ s. d.	*Main total* £ s. d.	*Unit cost* £ s. d.
Salaries and Wages			
Radiologists	1,231 0 0	..	2 4¼
Radiographers	1,113 14 6	..	2 1¼
Nursing	152 18 3	..	3½
Other	62 7 3	..	1½
		2,560 0 0	4 10½
Stores Issues and Direct Purchases			
X-ray films	..	581 2 8	1 1
*Instruments and equipment	..	528 19 3	1 0
Printing and stationery	..	107 15 5	2½
Cleaning materials	3 11	..	..
Bedding and linen	9 1 7	..	..
Hardware and crockery	1 0 4	..	..
Renewals and repairs to equipment	4 2 0	..	..
Uniforms and clothing	71 4 7	..	2
		85 12 5	
Total		£3,863 9 9	7 4

Note: If a training school please state number of students.
* Includes purchase and fitting of Anode tube £300 (approx.).

TABLE III

SAMPLES OF DEPARTMENTAL COST STATEMENT

Departmental Cost Statement for Period 1.10.51 to 31.12.51

Group D
Hospital F

Department: Laundry
Unit of cost: 100 pieces

Pieces washed for period			78,257
Average weekly number of pieces washed by:			
(*a*) Own laundry			5,417
(*b*) Other hospitals			603
Analysis of pieces washed:			
White coats .	1,625	Pillow slips .	6,970
Aprons . .	9,156	Sheets . .	8,266
Dresses . .	1,575	Draw sheets .	5,412
Overalls . .	156	Towels: Hand .	2,841
Theatre gowns .	3,696	Bath .	1,408
Blankets . .	281	Roller .	564
Counterpanes .	740	Other . .	35,567

Expenditure headings	*Sub-total*	*Main total*	*Unit cost*
	£ s. d.	£ s. d.	£ s. d.
Salaries and Wages			
Laundry staff:			
Superintendents (including deputies and assistants) .	76 2 7	..	1 11
Other	381 7 10	..	9 9
		457 10 5	11 8
Stores Issues and Direct Purchases			
Hardware and crockery . .	15 11	..	¼
Cleaning and chandlery . .	47 4 11	..	1 2¾
Furniture and furnishings .	25 8 6	..	8
		73 9 4	
Work done by other hospitals .	..	81 12 6	2 1
Total	..	£612 12 3	15 8

TABLE IV

DEPARTMENTAL SUMMARIES OF HOSPITAL UNIT-COSTS FOR SIX MONTHS ENDED 31ST MARCH 1952

INDEX

Note: All figures relating to the Mental Hospital (Hospital W) are in respect of the three months ended 31st December 1951

TABLE IV (*cont.*)
GENERAL MEDICAL WARDS UNIT-COST
Unit: In-patient days

Hospitals	Salaries and wages			Materials and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure	% Occ.	Average stay
	Medical	Nursing and other ward staff	Total							
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%	%	
TEACHING HOSPITALS										
General										
Hospital A . . .	3 6	10 8½	14 2½	1 5	15 7½	23,806	18,563	4·34	90·9	21·9
,, B . . .	5 6	7 1½	12 7½	2 0½	14 8	44,146	32,370	8·10	93·3	23·3
NON-TEACHING HOSPITALS										
General										
Hospital E . . .	2 5½	7 11	10 4½	1 9	12 1½	8,742	5,285	6·70	72·7	23·0
,, F . . .	2 10	9 7	12 5	1 11½	14 4½	6,665	4,790	5·82	91·6	17·7
,, G . . .	2 3	7 1¾	9 4¾	1 8	11 0¾	7,704	4,255	3·18	105·2	19·3
,, H . . .	10 6	9 4¼	19 10¼	1 4½	1 1 2¾	9,669	10,260	5·80	92·7	22·8
,, I . . .	3 11¾	14 3	18 2¾	3 1	1 1 3¾	9,982	10,640	27·72	79·6	12·4
General, chronic and mixed										
Hospital K . . .	3 11	11 7½	15 6½	1 5¼	16 11¾	6,439	5,467	6·73	75·2	14·8
Mainly chronic										
Hospital P . . .	1 9	8 5	10 2	10½	11 0½	4,168	2,301	9·85	70·5	37·9

GENERAL MEDICAL WARDS UNIT-COST

Units calculated on an average occupation of 90 per cent.

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITALS							
General							
Hospital A	3 6½	10 9½	14 4	1 5	15 9	23,552	18,563
„ B	5 8	7 4½	13 0½	2 1	15 1½	42,579	32,370
NON-TEACHING HOSPITALS							
General							
Hospital E	2 0	6 5	8 5	1 4	9 9	10,811	5,286
„ F	2 10½	9 9½	12 8	2 0	14 8	6,548	4,790
„ G	2 8	8 4	11 0	1 11	12 11	6,588	4,255
„ H	10 10	9 7	1 0 5	1 5	1 1 10	9,386	10,260
„ I	3 6	12 7	16 1	2 9	18 10	11,282	10,640
General, chronic and mixed							
Hospital K	3 3	9 9	13 0	1 3	14 3	7,700	5,467
Mainly chronic							
Hospital P	1 4½	6 7	7 11½	8½	8 8	5,316	2,301

TABLE IV (*cont.*)
GENERAL SURGICAL WARDS UNIT-COST
Unit: In-patient days

Hospitals	*Salaries and wages*			*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*	*% Occ.*	*Average stay*
	Medical	*Nursing and other ward staff*	*Total*							
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%	%	
TEACHING HOSPITALS										
General										
Hospital A . . .	6 1½	11 8	17 9½	2 5½	1 0 3	36,226	36,666	6·97	96·5	15·0
,, B . . .	5 1½	9 0½	14 2	2 2	16 4	46,792	38,188	8·00	84·3	13·3
NON-TEACHING HOSPITALS										
General										
Hospital E . . .	3 9	8 0½	11 9½	1 3½	13 1	8,682	5,687	6·10	77·6	12·5
,, F . . .	5 0½	7 11½	13 0	1 11½	14 11½	9,771	7,300	6·32	92·1	16·1
,, G . . .	3 2½	6 11½	10 2	2 4½	12 6½	20,706	12,953	7·77	82·6	14·0
,, H . . .	7 3½	10 9½	18 1	1 1½	19 2½	15,931	15,347	6·09	89·7	9·7
General, chronic and mixed										
Hospital K . . .	2 0½	12 1½	14 2	1 1	15 3	7,595	5,803	6·76	84·7	20·9

GENERAL SURGICAL WARDS UNIT-COST

Units calculated on an average occupation of 90 per cent.

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITALS							
General							
Hospital A	6 7	12 6	19 1	2 8	1 1 9	33,763	36,666
„ B	4 10	8 6	13 4	2 0	15 4	49,967	38,188
NON-TEACHING HOSPITALS							
General							
Hospital E	3 2½	6 11	10 1½	1 1½	11 3	10,067	5,687
„ F	5 2	8 1½	13 3½	2 0	15 3½	9,553	7,300
„ G	2 11½	6 4	9 3½	2 2	11 5½	22,564	12,953
„ H	7 3	10 10	18 1	1 1½	19 2½	15,975	15,346
General, chronic and mixed							
Hospital K	1 11	11 5	13 4	1 0½	14 4½	8,070	5,803

TABLE IV (*cont.*)

GYNAECOLOGICAL WARDS UNIT-COST

Unit: In-patient days

Hospitals	*Salaries and wages*			*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*	*% Occ.*	*Average stay*
	Medical	*Nursing and other ward staff*	*Total*							
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%	%	
TEACHING HOSPITALS										
General										
Hospital A . . .	5 9½	13 5	19 2½	2 5	1 1 7½	13,567	14,676	2·89	93·7	10·7
Special										
Hospital C . . .	7 4½	8 3½	15 8	2 4	18 0	19,761	17,766	6·80	91·9	11·5
NON-TEACHING HOSPITALS										
General										
Hospital E . . .	2 4	15 7	17 11	2 6	1 0 5	2,106	2,154	2·70	82·6	11·8
,, F . . .	2 7	10 5	13 0	3 3	16 3	2,905	2,364	2·35	88·2	10·9
,, H . . .	10½	12 5	13 3½	10	14 1½	5,779	4,084	2·04	91·6	9·7

GYNAECOLOGICAL WARDS UNIT-COST

Units calculated on an average occupation of 90 per cent.

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITALS							
General							
Hospital A	6 1	13 11½	1 0 0½	2 6	1 2 6½	13,011	14,676
Special							
Hospital C	7 6½	8 5½	16 0	2 4½	18 4½	19,351	17,766
NON-TEACHING HOSPITALS							
General							
Hospital E	2 2	14 4	16 6	2 3	18 9	2,293	2,154
,, F	2 6½	10 3	12 9½	3 2	15 11½	2,965	2,364
,, H	11	12 7	13 6	10½	14 4½	5,679	4,083

TABLE IV (*cont.*)

EAR, NOSE, AND THROAT WARDS UNIT-COST

Unit: In-patient days

Hospitals	*Salaries and wages*			*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*	*% Occ.*	*Average stay*
	Medical	*Nursing and other ward staff*	*Total*							
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%	%	
TEACHING HOSPITALS										
General										
Hospital A . . .	5 11½	11 5	17 4½	2 3	19 7½	11,703	11,495	1·99	79·9	6·9
,, B* . . .	11 10½	13 5	1 5 3½	13 10½	1 19 2	2,615	5,118	1·10	68·0	9·8
NON-TEACHING HOSPITALS										
General										
Hospital F . . .	4 11	8 1	13 0	1 3	14 3	4,098	2,915	3·24	86·1	9·2
,, G . . .	3 8	6 4	10 0	2 0	12 0	5,626	3,364	2·77	68·9	5·9
,, H . . .	9 6	11 10	1 1 4	1 1	1 2 5	6,339	7,102	2·59	83·6	6·5

* The operating theatre forms an integral part of this unit and the cost of the theatre is included in the ward costs.

EAR, NOSE, AND THROAT WARDS UNIT-COST

Units calculated on an average occupation of 80 per cent.

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITALS							
General							
Hospital A	5 11½	11 4½	17 4	2 3	19 7	11,712	11,495
„ B*	10 1	11 5	1 1 6	11 10	1 13 4	3,074	5,118
NON-TEACHING HOSPITALS							
General							
Hospital F	5 3½	8 8½	14 0	1 4	15 4	3,806	2,915
„ G	3 1½	5 5	8 6½	1 9	10 3½	6,540	3,364
„ H	9 11	12 5	1 2 4	1 1	1 3 5	6,064	7,102

* The operating theatre forms an integral part of this unit and the cost of the theatre is included in the ward costs.

TABLE IV (*cont.*)
MATERNITY WARDS UNIT-COST
Unit: In-patient days

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure	% Occ.	Average stay
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%	%	
TEACHING HOSPITAL										
Special										
Hospital C	4 0	18 3	1 2 3	7 3	1 9 6	15,418	22,756	13·10	102·7	11·7
NON-TEACHING HOSPITALS										
General										
Hospital G	7 0	11 2	18 2	2 4	1 0 6	2,656	2,719	1·76	103·7	22·0
General, chronic and mixed										
Hospital K	4 1	1 8 9	1 12 10	5 3	1 18 1	5,016	9,556	9·35	88·4	13·3
Mainly chronic										
Hospital M	3 1	15 6	18 7	2 1	1 0 8	3,863	3,994	6·31	63·9	11·4
,, O	1 11½	19 11	1 1 10½	2 11½	1 4 10	1,155	1,435	7·60	45·1	9·0
,, P	4 4½	1 0 1	1 4 5½	1 6½	1 6 0	1,708	2,218	9·12	66·7	10·7
,, R	1 5½	18 6½	1 0 0	1 6	1 1 6	1,559	1,678	5·86	45·2	10·3

MATERNITY WARDS UNIT-COST

Units calculated on an average occupation of 90 per cent.

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITAL							
Special							
Hospital C	4 7	1 0 10	1 5 5	8 2	1 13 7	13,505	22,756
NON-TEACHING HOSPITALS							
General							
Hospital G	8 0	12 11	1 0 11	2 8	1 3 7	2,306	2,719
General, chronic and mixed							
Hospital K	3 11½	1 8 3½	1 12 3	5 2	1 17 5	5,106	9,556
Mainly chronic							
Hospital M	2 2	11 0½	13 2½	1 5½	14 8	5,435	3,994
,, O	1 0	9 11½	10 11½	1 6	12 5½	2,306	1,435
,, P	3 3	14 10½	18 1½	1 1	19 2½	2,306	2,218
,, R	9	9 2½	9 11½	9	10 8½	3,129	1,678

TABLE IV (*cont.*)
CHILDREN'S WARDS UNIT-COST
Unit: In-patient days

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure	% Occ.	Average stay
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%	%	
TEACHING HOSPITAL										
Special										
Hospital C* . . .	5 3	12 0	17 3	3 6	1 0 9	661	688	0·69	76·8	20·7
NON-TEACHING HOSPITALS										
General										
Hospital E . . .	1 9	11 0½	12 9½	2 4	15 1½	2,977	2,253	2·90	74·3	12·9
,, G . . .	9	6 9½	7 6½	2 2	9 8½	5,843	2,832	1·86	75·8	14·7
,, H . . .	1 11½	10 6	12 5½	1 2½	13 8	6,320	4,314	2·19	90·8	11·2

* This is a new ward and the high unit-cost is largely due to staffing prior to acceptance of patients.

CHILDREN'S WARDS UNIT-COST

Units calculated on an average occupation of 80 per cent.

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITAL							
Special							
Hospital C*	5 0	11 7	16 7	3 5	1 0 0	688	688
NON-TEACHING HOSPITALS							
General							
Hospital E	1 7	10 4	11 11	2 2	14 1	3,203	2,253
,, G	8	6 5	7 1	2 1	9 2	6,165	2,832
,, H	2 2½	11 10½	14 1	1 5	15 6	5,563	4,314

* This is a new ward and the high unit-cost is largely due to staffing prior to acceptance of patients.

TABLE IV (*cont.*)

OTHER SPECIAL WARDS UNIT-COST

Unit: In-patient days

Hospitals	Specialty	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure	% Occ.	Average stay
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%	%	
TEACHING HOSPITALS											
General											
Hospital A	Dermatological	3 4½	12 7½	16 0	2 11	18 11	3,613	3,407	0·30	98·7	28·4
	Orthopaedic	3 10	9 7½	13 5½	1 11	15 4½	6,818	5,240	1·11	77·6	10·1
	Radiotherapy	2 7½	13 2½	15 10	2 0	17 10	5,835	5,208	1·21	88·6	20·3
Special											
Hospital C	Neo-natal	7 1½	1 4 2	1 11 3½	10 2½	2 1 6	2,099	4,359	2·10	67·4	13·9
,, D	Ophthalmic Med.	3 11½	7 6	11 5½	2 2½	13 8	9,466	6,470	9·0	68·1	16·0
	Ophthalmic Surg.	7 5½	7 11½	15 5	1 6	16 11	10,683	9,038	12·00	80·6	15·0
NON-TEACHING HOSPITALS											
General											
Hospital F	Gastric (Med. and Surgical)	4 3½	8 10½	13 2	3 3½	16 5½	3,259	2,677	3·05	84·8	15·3
,, H	Ophthalmic	8 2½	13 9½	1 2 0	1 11½	1 3 11½	3,186	3,818	1·62	91·6	11·3
	Radiotherapy hostel	..	10 0½	10 0½	1 0½	11 1½	1,379	767	0·32	57·9	19·4
	Recovery home	9½	11 5½	12 3	1 1½	13 4½	9,417	6,283	3·04	80·4	12·6
General, chronic and mixed											
Hospital J	Tuberculosis	1 9	6 10	8 7	5 7½	14 2½	3,310	2,354	5·72	86·1	106·7
Tuberculosis sanatoria (including isolation block)											
Hospital S	Tuberculosis	1 0½	4 4½	5 5	1 7½	7 0½	13,500	4,730	30·26	94·6	217·9
,, T*	Tuberculosis	3 1½	9 2½	12 4	8½	13 0½	39,908	26,071	30·08	97·0	187·3
,, U	Tuberculosis	1 3	4 4½	5 7½	3 1½	8 9	5,023	2,210	9·86	98·0	295·4
	Infectious diseases	3 10	8 9	12 7	3 11½	16 6½	6,085	5,036	22·25	59·4	25·7
Mental deficiency											
Hospital V	Mental deficiency	11½	2 2	3 1½	1 8	4 9½	80,359	19,197	28·89	100·1	..
Mental											
Hospital W**	Mental	6½	3 4½	3 11	11	4 10	68,871	16,734	34·18	98·5	..

* Including Thoracic Surgery.
** These figures apply only to the 3 months to 31st December 1951.

PRIVATE PATIENTS' WARDS UNIT-COST

Unit: In-patient days

Hospitals	*Salaries and wages* — *Nursing and other ward staff*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*	*% Occ.*	*Average stay*
	£ s. d.	£ s. d.	£ s. d.		£	%	%	
TEACHING HOSPITAL								
Special								
Hospital D . . .	16 5½	1 4½	17 10	2,593	2,313	2·80	70·8	13·2
NON-TEACHING HOSPITALS								
General								
Hospital G . . .	12 11¾	3 6½	16 6¼	2,835	2,341	1·72	81·5	11·0
„ H	1 5 1½	1 4½	1 6 6	2,939	3,891	1·92	74·7	11·5
„ I	11 0½	3 6¾	14 7¼	911	665	2·03	76·6	14·2

TABLE IV (*cont.*)

PRIVATE PATIENTS' WARDS UNIT-COST

Units calculated on an average occupation of 80 per cent.

Hospitals	*Salaries and wages* — *Nursing and other ward staff*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*
	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITAL					
Special					
Hospital D	14 7	1 3	15 10	2,928	2,313
NON-TEACHING HOSPITALS					
General					
Hospital G	13 2½	3 7	16 9½	2,783	2,341
,, H	1 3 5½	1 3½	1 4 9	3,146	3,891
,, I	10 7	3 5	14 0	951	665

LONG-STAY WARDS UNIT-COST

Unit: In-patient days

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure	% Occ.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%	%
NON-TEACHING HOSPITALS									
General, chronic and mixed									
Hospital J	7½	4 7½	5 3	3	5 6	34,406	9,496	23·02	89·9
,, K	3	10 3	10 6	10	11 4	23,229	13,156	13·19	96·7
Mainly chronic									
Hospital L	9	4 8	5 5	8½	6 1½	5,811	1,781	23·30	90·7
,, M	5½	6 2	6 7½	1 0½	7 8	43,796	16,752	28·71	93·6
,, N	4½	5 3½	5 8	1 0½	6 8½	37,893	12,729	45·28	89·2
,, O	5	6 7	7 0	1 3	8 3	10,849	4,459	22·30	83·5
,, P	7	5 5	6 0	5½	6 5½	8,805	2,843	12·48	98·2
,, Q	4½	6 6½	6 11	11	7 10	18,662	7,313	30·44	95·3
,, R	4	5 5	5 9	8	6 5	19,535	6,279	23·27	97·1

TABLE IV (*cont.*)

LONG-STAY WARDS UNIT-COST

Units calculated on an average occupation of 95 per cent.

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
NON-TEACHING HOSPITALS							
General, chronic and mixed							
Hospital J	7	4 5	5 0	3	5 3	36,335	9,496
,, K	3	10 5	10 8	10	11 6	22,813	13,156
Mainly chronic							
Hospital L	9	4 5	5 2	8½	5 10½	6,085	1,781
,, M	5½	6 1	6 6½	1 0	7 6½	44,431	16,752
,, N	4	4 11½	5 3½	1 0	6 3½	40,333	12,729
,, O	4	5 10	6 2	1 1	7 3	12,349	4,459
,, P	7	5 7½	6 2½	6	6 8½	8,519	2,843
,, Q	4½	6 7	6 11½	11	7 10½	18,602	7,313
,, R	4	5 6½	5 10½	8½	6 7	19,121	6,279

OUT-PATIENTS INCLUDING CASUALTY UNIT-COST

Unit: Attendance

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing and other ward staff	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS								
General								
Hospital A	3 5	1 2	4 7	10	5 5	113,030	30,402	6·70
„ B	3 1	11	4 0	5	4 5	116,116	25,789	6·90
Special								
Hospital C*	2 2	1 6	3 8	4½	4 0½	43,176	8,721	5·00
„ D†	1 9½	1 7	3 4½	2 6¾	5 11¼	71,386	21,142	25·00
NON-TEACHING HOSPITALS								
General								
Hospital E	3 7½	3 3½	6 11	2 1½	9 0½	14,195	6,410	8·30
„ F	3 7½	1 4½	5 0	1 3½	6 3½	37,453	11,730	12·99
„ G	2 7	1 8	4 3	1 5	5 8	54,986	15,320	10·04
„ H	3 2½	1 6½	4 9	1 2	5 11	59,499	17,633	9·02
„ I	3 5½	1 10½	5 4	1 3½	6 7½	7,089	2,359	6·14
General, chronic and mixed								
Hospital J‡	2 6	..	2 6	1	2 7	4,766	625	1·62
„ K	2 3	1 4	3 7	2	3 9	7,815	1,459	1·19
Mainly chronic								
Hospital M*	2 1½	2 7	4 8½	½	4 9	1,094	261	0·61
„ P	1 9½	..	1 9½	3½	2 1	538	57	..
Tuberculosis sanatoria								
Hospital T	2 7	2 2	4 9	5½	5 2½	1,277	334	0·65
Mental								
Hospital W	12 6	..	12 6	..	12 6	120	75	0·15

* Maternity and children. † Ophthalmic only. ‡ Maternity clinic.

TABLE IV (*cont.*)

OUT-PATIENTS EXCLUDING CASUALTY UNIT-COST*

Unit: *Attendance*

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing	Salaries and wages: Other	Total salaries and wages	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITALS								
General								
Hospital A	5 2½	1 0½	1½	6 4½	9	7 1½	68,864	24,548
,, B	4 2	6½	3	4 11½	2½	5 2	78,785	20,303
NON-TEACHING HOSPITALS								
General								
Hospital E	5 0½	1 9½	8½	7 6½	2 6½	10 1	9,519	4,806
,, G	3 8½	11	3	4 10½	1 6	6 4½	34,984	11,183
,, H	3 10	11½	7	5 4½	1 5½	6 10	47,380	16,120

* The unit-costs of those hospitals without casualty departments are shown on page 79.

OUT-PATIENTS EXCLUDING CASUALTY UNIT-COST

Unit: New Out-patient

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing	Salaries and wages: Other	Total salaries and wages	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITALS								
General								
Hospital A	12 8½	2 7½	3½	15 7½	1 10	17 5½	28,194	24,548
,, B	8 7½	1 2	5½	10 3	4½	10 7½	38,183	20,303
Special								
Hospital C*	14 7	9 11½	..	1 4 6½	2 6½	1 7 1	6,440	8,721
,, D†	5 7½	2 0½	2 11	10 7	8 6	19 1	21,342	20,391
NON-TEACHING HOSPITALS								
General								
Hospital E	14 1	4 11	1 10½	1 0 10½	7 0	1 7 10½	3,444	4,806
,, G	17 10½	4 5½	1 4	1 3 8	7 2	1 10 10	7,250	11,183
,, H	10 8½	2 7½	1 8	15 0	4 0	19 0	16,958	16,119
,, I	12 8½	6 5	5½	19 7	4 10	1 4 5	1,935	2,360
General, chronic and mixed								
Hospital K	10 0½	5 11½	1½	16 1½	9½	16 11	1,725	1,459
Tuberculosis sanatoria								
Hospital T	18 2½	15 7	..	1 13 9½	3 3½	1 17 1	180	334

* Maternity and children. † Solely ophthalmic.

TABLE IV (*cont.*)
OPERATING THEATRES UNIT-COST
Unit: Operating hours

Hospitals	Salaries and wages: Medical	Salaries and wages: Nursing	Salaries and wages: Other	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS									
General									
Hospital A . . .	1 4 1½	1 3 4½	2½	2 7 8½	1 11 11	3 19 7½	6,676	26,577	6·22
„ B. . . .	1 12 9½	1 4 8	4 0	3 1 5½	1 14 5½	4 15 11	4,145	19,885	4·50
Special									
Hospital C . . .	12 5	1 0 5	..	1 12 10	1 9 5½	3 2 3½	1,348	4,200	2·90
„ D . . .	8 10	16 5	..	1 5 3	18 3½	2 3 6½	1,036	2,257	3·00
NON-TEACHING HOSPITALS									
General									
Hospital E. . . .	2 14 3½	2 5 3½	2 7	5 2 2	1 15 1	6 17 3	702	4,817	5·10
„ F. . . .	2 19 0	1 10 2	8 1	4 17 3	2 17 10	7 15 1	945	7,328	6·80
„ G . . .	1 10 8	18 11½	3 0	2 12 7½	1 12 10	4 5 5½	1,402	5,989	5·30
„ H . . .	1 11 1	1 3 10	10	2 15 9	1 2 6	3 18 3	3,078	12,038	6·00
„ I. . . .	..	16 9½	3 7	1 0 4½	1 8 5½	2 8 10	493	1,204	3·47
Tuberculosis sanatoria									
Hospital T . . .	..	1 14 4	12 3½	2 6 7½	1 13 4½	4 0 0	323	1,293	1·60

RADIOLOGY—DIAGNOSTIC UNIT-COST

Unit: Points value of examinations

Hospitals	Salaries and wages				Materials and other expense	Points value		Examinations		Expenditure	Percentage of total expenditure
	Radiologists	Technical	Other	Total		Total unit-cost	Units	Units	Unit-cost		
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.			£ s. d.	£	%
TEACHING HOSPITALS											
General											
Hospital A	1 3	1 3½	9	3 3½	2 9	6 0½	46,868	19,482	14 7	14,209	2·89
,, B	2 6½	1 10	..	4 4½	5 1½	9 6	50,939	24,380	19 11	24,259	5·40
Special											
Hospital C	3 10½	3 5	7	7 10½	5 1	12 11½	4,128	1,539	1 14 10	2,681	1·40
NON-TEACHING HOSPITALS											
General											
Hospital E	2 4	3 4½	7	6 3½	2 11½	9 3	7,759	..	..	3,578	4·10
,, F	2 9	1 7	1 2	5 6	2 11	8 5	12,842	6,350	17 0	5,395	5·40
,, G	1 10	1 11½	2½	4 0	2 11½	6 11½	15,734	7,858	13 11	5,460	3·79
,, H	2 6½	2 8	3½	5 6	3 4	8 10	19,294	11,623	14 8	8,513	3·98
,, I*	1 4	4 5½	..	5 9½	7 2½	..	..	3,820	13 0	2,482	..
General, chronic and mixed											
Hospital K*	10	2 3½	..	3 1½	6 6½	..	..	3,663	9 8	1,772	..
Tuberculosis sanatoria											
Hospital S*	1 7	4	..	1 11	1 2½	..	..	1,031	3 1½	163	..
,, T*	..	1 7½	..	1 7½	2 7½	..	..	6,608	4 3	1,400	..

* Unit-cost on the basis of the number of examinations.

TABLE IV (*cont.*)
LABORATORY UNIT-COST
Unit: Points value of investigations

Hospitals	Salaries and wages				Materials and other expense	Points value		Investigations		Expenditure	Percentage of total expenditure
	Medical	Technical	Other	Total		Total unit-cost	Units	Units	Unit-cost		
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.			£ s. d.	£	%
TEACHING HOSPITALS											
General											
Hospital A*	2 2	1 2½	3	3 7½	6	4 1½	70,240	23,454	12 6	14,679	4·05
,, B	1 1	11½	1	2 1½	3	2 4½	120,518	48,188	6 0	14,431	5·00
Special											
Hospital C	7	8	..	1 3	3	1 6	54,711	29,751	2 11	4,295	2·30
,, D	8½	3 0½	..	3 9	8	4 5	10,808	4,315	11 1	2,400	2·90
NON-TEACHING HOSPITALS											
General											
Hospital E	1 1½	1 0	..	2 1½	6½	2 8	11,172	5,470	5 6	1,498	1·60
,, F	8½	7⅝	1	1 5	5	1 10	39,288	18,129	4 0	3,584	3·77
,, G	8	10	..	1 6	4	1 10	40,512	11,232	6 8	3,733	2·63
,, H	2 2½	1 11½	..	4 2	10	5 0	33,992	27,889	6 1	8,500	4·27
Mainly chronic											
Hospital M	1	1 10	..	1 11	1 4	3 3	2,960	1,343	7 3	486	0·78

* There are two laboratories at this hospital, for one of which information was not available until 1st January 1952.

PHYSIOTHERAPY UNIT-COST

Unit: 100 points value of treatments

Hospitals	Salaries and wages: Medical	Salaries and wages: Physio-therapists	Salaries and wages: Other	Salaries and wages: Total	Materials and other expense	Points value: Total unit-cost	Points value: Units	Treatments: Units	Treatments: Unit-cost	Expenditure	Percentage of total expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.			£ s. d.	£	%
TEACHING HOSPITALS											
General											
Hospital A* . .	1 0½	1 7 6½	10	1 9 5	4 1	1 13 6	3,194	887	6 0 8	5,353	1·38
,, B* . .	10 1½	1 15 0½	2 0½	2 7 2½	3 9½	2 11 0	2,920	1,013	7 7 2	7,454	1·90
NON-TEACHING HOSPITALS											
General											
Hospital F . .	..	2 3 9½	1 0	2 4 9½	6 9	2 11 6½	891	381	6 0 6	2,296	2·40
,, G . .	8 6	2 7 0½	3 3½	2 18 10	4 3	3 3 1	1,172	471	7 17 1	3,700	2·46
,, H . .	3 3	2 17 2½	1 4½	3 1 10	3 1½	3 4 11½	908	384	7 13 6	2,948	1·51
,, I† . .	15 8	8 4 3½	..	8 19 11½	12 7½	..	..	111	9 12 7	1,069	..
General, chronic and mixed											
Hospital J† . .	..	1 16 7	..	1 16 7	..	..	..	65	1 16 7	119	..
,, K† . .	11 6	5 17 2	..	6 8 8	16 9	..	..	256	7 5 5	1,862	..
Mainly chronic											
Hospital L† . .	..	7 18 8½	1 9 0½	9 7 9	7 1	..	..	31	9 14 10	302	..
,, M . .	..	2 1 3½	..	2 1 3½	4 1	2 5 4½	122	42	6 11 11	277	0·47
,, P† . .	3 5 11	9 12 11	..	12 18 10	11 9½	..	..	17	13 10 7½	230	..
,, Q† . .	5 10 0	17 10 0	..	23 0 0	1 10 0	..	..	10	24 10 0	245	..
,, R† . .	3 17 2	9 1 5	..	12 18 7	4 9 11	..	..	14	17 8 6	244	..
Tuberculosis sanatoria											
Hospital T† . .	..	9 8 11½	..	9 8 11½	7 4½	..	..	65	9 16 4	638	..

* Training school.

† In those hospitals where the counting of treatments on a weighted points basis has not been introduced, the unit-cost of 100 treatments has been given.

TABLE IV (*cont.*)

DISPENSARIES UNIT-COST

Unit: In-patient days and out-patient attendances

Hospitals	Salaries and wages	Drugs and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A	6	1 7	2 1	199,413	20,587	4·87
,, B	5½	1 3½	1 9	203,115	17,675	5·40
Special						
Hospital C	5½	1 2	1 7½	82,683	6,707	4·50
,, D	3	11¾	1 2¾	109,500	6,673	6·40
NON-TEACHING HOSPITALS						
General						
Hospital E	2½	2 1	2 3½	32,026	3,718	3·90
,, F	3	1 3½	1 6½	64,151	4,937	5·73
,, G	3½	1 2½	1 6	92,618	6,943	5·13
,, H	5¼	2 7¾	3 1	114,967	17,770	8·39
,, I	1½	2 6	2 7½	17,982	2,365	8·00
General, chronic and mixed						
Hospital J	..	9½	9½	38,251	1,451	4·90
,, K	4½	1 10½	2 3	54,236	6,123	6·04
Mainly chronic						
Hospital O	..	3½	3½	22,178	323	1·60
,, P	..	5¼	5¼	20,421	444	2·12
,, Q	..	2½	2½	27,306	283	1·24
,, R	..	3¾	3¾	29,745	475	1·33
Tuberculosis sanatoria						
Hospital T	3	2 3½	2 6½	41,185	5,268	6·15
Mental deficiency						
Hospital V	..	3	3	80,359	999	1·62
Mental						
Hospital W	½	2½	3	68,991	867	1·77

ALMONERS UNIT-COST

Unit: New in-patients and new out-patients

Hospitals	Salaries and wages	Materials and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A	1 10½	¾	1 11¼	35,825	3,444	0·79
,, B	1 3	1½	1 4½	43,857	3,023	0·80
Special						
Hospital C	1 7	2½	1 9½	9,657	857	0·60
,, D	4	¼	4¼	22,840	393	0·50
NON-TEACHING HOSPITALS						
General						
Hospital E	3 3	5½	3 8½	4,208	782	1·10
,, G	10	1½	11½	10,598	499	0·30
,, I	1 5½	..	1 5½	2,793	202	0·65
General, chronic and mixed						
Hospital K	4 11½	¾	5 0¼	3,170	796	0·77
Tuberculosis sanatoria						
Hospital T	19 4¾	6¼	19 11	413	411	0·49
General						
Hospital H	1 2	¾	1 2¾	19,697	1,219	0·57

TABLE IV (*cont.*)
RECORDS UNIT-COST
Unit: In-patients and out-patients weighted units

Hospitals	*Salaries and wages*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A	2 11	4	3 3	91,830	14,730	3·36
,, B	3 2	2½	3 4½	85,221	14,435	3·80
Special						
Hospital C	2 4½	6½	2 11	32,005	4,651	2·90
,, D	4½	½	5	57,046	1,183	1·50
NON-TEACHING HOSPITALS						
General						
Hospital E	2 9	4½	3 1½	12,984	2,018	2·90
,, F	1 7	½	1 7½	22,497	1,834	1·97
,, G	1 3½	¼	1 3¾	32,072	2,117	1·12
,, H	2 10	3½	3 1½	44,357	6,960	3·38
,, I	1 10	3½	2 1½	7,639	808	2·10
General, chronic and mixed						
Hospital K	4 2½	½	4 3	8,523	1,818	1·77
Mainly chronic						
Hospital P	3 5	2½	3 7½	1,050	190	0·88

ELECTROCARDIOGRAPHY UNIT-COST

Unit: Cardiograms

Hospitals	*Salaries and wages*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A	2 10	1 6	4 4	1,580	340	0·08
„ B	4 9	6 2½	10 11½	2,116	1,161	0·30
NON-TEACHING HOSPITALS						
General						
Hospital G	9 11	1 6	11 5	479	273	0·20
„ H	11 3½	3 7	14 10½	517	384	0·17

TABLE IV (*cont.*)

WORKS AND MAINTENANCE UNIT-COST

Unit: 100 square feet

Hospitals	Salaries and wages	Materials and other expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A (4)	12 2¾	13 9¾	1 6 0½	5,815	30,269	3·30
,, B (4)	1 11 10½	1 1 0½	2 12 11	5,181	54,836	7·00
Special						
Hospital C (4)	1 0 0¾	6 6½	1 6 7½	2,448	13,031	4·5
,, D (4)	6 2	18 0	1 4 2	1,188	5,743	5·9
NON-TEACHING HOSPITALS						
General						
Hospital E (2)	1 2 9½	1 12 6½	2 15 4	620	3,429	4·7
,, F (4)	7 0	1 7 5½	1 14 5½	1,088	7,497	2·87
,, G (2)	17 6	7 11	1 5 5	1,630	4,142	2·63
,, H (3)	1 3 11½	11 9	1 15 8½	3,000	16,050	5·8
,, I (2)	15 6½	16 2	1 11 8½	368	1,168	2·45
General, chronic and mixed						
Hospital J (3)	6 7	13 11½	1 0 6½	995	3,067	5·09
,, K (3)	1 0 11½	15 3½	1 16 3	1,200	6,525	4·46
Mainly chronic						
Hospital L (3)	..	10	10	580	73	1·24
,, M (4)	12 9½	9 8½	1 2 6	1,444	6,490	4·76
,, N (4)	16 0	10 4	1 6 4	628	3,311	6·22
,, O (3)	1 3 7½	1 4 6	2 8 1½	409	2,953	12·00
,, P (3)	11 1	12 1	1 3 2	481	1,673	4·24
,, Q (3)	18 4½	18 2	1 16 6½	380	2,083	6·01
,, R (3)	15 11¼	16 2	1 12 1¼	491	2,362	4·17
Tuberculosis sanatoria (including isolation block)						
Hospital S (3)	17 11	19 6	1 17 5	260	1,459	7·52
,, T (3)	2 10 6	1 9 8½	4 0 2½	1,147	13,801	10·74
,, U (4)	2 11	8 11½	11 10½	803	1,900	4·67
Mental deficiency						
Hospital V (4)	1 11 3½	1 11 11½	3 3 3	726	9,179	7·33
Mental						
Hospital W (3)	1 0 2	14 1	1 14 3	2,560	13,165	8·94

As far as possible the above figures cover a period of 12 months, but in order to arrive at a comparable unit-cost, all calculations have been made on a basis of 3 months by multiplying the area by the number of quarterly periods for which the expenditure figures were available.

The units shown are the actual areas (in 100's of square feet) and the figures in parenthesis indicate the number of quarters.

BOILER HOUSE UNIT-COST

Unit: 1,000 lb. of steam

Hospitals	*Salaries and wages*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITAL						
General						
Hospital A	1 0¼	7 2	8 2¼	45,008	18,411	3·87
NON-TEACHING HOSPITALS						
General						
Hospital F	11	3 9¼	4 8¼	17,568	4,084	4·80
,, G	1 2½	4 2	5 4½	17,976	4,817	3·12
,, H	10½	4 2½	5 1	40,827	10,361	5·29
General, chronic and mixed						
Hospital K	1 3½	3 0½	4 4	21,103	4,561	4·6
Mainly chronic						
Hospital M	11½	3 6½	4 6	22,671	5,126	8·37
,, N	3 2½	5 5¾	8 8¼	2,991	1,301	4·53
,, O	2 11½	3 3	6 2½	4,528	1,421	7·6
,, R	1 7	4 1	5 8	8,432	2,406	7·99
Tuberculosis sanatoria (including isolation block)						
Hospital S	3 7	11 3	14 10	2,196	1,627	9·37
,, T	1 1	5 10½	6 11½	21,288	7,430	9·1
,, U	1 7½	5 2½	6 10	10,618	3,613	15·06
Mental deficiency						
Hospital V	1 9	2 9	4 6	18,472	4,141	7·92
Mental						
Hospital W	1 6	4 11	6 5	6,707	2,173	4·44

TABLE IV (*cont.*)
RENT AND RATES UNIT-COST
Unit: 100 square feet

Hospitals	Total unit-cost	Units	Expenditure	Percentage of total expenditure
	£ s. d.		£	%
TEACHING HOSPITALS				
General				
Hospital A	4 9	5,815	1,379	0·46
,, B	4 11½	5,181	1,282	0·03
Special				
Hospital C	9 9	2,448	1,217	0·7
,, D	4 5½	1,188	264	0·3
NON-TEACHING HOSPITALS				
General				
Hospital E	9 3½	620	287	0·6
,, G	2 2½	1,630	179	0·1
,, H	6 8½	3,000	1,002	1·01
,, I	14 2	368	261	1·00
General, chronic and mixed				
Hospital J	7 11½	995	396	1·99
,, K	1 0 2	1,200	1,211	2·44
Mainly chronic				
Hospital L	2 10½	580	83	2·29
,, M	1 1 10	1,444	1,576	2·69
,, N	16 3½	628	511	1·75
,, Q	1 2 1	380	420	3·68
,, R	9 2½	491	226	1·65
Tuberculosis sanatoria (including isolation block)				
Hospital S	6 8	260	86	1·03
,, T	5	1,147	25	..
,, U	1 5 9½	803	1,035	4·70
Mental deficiency				
Hospital V	1 6 10	726	975	1·62
Mental				
Hospital W	1 1 6	1,350	1,452	2·97

GAS, WATER, AND ELECTRICITY, ETC., UNIT-COST

Unit: 100 square feet

Hospitals	Total unit-cost of materials and other expense	Units	Expenditure	Percentage of total expenditure
	£ s. d.		£	%
TEACHING HOSPITALS				
General				
Hospital A	1 7 1	5,815	7,883	1·43
,, B	1 10 11	5,181	8,007	1·70
Special				
Hospital C	1 18 4	2,448	4,692	2·70
,, D	15 7½	1,188	928	1·50
NON-TEACHING HOSPITALS				
General				
Hospital E	2 18 2½	621	1,808	2·10
,, F	1 14 11	1,088	1,898	1·82
,, G	1 1 2½	1,630	1,731	1·04
Hospital H	17 9½	2,876	2,559	1·62
General, chronic, and mixed				
Hospital J	1 10 9	994	1,528	2·59
Mainly chronic				
Hospital L	18 11	313	296	2·59
,, M	19 4	1,443	1,394	2·74
,, N	1 6 8½	628	838	1·76
Tuberculosis sanatoria (including isolation block)				
Hospital S	1 1 1½	260	275	1·63
,, U	17 8½	803	711	3·12
Mental deficiency				
Hospital V	1 15 1½	726	1,275	2·16
Mental				
Hospital W	1 5 2	1,350	1,697	3·3

TABLE IV (*cont.*)

POWER, LIGHT, HEAT, AND WATER UNIT-COST

(including boiler house and outside supplies)

Units: (*a*) available beds; (*b*) per 100 square feet

Hospitals	(*a*) *Unit-cost of gas, water, electricity, and boiler house per available bed*	*Units*	(*b*) *Unit-cost of gas, water, electricity, and boiler house per 100 sq. ft.*	*Units*	*Expenditure*
	£ s. d.		£ s. d.		£
TEACHING HOSPITALS					
General					
Hospital A	41 0 5	641	4 10 5	5,815	26,294
,, B	48 3 5	623	5 15 10½	5,181	30,010
Special					
Hospital C	57 3 0	270	6 6 1	2,448	15,431
,, D	25 13 9½	174	3 15 3	1,188	4,470
NON-TEACHING HOSPITALS					
General					
Hospital E	31 2 5½	170	8 10 5	621	5,291
,, F	24 6 4	246	5 9 11½	1,088	5,982
,, G	20 7 11½	321	4 0 4	1,630	6,548
,, H	32 1 2	403	4 9 10½	2,876	12,920
General, chronic and mixed					
Hospital J	8 6 7½	500	4 3 10	994	4,165
,, K	22 12 10	357	7 4 4	1,120	8,082
Mainly chronic					
Hospital L	9 5 8½	88	2 12 2½	313	817
,, M	22 0 6½	296	4 10 4½	1,443	6,520
,, N	9 4 4½	232	3 8 1½	628	2,139
,, O	9 9 0	197	4 11 0	409	1,862
,, P	11 7 1	206	4 17 3	481	2,339
,, Q	18 7 10	196	9 9 7½	380	3,603
,, R	17 3 8	199	7 4 10½	472	3,419
Tuberculosis sanatoria (including isolation block)					
,, S	24 7 11½	78	7 6 4½	260	1,903
Hospital U	34 17 5	124	5 7 8½	803	4,324
Mental deficiency					
,, V	12 8 5½	436	7 9 2½	726	5,416

GENERAL SERVICES UNIT-COST

Unit: 100 in-patient days

Hospitals	*Salaries and wages*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*
	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITALS					
General					
Hospital A	1 3 3	5 0	1 8 3	1,015	1,433
,, B	13 4	8	14 0	935	657
Special					
Hospital C	3 11	1 11½	5 10½	380	111
,, D	..	4 5½	4 5½	228	51
NON-TEACHING HOSPITALS					
General					
Hospital E	3 9	9 2	12 11	225	145
,, F	5 4	1 0 0¾	1 5 4¾	267	339
,, G	17 11	6 10	1 4 9	453	562
,, H	14 5	6 11	1 1 4	615	656
,, I	..	18 0	18 0	109	98
General, chronic and mixed					
Hospital J	5 9½	1 6 11	1 12 8½	383	626
,, K	13 8½	5 10	19 6½	464	453
Mainly chronic					
Hospital L	8 1½	9 10	17 11½	128	115
,, M	12 0	1 2 5	1 14 5	477	820
,, N	14 4	8 11	1 3 3	379	441
,, O	5 7½	9 8	15 3½	221	169
,, P	11 3	10 6½	1 1 9½	199	217
,, Q	4 1	10 1	14 2	273	194
,, R	2 7½	1 0¾	3 8¼	297	55
Tuberculosis sanatoria (including isolation block)					
Hospital S	5 9	5 0	10 9	135	73
,, T	6 7	1 6 10	1 13 5	399	667
,, U	5 10	7 6	13 4	123	82
Mental deficiency					
Hospital V	1 2½	3 2	4 4½	803	176

TABLE IV (*cont.*)

GENERAL SERVICES UNIT-COST (POSTAGES AND TELEPHONE)

Unit: Percentage of total expenditure

Group	*Total of expenditure and income for the group*	*Total expenditure*	*Percentage of total expenditure and income*		
			Salaries and wages	*Payments for services*	*Total*
	£	£	%	%	%
Group 1	959,067	3,854	0·08	0·32	0·40
Group 2	833,143	6,721	0·32	0·49	0·81
Group 3	334,689	909	0·19	0·08	0·27
Group 4	254,296	1,181	0·15	0·31	0·46
Group 5	341,474	2,148	0·36	0·27	0·63
Group 6	648,689	2,779	0·13	0·30	0·43
Group 7	107,028	345	0·08	0·24	0·32

PORTERING SERVICES UNIT-COST

Unit: 100 square feet

Hospitals	*Salaries and wages*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A	1 14 0	1 0	1 15 0	5,815	10,177	2·26
,, B	2 3 2½	1 1	2 4 3½	5,181	11,485	2·60
Special						
Hospital C	2 18 11¾	7¾	2 19 7½	2,448	7,294	4·3
,, D	1 6 0	1 1¾	1 7 1¾	1,188	1,613	2·0
NON-TEACHING HOSPITALS						
General						
Hospital E	3 16 0¼	3 10	3 19 10¼	621	2,480	3·5
,, F	2 3 6	3¾	2 3 9¾	1,088	2,383	2·77
,, G	1 5 7	1 8½	1 7 3½	1,630	2,224	1·54
,, H	1 5 9½	3½	1 6 1	3,000	3,907	2·02
,, I	14 2	..	14 2	368	261	0·77
General, chronic and mixed						
Hospital J	1 12 4	¾	1 12 4¾	995	1,611	4·39
,, K	3 3 11½	2	3 4 1½	1,200	3,848	4·02
Mainly chronic						
Hospital L	11 1½	..	11 1½	313	174	1·49
,, M	1 0 11	1 3	1 2 2	1,444	1,598	2·41
,, N	1 8 8½	1 5½	1 10 2	628	946	3·14
,, O	11 4	..	11 4	409	232	1·3
,, P	19 2	3½	19 5½	481	468	2·12
,, Q	2 5 8½	5	2 6 1½	380	876	1·24
,, R	1 2 11	1	1 3 0	491	564	2·07
Tuberculosis sanatoria (including isolation block)						
Hospital S	15 1½	2 0	17 1½	260	223	1·46
,, T	8 7	..	8 7	1,147	493	0·63
,, U	8 10	1	8 11	803	358	1·60
Mental deficiency						
Hospital V	2 10½	½	2 10¾	726	106	..

TABLE IV (*cont.*)

CLEANING SERVICES UNIT-COST

Unit: 100 square feet

Hospitals	*Salaries and wages*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A	2 0 8	3 11	2 4 7	3,904	8,703	1·93
,, B	3 13 8	5 6	3 19 2	4,748	18,785	4·8
Special						
Hospital C	3 19 7½	7 1½	4 6 9	2,150	9,326	5·2
,, D	3 18 10	3 2½	4 2 0½	1,088	4,463	5·3
NON-TEACHING HOSPITALS						
General						
Hospital E	4 2 9	1 5	4 4 2	602	2,532	6·4
,, F	3 9 5	5 6½	3 14 11½	882	3,305	4·2
,, G	4 12 2½	5 0½	4 17 3	1,367	6,647	5·08
,, H	1 11 7	3 0½	1 14 7½	2,876	4,973	2·46
General, chronic and mixed						
Hospital J	4 4 6½	7 11	4 12 5½	476	2,200	4·8
,, K	11 11	5 2	17 1	1,120	956	0·88
Mainly chronic						
Hospital L	1 3 5	2 5	1 5 10	301	388	5·10
,, M	3 17 9	11 8½	4 9 5½	820	3,667	6·82
,, N	3 18 4½	5 0	4 3 4½	364	1,518	5·99
,, O	2 1 11	4 0½	2 5 11½	374	859	4·8
,, P	2 6 5	6 4	2 12 9	446	1,176	5·22
,, Q	15 11	9 6	1 5 5	310	395	1·04
,, R	5 7	5 1	10 8	472	251	0·85
Tuberculosis sanatoria (including isolation block)						
Hospital S	2 8 2	6 10	2 15 0	240	660	4·8
,, U	4 0 2	5 6	4 5 8	330	1,414	6·43

OWN TRANSPORT UNIT-COST

Unit: Mileage

Hospitals	*Salaries and wages*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A	10	7½	1 5½	63,946	4,734	1·11
,, B	1 1½	11½	2 1	5,880	616	0·20
NON-TEACHING HOSPITALS						
General						
Hospital G	..	6	6	2,492	63	0·05
,, H	6½	4¼	10¾	12,476	550	0·31
General, chronic and mixed						
Hospital K	8½	3	11½	11,858	570	0·58
Mainly chronic						
Hospital M	7	4½	11½	7,126	336	0·53
Tuberculosis sanatoria						
Hospital S	9½	5	1 2½	5,350	326	2·07
,, T	1 4	6	1 10	9,750	906	0·92
Mental deficiency						
Hospital V	4½	4	8½	25,348	905	1·46
Mental						
Hospital W	7	5½	1 0½	9,969	532	1·09

TABLE IV (*cont.*)

OUTSIDE TRANSPORT UNIT-COST

Unit: 100 in-patient days

Hospitals	*Salaries and wages*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A	10 11½	17 9	1 8 8½	1,016	1,457	0·35
,, B	..	8 8	8 8	936	406	0·20
Special						
Hospital C	..	2 6 4	2 6 4	395	915	0·60
,, D	..	6 5	6 5	121	39	0·10
NON-TEACHING HOSPITALS						
General						
Hospital E	..	1 17 7	1 17 7	225	423	0·50
,, F	..	1 19 9	1 19 9	267	531	0·57
,, G	..	7 1½	7 1½	454	162	0·13
,, H	..	19 6	19 6	613	599	0·32
,, I	..	1 5 5	1 5 5	109	138	0·36
General, chronic and mixed						
Hospital J	..	1 0 2	1 0 2	383	387	1·08
,, K	..	5 7	5 7	464	130	0·11
Mainly chronic						
Hospital L	..	4 12 4½	4 12 4½	128	591	6·15
,, M	..	6 4½	6 4½	477	152	0·28
,, N	..	19 7	19 7	379	371	1·17
,, O	..	2 8	2 8	221	29	0·20
,, P	..	5 6½	5 6½	199	55	0·12
,, Q	..	4	4	137	2	0·02
,, R	..	2 3½	2 3½	297	34	0·15
Tuberculosis sanatoria (including isolation block)						
Hospital S	..	19 9	19 9	136	135	0·64
,, T	..	1 2 10½	1 2 10½	399	456	0·52
,, U	..	8 5½	8 5½	123	52	0·15
Mental deficiency						
Hospital V	..	4 10½	4 10½	803	194	0·39
Mental						
Hospital W	..	2 1	2 1	689	72	0·15

LAUNDRY UNIT-COST

Unit: 100 pieces

All the figures below cover a period of 9 months, except those marked with an asterisk which are for 6 months only

Hospitals	*Salaries and wages*	*Materials and other expense*	*Total unit-cost*	*Units*	*Expenditure*	*Percentage of total expenditure*
	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS						
General						
Hospital A	17 5	2 11½	1 0 4½	22,517	22,963	3·62
,, B	12 6½	2 0¼	14 6¾	18,699	13,603	2·20
Special						
Hospital C	13 9	2 0½	15 9½	6,923	5,464	2.20
,, D	17 10	2 2	1 0 0	1,489	1,490	1·20
NON-TEACHING HOSPITALS						
General						
Hospital F	10 8	3 10½	14 6½	2,376	1,724	1·38
,, G	12 1	4 2½	16 3½	3,072*	2,506	1·74
,, H	12 11	2 5	15 4	6,911	5,299	1·74
General, chronic and mixed						
Hospital J	19 4¾	1 9¼	1 1 2¼	3,460	3,661	6·27
,, K	1 2 1	3 7	1 5 8	4,901	6,287	4·44
Mainly chronic						
Hospital L		1 3 10½	1 3 10½	162*	193	
,, M	14 7	2 3	16 10	5,867	4,940	5·56
,, N	1 1 9	5 3	1 7 0	1,765	2,385	4·95
,, O	18 4½	4 10½	1 3 2½	1,164	1,352	4·60
,, P	1 0 10½	1 9¼	1 2 8	1,355	1,531	4·11
,, Q	18 3½	1 6	19 9½	1,448	1,433	4·19
,, R	1 0 2	3 1	1 3 3	1,818	2,117	4·53
Tuberculosis sanatoria (including isolation block)						
Hospital S	..	1 5 1	1 5 1	315	395	..
,, T	15 2½	3 7½	18 9½	1,984	1,862	1·53
,, U	19 11½	2 1½	1 2 1	1,981	2,187	6·51
Mental Deficiency						
Hospital V	5 6½	2 5½	8 0	4,029	1,612	1·9
Mental						
Hospital W	13 2½	3 6½	16 9	3,386*	2,835	2·91

TABLE IV (*cont.*)

CATERING UNIT-COST

Unit: Meal day (weighted)

Hospitals	Serving staff on basis of resident staff diet days	Salaries and wages: Serving staff on basis of total diet days	Salaries and wages: Kitchen staff	Salaries and wages: Total	Materials: Provisions	Materials: Other materials and expense	Total unit-cost	Units	Expenditure	Percentage of total expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS										
General										
Hospital A	1 4	5	11⅜	1 4⅜	2 10½	⅜	4 4	264,162	56,812	12·13
,, B	1 8½	7½	11½	1 7	2 11	3½	4 9½	244,755	58,966	12·80
Special										
Hospital C	1 10	7	1 4½	1 11½	3 3½	3½	5 6½	106,160	29,378	17·60
,, D	1 2	4	9¼	1 1¼	2 4⅜	1	3 7	48,234	8,621	10·20
NON-TEACHING HOSPITALS										
General										
Hospital E	..	..	11	11	3 11½	½	4 11	51,729	12,694	16·30
,, F	8	4½	7½	11⅜	3 2½	1	4 3½	46,990	10,106	11·64
,, G	1 0	4½	7½	1 0	3 4	1	4 5	83,683	18,556	13·68
,, H	1 4	5½	9	1 2½	3 3⅜	⅜	4 7	137,057	31,401	15·34
,, I	..	..	2 1	2 1	4 8½	⅜	6 10¼	19,913	6,819	17·13
General, chronic and mixed										
Hospital J	..	..	5	5	2 3½	½	2 9	62,567	8,519	21·82
,, K	1 10	4½	1 3	1 7½	4 0½	1	5 9	59,807	17,152	16·47
Mainly chronic										
Hospital L	..	..	4⅜	4⅜	1 11½	¼	2 4½	14,096	1,671	23·25
,, M	..	..	6	6	2 5½	½	3 0	87,769	13,280	22·32
,, N	..	..	4⅜	4⅜	2 1	1	2 6⅜	45,485	5,830	19·17
,, O	..	..	4½	4½	2 8½	⅛	3 1⅛	27,219	4,224	20·80
,, P	..	..	4½	4½	2 8½	¼	3 1¼	28,477	4,431	20·72
,, Q	..	..	5	5	2 7	¼	3 0¼	31,888	4,781	20·03
,, R	..	..	10	10	3 2	⅛	4 0½	32,914	6,615	24·45
Tuberculosis sanatoria (including isolation block)										
Hospital S	3 0	7	5	1 0	3 3½	2½	4 6	18,851	4,275	26·67
,, T	2½	¾	8½	9	3 3½	¼	4 0⅜	63,255	12,924	15·54
,, U	..	..	1 0	1 0	3 1	1	4 2	19,967	4,158	16·79
Mental deficiency										
Hospital V	..	..	2½	2½	2 5½	½	2 8½	86,227	11,949	18·29
Mental										
Hospital W	5½	½	5½	6	2 3½	½	2 10	70,248	9,929	20·28

RESIDENCES UNIT-COST

Unit: Resident days

Hospitals	Salaries and wages: Nursing	Salaries and wages: Other	Salaries and wages: Total	Materials and other expenses	Total unit-cost	Units	Expenditure	Percentage of total expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS								
General								
Hospital A	4½	1 10½	2 3	6	2 9	77,152	10,709	2·54
,, B	2½	1½	4	6½	10½	89,782	3,833	1·00
Special								
Hospital C	7	4½	11½	10½	1 10	34,224	3,134	1·70
,, D	1½	1½	3	5½	8½	13,013	474	0·60
NON-TEACHING HOSPITALS								
General								
Hospital E	4	1 6½	1 10½	1 8½	3 7	19,345	3,438	2·60
,, F	3	1	4	4	8	23,156	810	0·44
,, G	4¾	7¼	1 0	6	1 6	29,080	2,115	0·63
,, H	3	7	10	4	1 2	48,703	2,833	1·49
,, I	9	1 2½	1 11½	1 0½	3 0	6,865	1,024	2·84
General, chronic and mixed								
Hospital J	5¼	..	5¼	3	8¼	5,495	188	0·46
,, K	5	2 9½	3 2½	7½	3 10	12,029	2,287	2·38
Mainly chronic								
Hospital M	1 1¼	1 10	2 11¼	5	3 4¼	6,575	1,105	1·03
,, N	..	1 0¾	1 0¾	1 5¾	2 6½	5,267	673	1·68
,, O	..	11¾	11¾	1 3¼	2 3	3,257	361	2·80
,, P	..	..	..	1 4½	1 4½	6,461	373	1·79
,, Q	..	2 7½	2 7½	7	3 2½	4,034	644	3·08
,, R	..	2 7½	2 7½	1 9¼	4 4¾	3,678	806	3·53
Tuberculosis sanatoria (including isolation block)								
Hospital S	..	..	..	2⅓	2⅓	3,722	39	0·02
,, T	¾	3 8½	3 9¼	7	4 4¼	19,478	4,203	5·28
,, U	..	2 4	2 4	10	3 2	5,966	942	2·55
Mental deficiency								
Hospital V	..	..	..	4	4	3,547	60	0·06
Mental								
Hospital W	..	2 5	2 5	6	2 11	6,149	904	1·85

TABLE IV (*cont.*)

NURSES TRAINING UNIT-COST

(a) *S.R.N. Training Schools—Student nurses on establishment excluding those in the Preliminary Training School*

(b) *Other Training Schools—Number of students*

Hospitals	Type of training school	Salaries and wages				Materials and other expense		Total unit-cost	Units	Total expenditure	Percentage of total expenditure
		Nursing		Other	Total	Lecture fees	Other				
		Sister tutors	P.T.S. students								
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£	%
TEACHING HOSPITALS											
General											
Hospital A .	S.R.N.	8 5 11	5 2 1	6 7	13 14 7	6 7	1 19 5	16 0 7	291	4,665	1·16
,, B .	S.R.N.	6 17 0	18 14 10	..	25 11 10	2 13 5	3 0 2	31 5 5	270	8,443	2·00
Special											
Hospital C .	C.M.B.	16 8 3	..	..	16 8 3	5 5 4	2 15 8	24 9 3	41	1,003	0·6
NON-TEACHING HOSPITALS											
General											
Hospital F .	S.R.N.	8 4 0	16 7 7	18 0	25 9 7	4 10	17 3	26 11 8	79	2,100	2·2
,, G .	S.R.N.	6 7 0	11 14 10	..	18 1 10	1 10	5 17 0½	24 0 8½	81	1,947	1·34
,, G .	Pre-Nursing	10 17 7	..	26 12 11	37 10 6	3 16 6	1 5 11	42 12 11	17	725	0·50
,, H .	S.R.N.	6 14 1	24 6 8	14 11	31 15 8	1 14 0	5 15 8	39 5 4	119	4,673	0·9
Mainly chronic											
Hospital P .	S.E.A.N.	2 12 11½	..	..	2 12 11½	..	11 2½	3 4 2	24	77	0·25
Mental deficiency											
Hospital V .	M.D.	12 16 11	..	..	12 16 11	..	2 7 4	15 4 3	14	213	..

NURSING ADMINISTRATION UNIT-COST

Unit: Available staffed beds

Hospitals	Salaries and wages: Nursing	Salaries and wages: Other	Salaries and wages: Total	Materials and other expense	Total unit-cost	Units	Expenditure
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£
TEACHING HOSPITALS							
General							
Hospital A	4 15 8	1 7 5	6 3 1	1 2 11	7 6 0	621	4,534
,, B	2 10 1	16 1	3 6 2	17 0	4 3 2	615	2,559
Special							
Hospital C	6 16 10	3 3	7 0 1	2 13 4	9 13 5	243	2,350
,, D	4 5 9	..	4 5 9	10 0	4 15 9	169	810
NON-TEACHING HOSPITALS							
General							
Hospital E	6 1 11	1 5 7	7 7 6	11 2	7 18 8	178	1,412
,, F	5 8 1	4 4	5 12 5	2 4	5 14 9	245	1,405
,, G	4 5 9	13 3	4 19 0	2 10	5 1 10	321	1,635
,, *H	2 0 5	..	2 0 5	..	2 0 5	403	815
,, *I	3 12 10	..	3 12 10	..	3 12 10	89	324
General, chronic and mixed							
Hospital J	2 7 5	..	2 7 5	..	2 7 5	303	719
,, *K	2 1 1	..	2 1 1	..	2 1 1	357	733
Mainly chronic							
Hospital L	7 12 11	..	7 12 11	..	7 12 11	45	344
,, M	1 2 5	..	1 2 5	..	1 2 5	296	332
,, N	1 7 3	..	1 7 3	1	1 7 4	232	317
,, *O	1 15 4	..	1 15 4	..	1 15 4	197	348
,, *P	18 8	..	18 8	..	18 8	206	192
,, *Q	1 14 3	..	1 14 3	..	1 14 3	196	336
,, *R	2 3 11	..	2 3 11	..	2 3 11	199	437
Tuberculosis sanatoria (including isolation block)							
Hospital S	7 19 6	..	7 19 6	..	7 19 6	78	622
,, *T	2 15 8	..	2 15 8	..	2 15 8	274	762
,, U	4 1 3	..	4 1 3	..	4 1 3	124	504
Mental deficiency							
Hospital V	4 9 11½	..	4 9 11½	½	4 10 0	436	1,962
Mental							
Hospital W	1 11 0	..	1 11 0	2 4	1 13 4	760	1,267

* These figures relate to a period of 3 months only.

TABLE IV (*cont.*)
GENERAL ADMINISTRATION UNIT-COST
Unit: Percentage of total expenditure and income

Group	Total of expenditure and income for group	Administration costs			Percentage of expenditure and income		
		Salaries	Materials	Total	Salaries	Materials	Total
	£	£	£	£	%	%	%
Group 1	473,949	9,155	2,334	11,489	1·93	0·50	2·43
Group 2	396,511	10,000	4,059	14,059	2·52	1·02	3·54
Group 3	102,000	3,025	610	3,635	2·96	0·60	3·56
Group 4	127,478	4,124	1,047	5,171	3·23	0·82	4·05
Group 5	172,609	6,181	1,014	7,195	3·58	0·59	4·17
Group 6	306,444	11,854	2,559	14,413	3·85	0·85	4·70
Group 7	56,509	1,702	535	2,237	3·01	0·94	3·95

Note: These figures are based on the three months to 31st March 1952.

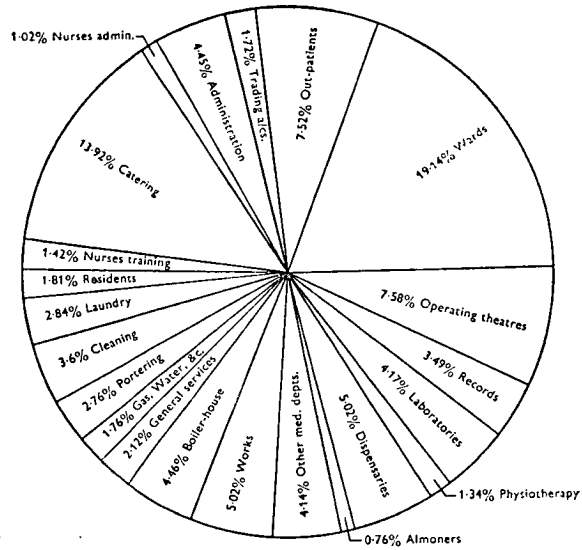
TABLE V

SUMMARY OF UNIT-COSTS OF SMALL HOSPITALS FOR THE THREE MONTHS ENDED 31ST MARCH 1952

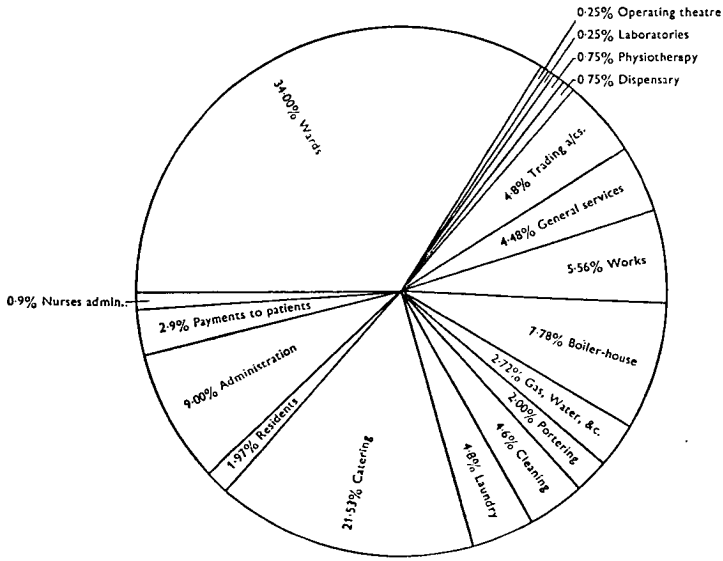
	No. of beds	Total expenditure	I.P. days	In-Patient Unit Cost									Average occupancy	Average stay	Diet day cost	Other services	Out-patients	
				Medical	Nursing	Other	Catering	Household and building	Sundry and admin.	Other salaries and wages	Credit for board and lodging	Total					Attendances	Unit-cost
		£		s. d.	£ s. d.	s. d.	s. d.	£ s. d.	s. d.	£ s. d.	s. d.	£ s. d.			s. d.			£ s. d.
General or Cottage																		
Hospital 1	18	3,563	1,427	6 6½	12 10	2 10¾	8 5½	8 9	3 9¼	1 10	2 2	2 2 11	87·0	8·6	4 10	Rad.	960	10 4
Hospital 2	21	3,459	1,274	5 4½	12 6½	4 9½	8 10¾	12 9½	3 0¾	2 0¾	2 9	2 6 9¼	66·0	11·0	5 4	Rad. Phys.	1,255	7 7
Hospital 3	40	3,943	2,236	7 0½	12 1½	2 3¾	5 4¼	1 10½	5¾	6 1	..	1 15 3¼	61·4	11·5	3 0½	Rad. O.Th. Mat.	3,313	..
Hospital 4	19	3,093	1,576	7 0	12 1	4 7	6 2	8 7	7	3 6	3 3	1 19 3	91·5	19·0	3 10	O.T.	327	..
Hospital 5	23	3,210	1,816	5 1	9 7	2 9	4 2	7 3	2	3 6	2 3	1 10 3	86·7	12·5	2 10	O.T. Rad. Phys. Cas.	435	1 1 6
Maternity																		
Hospital 6	17	2,836	1,355	9½	16 11	3 6	9 5½	11 8¼	3	3 8¼	4 5	2 1 10½	87·0	10·0	5 0	..	..	..
Hospital 7*	17	3,498	578	1 7½	2 1 0	4 10	16 2	1 13 4	4 0½	1 4 2½	4 2	6 1 0½	37·0	14·0	5 11½	..	..	..
Hospital 8	57	7,588	4,114	2 0½	16 0½	2 0¾	7 6¼	1 5¾	7¾	5 8¾	..	1 15 6¼	79·3	10·0	4 3	..	1,544	1 4¼
Hospital 9	66	10,807	4,360	3 0	17 5	4 0	9 4	11 6	11	9 10	6 8	2 9 4	72·2	14·9	3 7	..	..	..
Children's																		
Hospital 10	54	5,811	3,450	8 0	12 3	1 9	4 3	5 5	7	3 10	2 5	1 13 8	70·2	10·5	3 9	O.T.	..	..
Hospital 11	36	3,428	2,322	1 3½	6 11	7½	10 4½	7 10½	1 3½	3 5½	2 4	1 9 6	70·0	290	7 1	Phys.	..	..
Chronic																		
Hospital 12	36	2,066	2,474	4	7 4	8	4 8	3 5	..	1 8	1 7	16 6	76·0	143	3 4	..	..	..
Hospital 13	67	7,062	4,970	1 8	6 9	5	3 7	13 5	1 7	1 7	7	1 8 5	79·0	171	2 10	..	..	..
Isolation and Tuberculosis																		
Hospital 14	50	8,558	2,856	3 6½	1 0 6	4 0	7 4	17 7¼	3 1¼	7 9	3 11	2 19 11	67·0	26·0	2 11	..	..	..
Hospital 15	68	6,263	4,432	2 11¾	8 3¼	1 0	5 10¾	6 1¾	6¼	3 2¼	..	1 8 0	71·6	204 Pul. 431 other	4 1¼	Rad.	237	..
Post-operative and Convalescent																		
Hospital 16	58	4,525	4,405	8	8 1	7¼	4 2¾	4 8½	1¾	2 1½	..	1 0 6¾	83·5	16·0	3 0	..	..	..
Hospital 17	28	1,318	1,424	1 5	5 6¾	..	4 7	3 6½	1	3 3¾	..	18 6	69·5	19·2	3 2	..	..	..
Mental Deficiency																		
Hospital 18	13	669	1,098	3	5 5¾	..	3 10	2 4	3¾	..	..	12 2½	92·8	..	3 0¾	..	..	..
Chest Clinics																		
Clinic 1	..	1,427	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4,411	6 5
Clinic 2	..	1,629	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,342	1 4 3

* Open for only part of the quarter.

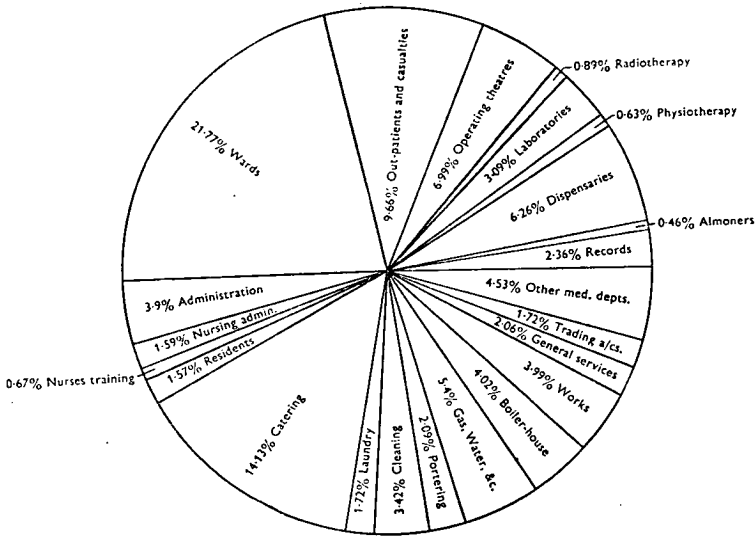
DIAGRAM I. COMPARISON OF THE PERCENTAGE TOTAL EXPENDITURE IN



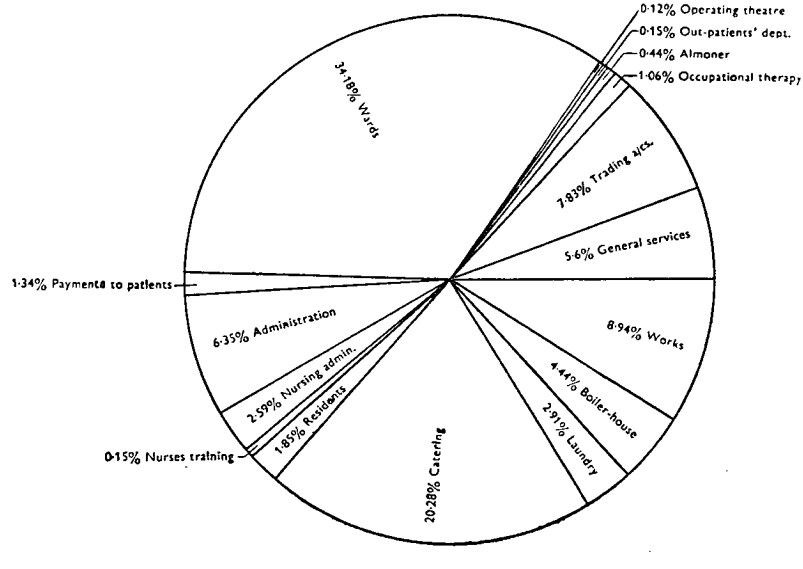
1. GENERAL TEACHING HOSPITALS



3. LONG-STAY HOSPITALS



2. NON-TEACHING GENERAL HOSPITALS



4. MENTAL HOSPITALS

Appendix I

DEFINITIONS OF EXPENDITURE ALLOCATED TO DEPARTMENTS AND OF UNITS OF COST

IN arriving at these definitions the general principle has been maintained that prime costs only should be charged departmentally.

In the allocation of salaries and wages it must be stressed that designation by occupation does not always give a clear indication of the work actually done by a member of the staff. It is therefore necessary in some cases to consider the functions of the employee and to allocate salary or wages accordingly.

Capital expenditure should be regarded as that expenditure which is met from the capital budget. Expenditure on renewals or maintenance of building or equipment, if it is for a considerable sum, should be shown separately in the departmental accounts.

It is recommended that as far as possible all items of expenditure allocated to departmental cost should be computed in units as well as the equivalent money value. For example, in the boiler house the tons of fuel consumed and in ward cost the numbers or hours of duty of ward staff should be shown; for radiology the number of radiographers and dark-room technicians and the area of film used are further useful indications for inter-department comparisons.

Departments

MEDICAL

IN-PATIENTS

Individual wards will not be costed, except where so desired by the hospital. They will be combined under the main specialties.

Salaries and wages

1. *Medical staff*
   Consultants.
   Registrars.
   Housemen.

   While the departmental allocation of salaries of consultants and registrars must be mainly related to the contract, consultation should take place where possible to adjust the contract times to the actual work being undertaken as the general pattern may vary from time to time.

The allocation of the salaries of housemen can generally be based upon their own estimations of time or that of the R.M.O. or R.S.O.

The total expenditure under each category should be divided by the number of hours charged to the department to give the average hourly rate. In the case of surgical wards the salaries relating to theatre sessions should all be charged to the ward.

2. *Nursing staff*

Sisters, Staff nurses } Direct allocation to wards.
Student nurses.*
Ward orderlies.*
Domestic staff (engaged on duties other than the cleaning of the ward).

Materials

Stores issues other than provisions.
Repairs and renewals of equipment.
Direct purchases.

Unit of cost

In-patient day (for definition see Appendix I*a*).

OUT-PATIENTS AND CASUALTY

Where the Casualty Department is physically separated it should be treated as a separate department, but where staff and equipment are common to the two departments they should be treated as one for costing purposes.

Salaries and wages

1. *Medical staff*

Consultants, Registrars, Housemen } To be allocated by contract or assessment as in the case of in-patients.

2. *Nursing staff*

Sisters and staff nurses—direct allocation.
Student nurses and orderlies will be by allocation on an establishment basis as in the case of in-patients.

3. *Porters*

Only those employed on duties solely within the department

* As the individuals in these categories of staff are changed at frequent intervals the salaries should be pooled and allocated departmentally on an establishment basis. This can usually be obtained from the Matron's office by a count of nursing days.

should be charged, e.g. calling and directing waiting patients to clinics. Conveyance of patients from ambulances, cars, &c., to the department to be classed as general porterage.

Materials

Stores issues and direct purchases except provisions; this will include:

Repairs and renewals of equipment.
Stationery.
Dressings and Instruments.

Unit of cost

Out-patient attendance (for definition see Appendix I*a*).

OPERATING THEATRES

Note: If there is a separate out-patient and/or casualty theatre, separate costings should be made unless the work done is confined to minor operations when the cost can be merged with the department.

Salaries and wages

Anaesthetists.
Theatre sisters.
Nursing staff directly allocated (apportionment may be necessary in some cases).
Technicians.
Porters—performing duties solely within the department.

Materials

Stores issues and direct purchases including:
Anaesthetic gases.
Drugs.
Dressings.
Instruments.
Repairs and renewals of equipment.
Hardware and crockery.
Stationery.

Unit of cost

Operating hour.

Definition: Operating time should be calculated for each session from the time of entry of the first patient to the removal of the last. Actual time should be recorded for single operations. The time spent between operations on the preparation of the theatre and subsequent theatre cleaning should be excluded.

RADIOLOGY (Diagnostic)

Note: Where there is a school for radiographers no difference should be made in the following allocation of expenditure. The unit cost will be affected and it will only be possible to attempt comparison between those departments in which teaching is carried on.

Salaries and wages

Radiologists.
Radiographers.
Technicians.
Clerical staff (other than those engaged mainly on records).
Porters doing special duties solely within the department.

Materials

Stores issues and direct purchases including:
- Films.
- Developing and other chemicals.
- Repairs and renewals of equipment.
- Dressings.
- Instruments.
- Stationery.
- Hardware and crockery.

Unit of cost

100 points on a weighted basis, at present experimental, set out in detail in Appendix I *b*.

RADIOTHERAPY

Salaries and wages

Radiotherapists.
Physicists.
Technicians.
Radiographers.
Clerical staff (other than those engaged mainly on records).
Porters and other staff engaged on duties solely within the department.

Materials

Stores issues and direct purchases including:
- Instruments.
- Maintenance of equipment.
- Dressings.
- Stationery.

Unit of cost

The expenditure has to be divided into three categories:

(*a*) X-ray and teleradium.
(*b*) Radium.
(*c*) Teaching, research and other.

The unit of cost for (*a*) is 1,000 röntgens delivered to treatment fields.

The unit of cost for (*b*) is a completed course of treatment. No units are to be used for (*c*). Full details are given in Appendix I*c*.

LABORATORIES

Salaries and wages

Pathologists.
Biochemists.
Technicians.
Mortuary attendants.
Clerical staff (other than those mainly engaged on records).
Porters and other staff engaged solely within the department.

Materials

Stores issues and direct purchases including:

Drugs.
Surgical instruments.
Stationery.
Repairs and renewals of equipment.

Unit of cost

100 points based on weighted points value of investigations, as detailed in Appendix I*d*.

PHYSIOTHERAPY

Note: Where there is a school for physiotherapists no difference should be made in the following allocation of expenditure. The unit cost will be affected and it will only be possible to attempt comparison between those departments in which teaching is carried on.

Salaries and wages

Physician in charge.
Physiotherapists.
Clerical staff (other than those engaged mainly on records).
Porters and other staff engaged solely within the department.

Materials

Stores issues and direct purchases including:
- Drugs and dressings.
- Hardware and crockery.
- Instruments.
- Linen.
- Repairs and renewals of equipment.
- Stationery.

Unit of cost

100 points on a weighted basis at present experimental as detailed in Appendix I*e*.

DISPENSARY

Salaries and wages

- Chief pharmacist and qualified staff.
- Dispensary technicians and assistants.
- Clerical staff.
- Porters and other staff performing duties solely within the department.

Materials

Drugs: If a bulk store is kept, issues from the store to the dispensary; in other cases purchase of drugs adjusted by opening and closing stocks where practicable.

Stores issues and direct purchases including:
- Hardware and crockery.
- Bottles, pill boxes, &c.
- Surgical instruments.
- Repairs and renewals of equipment.
- Stationery.

Unit of cost

At present in-patient days and out-patient attendances.

Attempts are being made in conjunction with the pharmacists to record the departmental consumption of the more expensive drugs, leaving a relatively small balance to be allocated to the hospital as a whole.

ALMONERS

Salaries and wages

- Almoner and assistants.
- Clerical staff (other than those engaged mainly on records).

Materials

Stores issues and direct purchases including:
Stationery.
Repairs and renewals of office equipment.
Uniforms.

Unit of cost

A new patient based on a total of new in-patients and new out-patients.

RECORDS

Salaries and wages

Records officer.
Clerical staff.
Medical secretaries.

Definition of records staff. All staff chargeable to the hospital service who are in any way mainly employed in the production of medical or scientific records, e.g.:

(*a*) The records department including staff employed in appointments offices, admission office, medical typists, registration, casualty, filing clerks and punched-card operators.

(*b*) Staff employed on records work in ancillary departments such as radiology, pathology, &c., including departmental appointments clerks, receptionists, typists, &c.

Materials

Stores issues and direct purchases including:
Stationery.
Filing-cabinets.
Typewriters and dictaphones.

Unit of cost

New out-patients: 1 unit.
Subsequent attendance: $\frac{1}{2}$ unit.
New in-patient: 2 units.
(For definition of the above see Appendix I*a*.)

ELECTROCARDIOGRAPHY

Salaries and wages

Technicians.

Materials

Stores issues and direct purchases including:
Repairs and renewals of equipment.

Films.
Chemicals.
Stationery.

Unit of cost
A cardiogram.

ELECTROENCEPHALOGRAPHY
Salaries and wages
Technicians.

Materials
Stores issues and direct purchases including:
Repairs and renewals of equipment.
Stationery.

Unit of cost
An electroencephalogram.

MEDICAL PHOTOGRAPHY
Salaries and Wages
Technicians.

Materials
Stores issues and direct purchases including:
Films.
Repairs and renewals of equipment.
Chemicals.
Stationery.

Unit of cost
An exposure.

OCCUPATIONAL THERAPY
Salaries and wages
Occupational therapist.

Materials
Stores issues and direct purchases including:
Materials for patients' use.
Repair and renewals of equipment.
Stationery.

Unit of cost

Sales of products should be credited to the department. It has been found in the experiment that the resulting cost is so small that no unit has been used. If this is not the case, the unit should be 100 in-patient days.

SERVICE DEPARTMENTS

Works Department

Note (1). No general attempt is being made to introduce job costing (although where this is being done it should continue), but major work of a capital nature should be excluded from the cost returns.

Note (2). This account is intended to show the total cost of the general maintenance of the building and fixtures.

Salaries and wages

Clerk of works or engineer in charge. (Some allocation of engineer's time to be allocated to boiler house and capital expenditure.)

Retaining fee for consultant engineer.

Clerical staff in works department.

Storekeeper (if any).

Artisan staff and unskilled works staff.

Where a group works maintenance service exists the wages of artisans should be allocated between the hospitals in the group on a time basis and the salaries of the group engineer and staff on his assessment of the division of their duties.

Materials

Stores issues and direct purchases including hire of outside plant and payments to outside contractors.

Unit of cost

1,000 cubic feet.

The area should first be calculated by a reasonably accurate measurement of block plans of the main buildings, ignoring outside covered corridors and small subsidiary buildings. Normally the ground-floor area multiplied by the number of effective stories will give the required figure, but individual care will be required in respect of basements. In many cases basements, house stores, kitchens, and other departments do not extend under the whole area of the main structure. Where block plans are not in the possession of the hospital the local authority may be able to assist, or alternatively the superintendent of works may be able to make the necessary measurement. To arrive at the approximate cubic capacity for this purpose the area should be multiplied by the

average height of the building. Where large grounds are a feature of the site, the approximate acreage should be shown as a separate figure.

BOILER HOUSE

(*Note.* The boiler-house costs should relate purely to the cost of servicing and maintenance of the boiler house and to the heat and/or power produced at that point.)

Salaries and wages

An allocation of the salary of the engineer.

Wages of stokers and fitters with an allocation of the wages of maintenance staff acting as relief stokers.

Staff or outside contractors employed in handling fuel and removal of ashes.

Materials

Fuel (to be shown separately) giving details of actual weights used.

Stores issues and direct purchases including repair and maintenance of boilers, but excluding repairs of pipes, &c., used for the distribution of steam or current to hospital departments.

Unit of cost

1,000 pounds of steam.

RENTS AND RATES

This section is for memorandum purposes only and contains expenditure on rents and rates. It has been found that rates and rateable values differ so much from one hospital to another and that the payment of rents often applies only to a small part, if any, of hospital buildings, that no useful purpose is served by arriving at a unit of cost. If one is desired, 100 square feet of area is the most appropriate.

GAS, WATER, AND ELECTRICITY

Materials

All charges for gas, water, and electricity supplied by outside bodies.

Note. It is realized that these items are a part of the prime cost of other departments, and the engineers of the hospitals concerned have been considering this problem. They suggest that for the purpose of allocation over departments, expenditure under this head should be added to that for the boiler house and the total charged to departments on the basis of an estimate of the Ministry of Fuel fuel-units used by each.

GENERAL SERVICES

Salaries and wages

Telephonists.
Chaplain.
Barber.
Other staff not allocated to departments.

Materials

All charges for telephone, professional, and other general items which cannot easily be allocated departmentally.

Unit of cost

100 in-patient days.

Note. For the last three months of the experiment expenditure on telephone and postage has been segregated, so that its importance can be gauged, and a more appropriate unit of cost experimented with.

PORTERAGE

Salaries and wages

Wages of porters carrying out the duties described below.

Materials

Stores issues and direct purchases including uniforms.

Unit of cost

100 square feet of total area of hospital. So long as similar types of hospital are considered together it is thought that this unit affords a better comparison than the number of in-patients.

Duties of porters to be charged to porterage

General duties including cleaning corridors, grounds, &c. (unless those employed in cleaning corridors are so employed whole-time and are, therefore, taking the place of domestic staff, when they should be charged to cleaning services).
Conveyance of fuel, lighting, and maintenance of fires.
Collection and delivery of laundry.
Conveyance of stores and food from kitchen.
Collection and disposal of dirty dressings and other refuse.
Moving of beds, bedding, and furniture.
General porterage to and from wards.
Conveying patients between wards and departments.

Handling chair and stretcher cases.
Storing and reissue of patients' private clothing.
Removal of bodies to mortuary.
Distributing mail to patients and staff.
All other duties of a general nature carried out by employees classed as porters which cannot be allocated to a special department.

Duties of porters to be charged to special departments

Catering department

Daily cleaning of kitchen utensils and equipment.
Simple preparation of vegetables and fish.
Collection of groceries from stores, handling heavy weights.
Transport of food within kitchen precincts.

Operating theatre: special portering duties solely within the department.

X-ray Department:	do.	do.
Laboratory:	do.	do.
Dispensary:	do.	do.

All other employees classed as porters who are engaged solely within a department on special departmental work, unless they are engaged on duties of a general nature, when they will be charged to porterage.

CLEANING SERVICE

Salaries and wages

Domestic supervisor.
Cleaners.

Materials

Stores issues and direct purchases including:
Uniforms.
Hardware and crockery.
Cleaning materials.

Unit of cost

100 square feet of area of buildings cleaned by staff whose wages are charged to this department.

Notes

(1) Cleaning services refer to the cleaning of buildings and furniture, but not equipment such as crockery (catering), laboratory apparatus, medicine bottles (dispensary).
(2) The area may not include the whole hospital since certain sections such as laundry, boiler house, &c., will not be cleaned by the

domestic staff. All such areas should be excluded in calculating the number of units of cost.

(3) In some departments such as nurses' homes, it may be impracticable to segregate the cost of domestics engaged on cleaning as compared with their other duties. In these cases the total cost of domestic staff should be charged to the department and the area excluded from the total units.

TRANSPORT (own vehicles)

Salaries and wages

Transport officer.
Drivers and mechanics.

Materials

Stores issues and direct purchases including:
Petrol and oil.
Repairs.
Licences and insurance.
Uniforms.

Unit of cost

A mile (for each vehicle when possible).

TRANSPORT (outside contractors and travelling expenses)

Expenditure

All payments to outside contractors for transport and travelling expenses of members of committees, &c. (Travelling expenses of individual members of the staff should follow the same departmental allocation as their salary.)

Unit of cost

100 in-patient days.

LAUNDRY

Salaries and wages

Laundry manager.
Laundry staff.

Materials

Stores issues and direct purchases including:
Soap and washing materials.
Repairs and maintenance of machinery.

Unit of cost

100 pieces washed. When possible the total number washed should be analysed under the main types of article as follows:

Large sheets	Handkerchiefs
Draw sheets	Aprons
Pillow-slips and covers	Overalls
Blankets	Dresses
Towels	Caps and cuffs
Tray cloths and serviettes	Theatre gowns
Tea-cloths, &c.	Flannel jackets and pants
Theatre smalls	Other.

CATERING

Note: Where there is a dietetic department or separate kitchen for staff and patients, these can be treated as separate departments for costing if it is thought desirable.

Salaries and wages

As far as possible salaries and wages should be split into two headings:

(*a*) *Kitchen staff*

Catering supervisor (wholly chargeable to kitchen staff).
Dietitians.
Chef and cooks.
Kitchen maids.
Kitchen porters (i.e. 'Porters' dealing mainly with the regular cleaning of kitchen utensils and equipment, preparation of food, transport of groceries from stores to kitchen and porterage of food within kitchen precincts (but not from kitchen to wards)).

(*b*) *Dining-room staff*

Butlers—if mainly employed on waiting at table.
Dining-room maids—if mainly employed on waiting at table.
Canteen staff—if the canteen is supplied by the kitchen.

Materials

Stores issues and direct purchases of provisions. All provisions should be charged to the catering department even though they may in fact be sent to wards, kitchen, nurses' dining-rooms, or other departments.

Other stores issues and direct purchases including:
Crockery and hardware.
Repairs and maintenance of equipment.
Cleaning materials.

Unit of Cost

A meal day on a weighted basis of 15 points a day where the supper is a light meal and 18 points where a hot meal is served in the evening. Owing to varying customs in different parts of the country the allocation of points between the meals is left to the discretion of the catering supervisor.

STAFF RESIDENCE

Note (1). Where convenient costs for medical, nursing, and domestic staff residences should be separated, but in many cases the physical layout of the residential buildings necessitates a composite cost statement.

Note (2). The cost of meals should be incorporated in catering costs, even though kitchens are maintained in the staff residence.

Salaries and wages

Home sister, warden, or housekeeper.

Domestic staff (where practicable domestic staff engaged on cleaning should be separated and charged to cleaning service).

Materials

Stores issues and direct purchases including:

Cleaning materials.
Hardware and crockery.
Bedding and linen.
Furniture and furnishings.

Unit of cost

A resident day based on the number of rooms allocated to individual staff, irrespective of their periods of holiday, sick leave, &c.

NURSES TRAINING, INCLUDING PRELIMINARY TRAINING SCHOOL

Salaries and wages

Sister tutors.

Lecturers' fees.

Domestic staff (where practicable domestic staff engaged in cleaning should be separated and charged to cleaning service).

Salaries of students in preliminary training school.

Materials

Stores issues and direct purchases including:

Equipment.
Stationery.
Repairs and renewals of furniture, &c.

Unit of cost

A nurse in training based on the average number of nurses in training (excluding those in P.T.S.) counted at the month end or other consistent and convenient date.

NURSING ADMINISTRATION

Salaries and wages

Matron and secretarial staff in matron's office.

Assistant matron and sisters who are engaged solely or mainly on general administrative duties not chargeable under any other departmental head.

Materials

Stores issues and direct purchases (e.g. stationery).

Unit of cost

An available staffed bed based on the total number in the hospital or group.

Where nursing is organized on a group basis the expenditure must be built up to a similar level.

GENERAL ADMINISTRATION

Note (1). In large hospitals where the various sections of the administrative staff are clearly defined, separate departmental accounts can be kept for each section if thought desirable.

Note (2). If one person is wholly or mainly employed on work the nature of which falls under one of the other departmental headings the salary should be charged to that department.

Staff

Secretary or administrative officer.

Clerical and secretarial staff in his office.

Note: In the smaller hospitals and mental and mental deficiency hospitals, where the staff of the administrative officer may be engaged on more general duties, they should nevertheless be included under this heading.

Finance officer.

Accounting and secretarial staff in his office.

Supplies officer.

Clerical and secretarial staff in his office.

Store keepers in general store.

Materials

Stores issues and direct purchases including stationery.

Unit of cost

A percentage of the gross income and expenditure of the group including specialist salaries (even though paid by the regional board), patients' monies, and capital expenditure. Income and expenditure on endowment fund monies should be excluded, as should the salaries of clerical staff engaged on administering these funds.

TRADING ACCOUNTS

SEWING ROOM

Staff

Sewing-room or linen-room supervisor.
Dressmakers.
Seamstresses.
Assistants.

Materials

Stores issues and direct purchases including:
Haberdashery.
Renewals and repairs to sewing machines and other equipment.
(Materials for conversion will not be included in the cost as they will be either made up and charged back to stores or departments or be treated as stock in hand.)

Unit of cost

This has been ignored for costing comparisons for the time being owing to the difficulties of obtaining a suitable unit of cost and the relatively small total expenditure involved (apart from cost of material converted which is charged to departments). Further consideration will be given to it at a later stage and particularly to the larger sewing rooms which act as centres of distribution for linen, staff uniforms, &c.

FARMS AND PRODUCTIVE GARDENS

Salaries and wages

Farm bailiff.
Farm workers.
Gardeners.
Other staff.

Materials

Stores issues and direct purchases including:
Repairs of machinery and equipment.
Fertilizers, seeds, plants, &c.
Petrol for tractors.

Heating for greenhouses.
Note: The value of the produce consumed by the hospital or sold will be credited to this account.

CANTEEN AND SHOPS

Salaries and wages

Manageress (if any).
Waitresses.

Materials

Purchases for resale.
Cost of meals provided from main kitchen.
Provisions.
Stores issues and other direct purchases.
Note: Receipts for meals and sale of goods will be credited to this account.

Mental and Mental Deficiency Hospitals

The methods used in applying departmental costing to mental hospitals do not differ greatly from those used in general hospitals, and the detailed description of the allocation of expenditure and units of cost given above requires no alteration except in the following respects.

Wards

Wards in mental hospitals should be grouped under the three following divisions:

1. Those with a higher nursing or maintenance cost, being:
   Admission and treatment wards.
   Wards for disturbed and epileptic patients.
   Wards for sick and infirm patients.
   Wards for the treatment of neurosis.
2. Those with a lower nursing or maintenance cost, being:
   Wards for chronic patients.
3. Those with a very low nursing or maintenance cost, being:
   Open or parole wards for convalescent patients.

Medical care

This is regarded as a separate department. If any member of the whole-time medical staff undertakes work in another hospital, a deduction of one-eleventh for each weekly session should be made from his salary.

Out-patients

Where the number of out-patients is not considerable and there is not a regular weekly clinic, the cost of out-patients should be ignored.

Operating theatres

Where the theatre is used only for emergency work and there is no special theatre staff, the cost of it should be ignored.

Radiology and pathology

Where these services are provided by another hospital no expenditure will appear, but a note should be kept of the number and type of investigations.

Records

Patients' records are generally kept as a part of the general administration of the hospital and a separate departmental heading will not be required.

Non-medical Departments

Catering

The cost of staff meals may be higher than the cost of patients' meals. A test of actual cost should be made and the points value of meals adjusted accordingly.

Bakery

The bakery should be shown as a separate department, but its cost should afterwards be charged to catering.

Shoemaker, tailor, upholsterer, sewing room

Accounts should be kept of each of the above and the cost of wages and materials charged to them. Any articles made (not including repairs) should be credited at their material value and charged to stores or other departments. The unit of cost will be the number of jobs done.

Staff residences

It will be necessary to separate the cost of houses which are rented to members of the staff. These can be regarded for costing purposes as a trading account.

Administration

The cost of administration may appear to be higher in a mental hospital because the staff deals with all patient records and with other work which in a general hospital is done in a separate department. For purposes of costing it may not be easy to charge to administration any of the salary of the physician superintendent which will then all be charged to medical care. The salary of his secretary and of any clerks in his office should, however, be charged to administration.

Appendix I a

DEFINITION OF IN-PATIENTS AND OUT-PATIENTS

(As defined in the Notes to the Ministry of Health Statistical Return, S.H. 3)

1. *Out-patient.* An out-patient is an individual attending a clinical session of the out-patient department for treatment or advice.

2. *New out-patient.* A new out-patient is one whose first attendance of a continuous series at a clinical department for the same ailment (or single attendance if only one is needed) falls within the period under review. A person attending different departments (whether for the same or different ailments) should be counted as a separate new out-patient in each department.

3. *Out-patient attendance.* An out-patient attendance should be counted for each one of a course of attendances at a clinical department. An out-patient attendance at a non-clinical department such as radiology, physiotherapy, &c., should not be counted as either a new out-patient or as an out-patient attendance.

4. *In-patient.* An in-patient is a person occupying a bed in the in-patient department of the hospital at a fixed hour of the day, which hour, once fixed, should not be changed during the year or for subsequent years. An hour early in the day, before discharge of patients begins, should be chosen. A patient in a temporary bed in the in-patient department should be counted. Infants born in a maternity ward should not be counted as separate in-patients. (If discharged with the mother but continuing to attend as an out-patient, an infant should be counted as a new out-patient.) Sick staff receiving hospital treatment in their own living quarters should not be included as in-patients, but if they occupy a bed which is included in the hospital's normal bed complement, they should be counted as in-patients, whether they have been accommodated in one of the general wards or in a special ward reserved for the treatment of sick members of the hospital staff.

5. *In-patient days.* In-patient days can be calculated by totalling the daily count of in-patients for a given period. To this count should be added one patient day for each patient who has been both admitted and discharged during the same day.

Appendix I b

UNIT OF COST FOR DIAGNOSTIC X-RAY DEPARTMENTS

Provisional list of investigations and their weighted values

A.	(1) Chest, without screening (2) Chest (miniature) (3) Extremities, one area (4) Foreign body, demonstration of (5) Gall-bladder, plain (6) Pelvis (7) Teeth, one area	1 unit
B.	(1) Abdomen, plain (2) Chest, with screening (3) Foreign body, localization of (4) Jaws (5) Pregnancy, demonstration of (6) Salivary glands (7) Sinuses, frontals and antra (8) Spine, one area (9) Urinary tract, plain	2 units
C.	(1) Abdomen, with screening (2) Cholangiography (3) Fistula, injection of contrast media (4) Kymography (5) Mastoid and petrous temporal bones (6) Sinuses, complete (7) Skull	3 units
D.	(1) Cephalo-pelvimetry (2) Cholecystography (3) Cystography (4) Foreign body in the eye, localization of (5) Hysterosalpingography (6) Sialography (7) Spine, more than one area (8) Teeth (all) (9) Urethrography (10) Urography (instrumental)	4 units

E.	(1) Arteriography (2) Arthrography (3) Barium meal, oesophagus (4) Barium meal, stomach and duodenum (5) Barium enema (6) Cineradiography (1 investigation) (7) Tomography (8) Urography (intravenous) (9) Venography	6 units
F.	(1) Aortography (2) Barium meal, small intestine (3) Barium meal, full (4) Bronchography (5) Encephalography (6) Myelography (7) Smith Petersen pin, insertion of and similar procedures (8) Ventriculography	8 units
G.	(1) Angiocardiography (2) Cardiac catheterization	10 units

An extra 3 units should be added to each examination when it is done on a portable machine in a ward.

Appendix Ic

UNIT OF COST FOR RADIOTHERAPY DEPARTMENT

THE work of the radiotherapy department should be divided into two as follows:

1. Treatment by X-rays and teleradium, the costs of which include:

   Proportion of salaries of medical staff.
   ,, ,, physics department (including workshop).
   ,, ,, clerical staff.
   Salaries of technicians.
   Salary of engineer.
   Maintenance of apparatus.
   Equipment other than major plant.
   Drugs and dressings, &c.

   The unit of cost will be the röntgens delivered to treatment fields, i.e. the total surface dose given by the machine during treatment, and 1,000 röntgens (*r*) will be regarded as 'one unit'.

2. Treatment by radium (excluding teleradium):

   (*a*) interstitial
   (*b*) intracavitary
   (*c*) superficial

   the costs for which include:

   Proportion of salaries of medical staff (excluding time spent in operating theatre).
   Proportion of salaries of physics department (including workshop).
   Proportion of salaries of clerical staff.
   Salaries of technicians.
   Materials.
   Radium repairs (the capital cost of radium should be excluded).

   The unit of cost will be a completed course of treatment to a patient.

The whole cost of the salaries of technicians and clerical staff will be charged in the first place to the radiotherapy department, but part of the salaries of medical staff of the department will then be allocated to ward costs, part to out-patient costs, which will include external clinics, and

part to theatre costs. Only part of the salaries of the physics department will be borne by the radiotherapy department as a great deal of its work is concerned with research.

There will thus remain a proportion of salary and material cost arising from teaching and research which will be segregated and for which there is no unit of cost.

Appendix Id

PROPOSED UNIT SCHEME FOR LABORATORY INVESTIGATIONS

IT is important that there should be a standard system of recording the work done in a pathological department. At the present time there is considerable confusion, particularly among hospital administrators, as many different methods are in use, e.g. E.M.S. unit, number of investigations, number of specimens.

This problem has recently been considered, almost simultaneously, by the Nuffield Provincial Hospitals Trust in its experiment in hospital costing and by the Central Pathological Committee of the Ministry of Health and it was agreed that the closest co-operation was desirable. In consequence the simplified unit schedule now recommended has been produced by the combined efforts of many pathologists in all parts of the country.

The unit-values recorded in the accompanying schedule must be regarded as an indication only of the activities of a pathological department. They take no account of the bedside and consultative aspects which are such essential parts of clinical pathology. It must therefore be emphasized that unit-values cannot be used as the sole criterion in assessing the function and activities of a pathological department, or for comparison of the establishments or costings of different laboratories. The range of tests is continually expanding, new methods have to be subjected to rigorous trials before acceptance for routine use, while individual techniques vary from laboratory to laboratory; moreover, the 'units' are not directly related to the status of the individual doing the test. It is therefore essential that whenever these unit-values are used for purposes of comparison the opinion of senior pathologists cognizant of the work and local set-up should be a major factor in determining the role or establishment of any particular laboratory.

The schedule is not complete but most routine tests are given; these have been evaluated mainly on the basis of an overall time-factor (1 unit = 10 minutes), though consideration has also been given to the inclusion of costly overheads involved in some tests. Tests not included should be assessed in a similar manner, taking the average time required for the particular investigation. It is important that the assessment of tests should be made by a pathologist or senior member of the technical staff.

PATHOLOGICAL INVESTIGATIONS

Classification of routine tests

	Division	*Unit-value*
I. *Collection of specimen*		
From patients in wards or out-patient department (not attending laboratory)	A	1
II. *Bacteriology, general and serology*		
(1) Microscopic examination only (films, hairs, scales, dark-ground, sputum for T.B.). .	A	1
(2) (*a*) Bacteriological examination (including microscopy) of swab, pus exudate, &c., in which diagnosis is made with not more than direct film (excluding T.B.) culture, and films of organisms from plate(s) .	B	2
(*b*) Bacteriological examination with culture and special tests . . . . . Owing to the complexity of these examinations reliance must be placed upon the individual assessor to give a fair unit value	C/D	4/6
(*c*) Routine sensitivity tests on antibiotics .	A	1
(3) T.B.—Streptomycin sensitivity (in Dubos medium)	D	6
(4) Culture for tubercle bacillus . . .	C	4
(5) Blood culture	C	4
(6) Agglutination test (any number of antigens) .	C	4
(7) W.R. }	A	1
(8) Kahn } in batches	A	1
(9) G.C.F.T. }	A	1
(10) Preparation of autogenous vaccine . .	D	6
(11) Estimation of antibiotic level (per antibiotic)	B	2
III. *C.S.F.*		
(1) Cytology	A	1
(2) Protein, sugar, chlorides	B	2
(3) Lange	B	2
(4) Bacteriology (as for Bacteriology, see II (2) above)		
(5) W.R.—in batches	A	1
IV. *Seminal fluid.* Routine examination (including count, microscopy, motility)	B	2
V. *Faeces*		
(1) Microscopy for any constituent (including parasites)	A	1
(2) Bacteriological examination (including microscopy) and identification of organisms—as for Bacteriology. See II (2) above.		

	Division	Unit-value
V. *Faeces (cont.)*		
(3) Occult blood	A	1
(4) Faecal fat estimation (differential)	C	4
(5) Fat balance	D	6
(6) Faecal Urobilinogen:		
(*a*) Qualitative	B	2
(*b*) Quantitative	C	4
VI. *Urine*		
(1) (*a*) Simple chemistry, e.g. albumen, sugar, and ketones	A	1
(*b*) Basic routine examination (sp. gr., reaction, protein, sugar; and including ketones, bile salts, and pigments where necessary and microscopy)	B	2
(*c*) Bence-Jones protein	B	2
(2) As above with the addition of bacteriology—as for Bacteriology, see II (2) above		
(3) Pregnancy test:		
(*a*) Xenopus	B	2
(*b*) A. Z. or Friedman	D	6
(4) Albumen—quantitative	A	1
(5) Ascorbic acid—quantitative	C	4
(6) Chlorides—quantitative	A	1
(7) (*a*) Creatinine—quantitative	B	2
(*b*) Creatine and creatinine—quantitative	C	4
(8) Diastase—quantitative	C	4
(9) Glucose—quantitative	B	2
(10) Lead—quantitative	F	20
(11) Urea—quantitative	A	1
(12) Urea clearance test	C	4
(13) Urea concentration	B	2
(14) Urine—concentration or dilution test	A	1
(15) Examination (spectroscopic and otherwise) for abnormal pigments other than under (1)	B	2
(16) Ketosteroids	E	12
(17) Identification of reducing substance	C	4
(18) Urobilinogen—quantitative	A	1
(19) Hippuric acid	C	4
(20) Barbiturates	C	4
(21) Examination of stone	D	6
VII. *Blood chemistry*		
(1) Any spectroscopic examination	B	2
Estimation of:		
(2) Alkali reserve or CO_2 combining power	B	2
(3) Van der Bergh—qualitative or quantitative	B	2
(4) Calcium	C	4
(5) Chloride	B	2

	Division	*Unit-value*
VII. *Blood chemistry, estimation of (cont.)*		
(6) Cholesterol total	C	4
(7) Cholesterol, free and ester	D	6
(8) Creatine	C	4
(9) Diastase (amylase)	C	4
(10) Non-protein nitrogen	C	4
(11) Phosphatase (alkaline or acid)	C	4
(12) Phosphorous (inorganic)	B	2
(13) Potassium (ordinary chemical)	D	6
(14) Potassium (flame photometer)	A	1
(15) Protein (total)	B	2
(16) Protein (differential):		
(*a*) Colorimetric	C	4
(*b*) Kjeldahl	D	6
(17) Sodium (ordinary chemical)	C	4
(18) Sodium (flame photometer)	A	1
(19) Sugar	B	2
(20) Sugar tolerance curve (urine tests included)—as individual specimens up to total maximum of	D	6
(21) Urea	B	2
(22) Uric acid	B	2
(23) Any flocculation test—such as thymol turbidity	A	1
(24) Ascorbic acid	C	4
(25) Bromides	A	1
(26) Bromsulphthalein test	B	2
(27) Carotenes	B	2
(28) Congo red (test for amyloidosis)	B	2
(29) Fatty acid (total)	D	6
(30) Icteric index	A	1
(31) Lipase	B	2
(32) Pyruvic acid	D	6
(33) Salicylates	B	2
(34) Sulphonamide	B	2
(35) Thicoyanate	B	2
(36) Vitamin A	B	2
(37) D.N.E.	B	2
VIII. *Haematology*		
(1) Haemoglobin with or without examination of film	A	1
(2) Red blood count with or without haemoglobin	A	1
(3) White blood count with or without haemoglobin	A	1
(4) Differential count with or without haemoglobin	B	2
(5) Platelet count	B	2
(6) Reticulocyte count	A	1
(7) Direct eosinophil count	B	2

	Division	*Unit-value*
VIII. *Haematology (cont.)*		
(8) P.C.V.	A	1
(9) Group determination (A, B, O, and D, excluding special Rh. groups)	B	2
(10) Group determination (special Rh. groups)	C	4
(11) Direct matching—per donor	A	1
„ „ —with Coombs or albumen test	B	2
(12) Bleeding time	A	1
(13) Clotting time	B	2
(14) Fragility test	C	4
(15) Prothrombin estimation	B	2
(16) E.S.R.	A	1
(17) Marrow film	D	6
(18) Malaria or other parasite	B	2
(19) Paul Bunnell	B	2
„ „ (including absorption)	C	4
(20) Cold agglutinins	B	2
(21) Plasma clotting time	B	2
(22) Formol gel tests	A	1
(23) 'L.E.' Cells	C	4
IX. *Post-mortem*		
(1) Complete	E	12
(2) Limited	C	4
X. *Histology*		
(1) Section and report (per block)	C	4
(2) Malignant cells in sputum, fluids or secretions	C	4
XI. *Alimentary tract contents*		
(1) Any intestinal enzyme—quantitative	B	2
(2) Gastric analysis—single sample	A	1
(3) Fractional test meal	C	4
XII. *Metabolism*		
(1) Basal metabolic rate	D	6
(2) Vital capacity	B	2
XIII. *Milk*		
(1) Lactose	B	2
(2) Fat:		
(*a*) Centrifuge	A	1
(*b*) By ether extraction	C	4
(3) Total nitrogen	C	4

PUBLIC HEALTH BACTERIOLOGICAL EXAMINATIONS

	Division	*Unit-value*
XIV. *General food* (excluding milk and ice cream but including fish removed from shells)		
(1) Routine bacteriological examination of all food samples (per outbreak)—including Bacterial plate count Coliform count Staphylococci; *Cl. welchii*; direct and enrichment culture and mechanical examination of 'can' where applicable .	E/F	12/20
(2) Routine examination of shell fish— Faecal coli count Minimum of 10 fish (Clegg and Sherwood) Per 10 fish	D	6
XV. *Water*		
(1) Complete standard routine examination (Reports on Public Health and Medical Subjects, No. 71)	E	12
(2) Presumptive coli	B	2
(3) Confirmed coli.	B	2
(4) Faecal coli	B	2
(5) Plate count	B	2
(6) Faecal streptococci	C	4
(7) *Cl. welchii*	C	4
(8) Other organisms	D	6
(9) Simple test for free chlorine (Nesslor) .	A	1
XVI. *Shell Fish*		
(1) Routine examination for faecal coli count: minimum of 10 fish per 10 samples (Clegg and Sherwood)	E	12
XVII. *Serological tests*		
(1) Respiratory disease screening tests: Haemagglutination inhibition test for Influenza A and B, Q-fever, Psittacosis—L.G.V., Strept. M.G. } C.F.T. } In batches per specimen	B	2
(2) Leptospiral screening; batches of not less than 20 per specimen	A	1

	Division	Unit-value
XVII. *Serological tests (cont.)*		
(3) Individual C.F.T., quantitative: Influenza, Q-fever, Psittacosis—L.G.V., Lymphocytic choriomeningitis, Streptococcus M.G. agglutination — In batches per specimen, per examination	A	1
(4) Smallpox C.F.T.	E	12
(5) Smallpox egg inoculation	D	6
(6) Influenza virus isolation, egg	E	12
(7) Lymphocytic choriomeningitis; preliminary mouse isolation	D	6
XVIII. *Intradermal tests*		
(1) Single test for one person	B	2
(2) For each additional person up to 5	A	1
(3) Tests for more than 5 persons to be calculated on the basis of per man-hour	D	6
XIX. *Prophylactic immunization*		
(1) Smallpox T.A.B., Typhus:		
(*a*) Single patient and not more than 2 immunization procedures	B	2
(*b*) Batches of 5 patients for one type of immunization; per patient	A	1
(*c*) Batches of more than 5 individuals to be calculated on the basis of per man-hour	D	6
XX. *Public health field work*		
(1) To be calculated on the basis of man-hours (per man-hour)	D	6
(2) The examination of specimens brought back to the laboratory will be charged on the following basis (per specimen)	B	2
XXI. *Milk*		
(1) Coliform test	B	2
(2) Methylene blue test for raw or heat-treated milk	A	1
(3) Coliform plus methylene blue test	B	2
(4) Phosphatase test	B	2
(5) Turbidity test	B	2
(6) Microscopical examination for pus and streptococci	B	2
(7) Breed smear	B	2
(8) Microscopical examination for tubercle bacilli:		
For single specimen	C	4
For 5 or more, per specimen	B	2
(9) Milk bottles, plate count on each bottle	B	2

	Division	*Unit-value*
XXI. *Milk* (*cont.*)		
(10) Churn rinsings, plate count on each specimen	B	2
(11) Ring test for *Brucella*; batches of 5 or more, per sample	A	1
(12) Cultural examination for *Brucella*	D	6
(13) Animal inoculation for tubercle bacilli or *Brucella*:		
For 2 animals	E	12
For 1 animal	D	6
(14) Animal inoculation other than for tubercle bacilli or *Brucella*, per animal	C	4
(15) Examination of milk for *R. burneti* by C.F.T.:		
On guinea-pig serum, single specimen	F	20
Batches of 3 or more, per sample	D	6
XXII. *Ice cream*		
(1) Plate count	B	2
(2) Coliform test (presumptive and faecal)	B	2
(3) Methylene blue test	A	1

Appendix Ie

PHYSIOTHERAPY DEPARTMENTS: LIST OF TREATMENTS AND THEIR WEIGHTED VALUES

In assessing the unit-value the relative average time taken by the physiotherapist in giving the treatment has been considered

Treatment	*Unit-value*		*Notes*
	Out-patient	*In-patient*	
Individual treatments other than exercises	..	..	'*A treatment*' is one of the treatments listed below given to one part of the body. If, however, two or more parts of the body are treated simultaneously without involving additional time this should also be counted as one treatment. Where more than one physiotherapist is needed for the treatment of one patient the number of units should be doubled. Treatment carried out in a ward should be given the unit values shown in the column for In-patients.
Short-wave and Long-wave diathermy	2	2	These treatments are generally carried out in the department and not in the wards. In- and out-patients should be separately recorded but at the same unit value.
Paraffin wax	1	1	
Ultra-violet light general	1	6	This treatment is sometimes given to groups of patients, but, as this is not quite analogous to 'class' treatment, each patient in the group should be counted as an individual treatment.
Ultra-violet light local	3	6	
Infra-red and radiant heat	1	2	
Faradism, Galvanism, Sinusoidal — Shorter	2	4	Where the continuous attention of the physiotherapist is not required during treatment.
Faradism, Galvanism, Sinusoidal — Longer	3	4	Where the continuous attention of the physiotherapist is required during treatment.
Massage	3	4	
High-frequency	3	3	
Vibratory massage	3	3	
Plaster work	6	6	
Dressings	3	3	
Exercises			
Individual treatments	3	3	These treatments should count as 3 units, irrespective of time taken and parts of the body included. Where percussion and postural drainage are given with the exercises no extra units should be allotted. Where more than one physiotherapist is needed for the treatment of one patient the number of units should be doubled.
Class exercises per class	6	6	'*A class*' is a group of patients under the care of *one* physiotherapist.

Appendix II

THE REASONS FOR THE ADOPTION OF THE DEFINITIONS IN APPENDIX I AND COMMENTS ON THE SUMMARIES OF UNIT-COSTS IN TABLE IV

WHEN arriving at the definitions of the units of cost and the departmental allocation of expenditure many problems were met. The essential thing was to find a basis which would ensure the greatest degree of uniformity despite differences in organization. In some cases it has been found necessary to depart to a slight extent from the pattern of administration of a hospital, but in all these cases it would be possible, by a building up of departmental expenditure, to provide departmental heads with the information they require.

The summaries of unit costs given in Table IV are for the most part the results for the six months ended 31st March 1952. It must be emphasized that there has not yet been time to investigate the reasons for apparent differences in the costs and care is needed when scrutinizing these figures. For one thing the sample is not of a sufficient size to give any reliable average on which to make a comparison, nor are the figures for a sufficiently long period. It may be that there were in some cases special circumstances affecting this period the effects of which in a comparison over a year would be levelled out. The results must, therefore, be regarded rather as an exercise in method than as a pointer to over- or under-spending.

Before departmental problems are considered, however, it is necessary to discuss the allocation of some of the larger sections of salaries and wages.

MEDICAL SALARIES

It was decided, in the first place, to allocate consultants' salaries on the basis of their contracts, and that the salaries of registrars and housemen should follow the same allocation as the salary of the consultant to whom they were attached. Contracts, however, were made soon after the National Health Service started and it was found that in many cases they bore little relation to fact. Where necessary, therefore, each consultant was asked to give the proportion of time spent in ward rounds, out-patient clinics, operating sessions, &c., and the registrars were asked to give a rough division of their own and the housemen's duties. Either

the contracts or these estimates were used as the basis of allocation. The unit of cost for wards and operating theatres still showed very diverse results, and a further analysis of medical time was prepared showing the number of hours for each department. These hours were evaluated at a standard rate and thus it was possible to determine whether differences in unit-cost arose from variation in the rate of payment (arising from the incidence of distinction awards, &c.) or in the amount of time which was officially spent in each department. The hours were based on the number of sessions in the case of part-time consultants, and on a 38½-hour week for full-time medical staff.

There were still considerable discrepancies in the unit-cost of medical salaries and it was decided that some consultants in each group should be asked to assist by arranging for members of their team to keep a diary for a period of two weeks showing the division of their time as between out-patients clinics, ward rounds, and, where applicable, operating theatres. It was hoped that in this way the basis of allocation which had been used would be confirmed.

It was also decided that the salaries relating to theatre sessions should be charged to the appropriate beds rather than to the operating theatre as the use of the theatre was most variable, and it was hoped that greater uniformity would ensue.

Another problem arose in respect of consultants who were on call for the smaller or long-stay hospitals in the group and were, in fact, seldom needed. Their salaries were allocated to the wards in the acute hospital with a correspondingly high cost. The salaries of consultants in the special departments, such as radiology and pathology, presented little difficulty.

In the teaching hospitals it was difficult to decide how to treat distinction awards paid to members of the staff of the university as there were no official sessions allocated to any department. Estimates were obtained of the division of the work and the payment allocated on this basis.

Nursing salaries

As junior ward personnel changes frequently, to charge the salaries of nurses working in a ward to that ward would be a considerable task and it was, therefore, agreed that though the salaries of the senior nursing staff should be allocated direct, the junior staff should be charged on the basis of the number of nursing days. It was found that in matron's office records were kept of the staffing of each department each week, and from these records it was easy to prepare a summary of nursing days for each grade of student nurse. The total cost of salaries was allocated departmentally on this basis. Thus the cost of night staff, holi-

days, sick-leave, &c., was automatically spread. The cost of nurses' uniforms was allocated in the same way. The salary cost which was used was the gross salary before deductions for board and lodging were made; therefore, any difference between the cost of resident and non-resident staff did not appear in ward expenditure.

If individual wards are being costed there is, in fact, a good argument for charging all ward nursing salaries on this basis. Then individual ward cost is not affected by the length of a sister's service, but the average cost of a sister's salary would vary from hospital to hospital, according to the seniority of the staff. When standards are introduced, this would be one of the variations from standard which it would be necessary to show up.

Salaries of other ward staff

Many difficulties arose in the attempt to define what other ward staff should be included in ward cost. There is a multiplicity of denominations. There are nursing orderlies, nursing assistants, ward orderlies, ward clerks, ward maids, resident maids, domestics, and daily cleaners. For the sake of simplicity it was felt that any means of avoiding the analysis of wages paid to daily cleaners should be explored and that if they were charged to a department called 'cleaning services' this would be achieved and in addition it might be possible to compare the cost of cleaning two hospital buildings. There was, however, great difficulty in drawing the distinction between cleaners and those ward maids who were employed more in duties concerned with the feeding of and caring for the patient than in the cleaning of the ward. Moreover, some of the duties of the nursing assistants differed only very slightly from those of the domestic staff. Finally it was decided that nursing orderlies should be included in nursing salaries as they more often filled functions which, in the acute hospitals, were carried out by the student nurse; that all other staff in a ward, except domestic staff engaged practically wholly in the cleaning of the ward and its furniture and fittings, should be shown as part of the ward cost and that the domestics so engaged in cleaning should be charged to cleaning services.

Having dealt with the main types of staff engaged on work in the ward it is possible to pass on to the problems of each department so that the reasons for the bases used can be appreciated.

Wards

Allocation of expenditure

The ward costs do not attempt to show the total cost of the treatment of a patient, but only the cost of the care which arises in the ward itself. If it is desirable to arrive at the total cost of treatment, this can be done

by building up departmental costs, but it must necessarily be a very approximate figure as so many arbitrary allocations have to be made.

It was not known how the cost of various types of wards might differ and, therefore, whenever one or more complete wards were allocated to any specialty they were separated for costing purposes. Where the total beds allotted to a specialty comprised a part of a ward it was impracticable to make any separation.

Ear, nose, and throat and maternity departments were separated, as it was known that, in the case of maternity, because of higher staff ratios, there was a definite increase in cost. In the case of E.N.T. departments the difference might not be so marked, but in both these specialties it is often found that the department is self-contained and the operating theatre and out-patient department are all in the same building and operated by the same staff. It is then difficult to arrive at the separate cost of theatres and out-patients without intensive study and detailed allocation of staff time and materials.

The specialties which are often found in special hospitals such as tuberculosis, eye, paediatrics, and chronic sick, have all been separated as has, whenever possible, the cost of private patients.

Unit of cost

The unit of cost which has been used is the in-patient day. To save work in the hospitals the definition contained in the notes to S.H. 3 has been adopted, although it is realized that patients who are admitted or discharged on the same day are not always included and this, in some hospitals, is an appreciable figure. Average stay and percentage occupancy were also shown as factors which affect cost.

Summaries of cost (Table IV, pages 61–106)

Summaries are given for general medical wards (page 62), general surgical wards (page 64), gynaecological wards (page 66), ear, nose, and throat wards (page 68), maternity wards (page 70), children's wards (page 72), other special wards (page 74), private patients wards (page 75), long-stay (or chronic sick) wards (page 77).

From Table I it will be seen that the percentage of total expenditure which arises from the cost of the services given in the wards is 19 per cent. in general teaching hospitals, 22 per cent. in general non-teaching hospitals, and 34 per cent. in hospitals for the chronic sick and for mental cases. This represents a considerable proportion of the total. Moreover, ward expenditure accounts for nearly 25 per cent. of medical and 60 per cent. of nursing salaries.

As far as can be seen from the small sample of hospitals in the experiment, there is little difference between the cost of nursing and of

materials in a medical and surgical ward, but there is a difference in the cost of medical salaries as, in the case of surgical wards, the salaries relating to theatre sessions are also included.

It seems, however, that the ward cost of the treatment of surgical patients does not vary considerably between surgical specialties, such as general surgery and gynaecology, and that there is no reason for separating these specialties except those which are known to require more nursing or medical care such as neuro-surgery and plastic-surgery.

Another factor which affects unit-cost is the occupancy of the beds in a ward. It is thought that in wards dealing with the same specialty the staff of the ward would not be affected to any great degree by occupancy and that the cost of materials would vary only very slightly. Supplementary summaries have been prepared for medical, surgical, and some of the special wards showing the cost of an in-patient day if the occupation of all wards was at the same level.

It is thought that though average stay might affect the cost of long-stay as compared with acute cases, the difference in the average stay of patients in similar types of wards would not have any great effect on ward cost, though it does affect very much the economic usage of beds.

In all cases there is considerable variation in the unit cost of medical salaries and, as has been stated earlier, this is being examined further. In addition to this the following comments can be made on the cost of each type of ward.

Medical wards (Table IV, pages 62 and 63).

From the table it seemed that a 90 per cent. occupation of beds could be achieved and this was used as the basis for the figures on page 63. The resultant increase in the cost at hospital G does help to present a more uniform picture, though there are still considerable differences between hospitals of the same type. The decrease in the unit-cost of hospitals E and P would lead one to assume that these wards are staffed on the basis of a low occupation. One point of interest is the low occupation in wards in hospitals which are not dealing wholly with acute cases. There are also marked variations in the length of stay; in hospital P this may be accounted for by the transfer to this ward of acutely ill chronic sick patients.

Surgical wards (Table IV, pages 64 and 65)

Again it seemed that 90 per cent. occupation should be regarded as the standard and it was used as the basis for the figures on page 65, although in this case it accentuated differences rather than helping to explain them.

Gynaecological wards (Table IV, pages 66 and 67)

The cost of a ward for gynaecological cases seems to be slightly higher than that of general surgical wards, and this may be partially accounted for by the rather shorter average length of stay calling for a higher nursing staff ratio. The difference is, however, not marked, and except where individual wards are being costed those for gynaecology might be included in general surgery. Page 67 based on a 90 per cent. occupation does not give much greater uniformity as there was comparatively little difference in occupation rates.

Ear, Nose, and Throat (Table IV, pages 68 and 69)

It is not possible to compare hospital B with the others unless the operating time on patients in these wards is segregated and the cost added to the ward cost. The sample is so small that it is difficult to comment. The figures on page 69 have been based on 80 per cent. occupation as it was felt that the large number of tonsil and adenoids cases which would be dealt with would make it difficult to attain a higher percentage. There are usually two tonsil and adenoids operating sessions a week, and as the children need only be kept in for 2 or 2½ days, a few vacant beds must result.

Maternity wards (Table IV, pages 70 and 71)

As will be seen, the cost of maternity wards is higher than that for any other specialty. When a uniform basis of 90 per cent. occupation is taken, there is less variation in the cost if those wards are part of an acute hospital, but it results in less comparability in the cost of maternity units in the ex-public assistance institutions. A most interesting point is the low occupation in all these units. The unit-cost based on actual occupation seems to show that the beds are staffed when needed and there is not a fixed staff complement based on a full usage of them or the unit-cost would be higher. If this were not the case these units would be wasteful of money and nursing staff.

Children's wards (Table IV, pages 72 and 73)

Few of the costs in the table are comparable. Hospital C is a unit for infants of under one year and is used for teaching and research. Average occupation is low and this may be inevitable for children's wards.

Other special wards (Table IV, page 74)

The acute specialties were separated with the object of ascertaining whether the specialty affected cost, but the sample is so small that it is

difficult to draw any conclusions. From this list, however, there seems to be no reason for expecting any of them to prove exceptionally high in cost, so that, unless individual wards are being costed, no separation need be made. It should be pointed out, however, that even if the wards are not being separately costed, statistics of occupation and average stay should be individually examined as these are by no means uniform, and only by examining them under specialties can any judgement be made as to the efficient use of beds.

Tuberculosis has to be considered separately as the cost will vary with the amount of acute treatment provided, since this will affect the ratio of ward staff to beds. Infectious diseases also needs individual examination as the percentage occupancy will be lower and a certain number of staff have to be available to meet the outbreak of an epidemic. This is probably the only type of hospital in which the percentage occupation of beds seriously affects unit-cost.

The mental and mental deficiency hospitals are included in this list and, as would be expected, their unit-cost appears very low. This arises from the fact that in many cases the patients are physically well and need only custodian care. There is, moreover, a very small turnover of patients.

Two wards, both in hospital H, are of interest. The first is a radiotherapy hostel administered by the hospital for patients receiving treatment in the radiotherapy department who do not need full nursing care. It will be noted that the cost is lower than that of an acute ward even though the occupancy of the hostel is only 58 per cent. The second is a recovery home largely used for the transfer of post-operative cases. The nursing cost seems to be no lower than that of an acute ward, but the use of the home results in a reduction in the average stay in the surgical wards of this hospital to 9·7 days, by far the lowest in the sample.

Private patients (Table IV, pages 75 and 76)

The average occupation of these wards would seem to be generally lower. For this reason 80 per cent. has been used as the basis of occupation for the figures on page 76.

Long-stay wards (Table IV, pages 77 and 78)

These are almost all wards for the chronic sick in ex-public assistance institutions and there is remarkable uniformity in their cost. The variation is even less when all figures are adjusted to a basis of 95 per cent. occupation. In these wards the figures of average stay are not very informative as a period of six months is too short to give any idea of the rate of turnover of this type of case. Hospital K is an ex-municipal hospital which is treating more and more acute cases.

OUT-PATIENTS AND CASUALTY DEPARTMENTS

Allocation of expenditure

In the individual hospitals the cost of out-patients and casualty departments has been separated, and in some places that of special clinics, such as psychiatry, has been arrived at. The special clinics so treated are those in which the cost was thought to be higher than the average.

All staff which are employed wholly within the department have been charged to it with the exception of clerical staff who are engaged on records. No allocation has been made in respect of staff such as porters who are on call when needed by the department.

Unit of cost

The unit used has been out-patient attendances and the definition given in the notes to S.H. 3 has been adopted. Methods of counting attendances were examined. In some hospitals there may be a small margin of error, but this would not be of sufficient extent to invalidate the results. The major problem was to ensure that the attendances included were the same in every case and that clinics for treatment and minor dressings had not been left out.

Summary of cost (Table IV, pages 79, 80, and 81)

In preparing the summary of cost on page 79, expenditure on the out-patient department, including special clinics, was added to that of the casualty department. It was found that the organization of the two departments varied so much from hospital to hospital that it was not possible to consider them separately. In one hospital the emergency theatre may be situated in the out-patient department, and in another in the casualty department, but it is in all cases used by both.

It can be seen that in the general teaching hospitals direct expenditure on out-patients represents about 7 per cent. of total expenditure, while in the non-teaching hospitals it is nearer 10 per cent.

On pages 80 and 81 the cost of out-patients only is shown both as a unit-cost of an out-patient attendance and of a new out-patient. As will be seen, the cost of a new out-patient shows much greater variation than the cost per attendance as the ratio of attendances to patients is different, being high in the case of hospitals G and K. It has been found that the basis of counting new out-patients is not always uniform, and in the case of hospital B it is known that the number of new out-patients should be higher than is stated.

Operating theatres

Allocation of expenditure

One of the main problems in the costing of operating theatres has been the allocation of medical salaries as between the theatre and the wards. This was especially difficult in the case of theatres which were not in constant use, as, for example, those in a hospital mainly for the chronic sick. It was decided that it would give greater uniformity if the cost of salaries of surgeons was charged to the appropriate wards.

In some hospitals there is difficulty in arriving at the cost of drugs used in the theatre, as issues from the dispensary are not priced. As long as such pricing is confined to drugs used by a few special departments, and does not include the pricing of prescriptions, it should be possible.

Unit of cost

The unit of cost is the operating hour and is based on the length of each operating session. It has been found a simple matter to obtain records of time by asking the theatre sister to make a note of it in the register of operations or on a simple weekly or monthly form.

This unit was adopted in preference to the number of operations as it was felt that there might be such a difference in the type of operation performed that no comparison would be possible.

Summary of cost (Table IV, page 82)

The unit cost per operating hour shows considerable variation even in similar types of hospital, and this arises largely from differences in medical and nursing salaries. Theatre costs account for nearly 10 per cent. of total expenditure and it may be useful at a later stage to make a further study of these figures. It may be that the basis of time recorded varies and this needs examination. It seems that the smaller units tend to be the more expensive, but a larger sample is required before that can be established.

Diagnostic radiology

Allocation of expenditure and unit of cost

The major problem for this department was to arrive at a suitable unit of cost which would give a broad picture of the work carried out. It was clear that the Trust would need expert advice. An invitation was therefore sent to the radiologists attached to each group to meet one another in London to discuss the problem and to advise the Trust on the unit to be adopted for the experiment.

As a result of the first meeting further help was sought from the Faculty of Radiologists, and the Council of the Faculty nominated

members to meet representatives of the Trust. After much discussion an agreed list of examinations was prepared, divided into broad categories according to the time, materials, and skill required for each. A simple count of examinations was considered, but it was felt that this would not give sufficient indication of the work done and would not show in any way the difference between a hospital whose needs were met by a number of routine examinations and a hospital for which the whole scale of diagnostic facilities was required. Details of the unit values are given in Appendix I*b*.

After the end of three months a further meeting of radiologists was held to discuss the results of the experiment. Some minor changes were made in the list of examinations, but it was agreed that on the whole it had worked well. One problem which appeared was the differing results in comparable hospitals when the unit values were compared with the numbers of examinations counted for S.H. 3. It was agreed that for the month of May 1952 the number of examinations of each type should be counted as well as the unit-values. This would ensure that the units did in fact show real variation in the work of a department and that the difference was not due to lack of uniformity in counting methods. It is interesting to note that in two teaching hospitals there was very little difference in the pattern of work falling on the department.

Summary of costs (Table IV, page 83)

The summary shows the relationships between the weighted values of examinations and the number of examinations. In the case of hospital A the unit-cost is lower than it would normally be as the staff was short of one radiologist most of the period. Moreover, during the quarter there has been an acute shortage of X-ray films. In the case of hospital A this shortage was met by reducing the number of films used on each case, whereas in hospital B fewer examinations were carried out.

Another complication is that some radiological departments have a school of radiography. It was impossible to separate the cost of teaching from the cost of treatment as students have to work in the department to get their practical training and the tutors are not only engaged in class work but also supervise and help in the practical work of the department. For the purpose of costing therefore, no difference was made between a teaching and a non-teaching department, but it must be realized that a comparison should only be made between departments of the same type.

RADIOTHERAPY

Allocation of expenditure and unit of cost

Again it was necessary to call on the specialists concerned for help in arriving at a unit of cost. It was decided that expenditure should be

allocated under two heads, (*a*) treatment by X-ray and teleradium, the unit for which should be 1,000 röntgens delivered to treatment fields, and (*b*) treatment by radium, the unit for which should be a completed course of treatment to a patient. The problems which arose in the allocation of expenditure under these two headings were discussed, and although there were considerable difficulties to be overcome, and some allocations had to be made on an arbitrary basis, it was thought that there was no better way of assessing the work and cost of the department. It was emphasized that the expenditure allocated to this department should include only the cost of treatment in the department and not the cost of the time of the staff spent in operating theatres, out-patient clinics or wards. There would be a residue of expenditure which was attributable to teaching and research and for which no unit could be found. It was suggested that as there was no radiotherapy department in the Manchester teaching group the Christie Hospital should be invited to co-operate. The South Manchester Hospital Management Committee accepted an invitation to help in this way and from 1st October 1951 costs of the treatment departments at the Christie Hospital were made available.

No summary of cost has been included in Table IV as there are only two comparable departments concerned in the experiment.

Laboratories

Allocation of expenditure and unit of cost

The problem of the unit of cost for laboratories was similar to that for radiology, but the number of different investigations was even larger and more varied. After discussion with the pathologists it was decided that a list of the investigations more generally carried out should be prepared and divided into six broad categories on the basis of the time, skill, and materials involved, and that each category should be given a unit-value. One of the pathologists who was advising the Trust was also a member of a sub-committee of the Central Pathological Advisory Committee of the Ministry of Health which was considering a similar problem. When the list of investigations had been prepared and agreed, it was at his request sent to all the members of the Ministry's Advisory Committee as well as to those concerned with the hospitals in the experiment. Each pathologist was asked to mark the list with his assessment of the unit-value of the investigation and to return it to the Trust. From these a final list of unit-values was worked out. The counting of units on this basis began on 1st October 1951, and in December two further meetings were held to discuss the results of the first two months. Some minor amendments were made and another section which had been prepared by the Public Health Laboratory Service was added. The list was

then sent for the consideration of the Central Pathological Advisory Committee. They decided that by the end of 1951 a sufficient trial would have been given to the system and they hoped it might then be generally adopted. At a meeting in June 1952 a few further alterations were made and the list was adopted for presentation to the Ministry of Health.

In the case of the laboratories it was realized that there had been considerable scope for error in the assessment and counting of units under previous systems. It was hoped that the new list might obviate some of these errors, especially if the assessment could be made by a senior member of the technical staff. It was also desirable to emphasize that in the case of pathology, as well as radiology, radiotheraphy, and physiotherapy, the units would only give a broad indication of the work of a department and should not be used as a means of criticism without a specialist assessment of the staffing and of the type and quality of the work. The full list is given in Appendix I *d*.

Summary of cost (Table IV, page 84)

Figures are given for the weighted value of investigations and the actual number of investigations in each laboratory so that it can be seen whether there is any difference in the relationship between the two. There are also factors to be considered which, while not affecting unit-cost, do affect total hospital expenditure. One of these is the difference in the use made of a department. This applies to many of the departments of the hospital, and the relationship between the number of patients and the service given is being studied.

The unit-cost for hospital H appears to be high, but this department serves not only the hospital but the group, and in future the cost will be shown on a group basis.

PHYSIOTHERAPY

Allocation of expenditure and unit of cost

As with the other treatment and diagnostic departments, the Trust had to seek for help and asked for the advice of the physiotherapists concerned and for the co-operation of the Chartered Society of Physiotherapists. In this department salaries and wages are the largest element of cost. The main types of treatment given in the department were each allotted a unit-value based mainly on the time factor. These units had also to differentiate between class exercises and individual treatments and between treatment in the department and in the ward, as all these factors affected the time taken by the physiotherapist in giving the treatment.

It was not possible to institute the recording of these units until 1st October, and so no information was available on the applicability of the system until January. Further discussions then took place and it was

found that there was a need for a clearer definition of exercises, as there had been a lack of uniformity in the assessment of the unit-value of the various types of these treatments. The Trust has received help from a member of the Chartered Society who has visited all the departments with a view to assessing the degree of uniformity which is being obtained with the amended definitions.

As in the case of radiography there is the complication to be considered of those departments which form part of a school of physiotherapy, and again it must be emphasized that like must only be compared with like and that a teaching department can only be compared with another teaching department.

A further problem is the varying organization of the medical staffing of the department. In some hospitals there is a specialist in physical medicine whose salary will be charged to the department. In others much of the work is referred to the department by the orthopaedic surgeon whose salary is chargeable to the orthopaedic clinic. This makes inter-hospital comparison even more difficult.

It must also be emphasized that although the units are based on time they do not attempt to measure the working hours of the staff. Something needs to be added for attendance at clinics and ward rounds, for administration, and in the case of large and scattered groups, for inter-hospital travel. The object of the units is only to attempt to provide a broad picture of the work of the department. Varying results which this picture may give can only be examined with expert knowledge of the problems and of the type of case which may need treatment in different hospitals.

Summary of cost (Table IV, page 85)

The apparent difference in cost in the two teaching departments is accounted for by a difference in the method of counting units which has since been adjusted. The relationship between units and treatments is shown.

DISPENSARIES

Allocation of expenditure and unit of cost

The dispensary has always been one of the problems of functional costing in hospitals. An analogy has often been drawn between the dispensary and the kitchen and the problems are somewhat similar. In both departments materials are received and require time spent upon them for their mixture and conversion into a different product. But in the case of the kitchen it is possible, by giving a weighted unit to the various meals prepared, to arrive at a fairly uniform measurement of production. In the dispensary the value of medicines prepared has no

degree of uniformity; one may be expensive in the cost of drugs and need little time, in another the drug cost may be negligible but the time spent on making the mixture may be considerable. Moreover, the amount of medicine issued to patients varies considerably; it may last 3½ days for an in-patient and six months for an out-patient. Therefore the number of prescriptions issued to in- and out-patients is of little use as a measurement of cost.

In addition to this there is the work entailed in preparing stock mixtures and in the issue of drugs and chemicals to wards and departments. It seems as if there is no one unit which can take cognizance of all the factors.

The Trust therefore turned to the pharmacists for their help in solving the problem. From an analysis which had already been done at Oxford, it seemed as if there were about 50–100 items of expensive drugs which would account for over 75 per cent. of expenditure on drugs, and the amount of labour needed to deal with these drugs was small. Therefore the remaining drugs consisting of several thousand single items did, in fact, account for less than a quarter of the total cost, and most of the time of the pharmacist and his staff would be spent in dealing with them. Thus it might be fairly simple to eliminate from dispensary cost all the expensive drugs and charge them direct to departments. The balance of expenditure would represent the routine part of the dispenser's work and a unit could be used, such as the number of prescriptions, or the number of prescribers (i.e. whole-time medical staff).

The preparation and study of the list of expensive drugs was not completed during the experimental year, so for the time being the number of out-patient attendances, plus in-patient days, was used as a temporary unit. In the meantime studies are being made of in- and out-patient use of the dispensary and of other factors which may help in arriving at an agreed unit.

Summary of cost (Table IV, page 86)

The unit used, a total of in-patient days and out-patient attendances, seems to provide a better method of comparison than was expected. In a number of cases the reasons for the difference in cost are known. For example:

Hospital C is a special hospital for women and children and treats a large number of maternity cases.

Hospital D deals only with ophthalmology.

Hospital H is providing a group service. Moreover, as is often the case, owing to lack of space, it is impossible to keep a central drug store and all expenditure on drugs, whether consumed or not, is included here. The hospital is buying for the group and though the

cost of drugs issued to other hospitals is charged out, the figures shown in the statement may be unavoidably inflated.

It can be seen that the total expenditure amounts to about 5 per cent. of the total for a general hospital. If it is possible by keeping records of expensive drugs to account for 75 per cent. of it, the remaining problem will be a small one.

ALMONERS

Allocation of expenditure and unit of cost

Once again the difficulty was to decide how to measure the work done by the department. The problem was discussed with the Secretary of the Institute of Almoners, but although the discussion revealed more of the problems it did not give any indication as to a unit which would take into account the many factors which had to be considered. In some hospitals the almoners or their staff see every patient. In others they only deal with the patients referred to them by the medical staff. The number of interviews was considered as a possible unit but was discarded as it took no account of the work done by correspondence and by telephone. The number of cases treated was also considered, but it seemed to present a problem because of the varying use of the department which affected the degree of service given to each case. It was finally decided that the best measure of work at present available was the number of new patients treated at the hospital, both in the wards and in the out-patient department.

Summary of cost (Table IV, page 87)

The unit costs appear to vary considerably, but perhaps no more than does the work referred to and done by the department. In several cases a knowledge of the hospitals concerned provides some reason for the difference in cost. As would be expected, the cost of social service for each new tuberculosis patient is far higher than for any other type of patient. The total expenditure involved seems comparatively small, but in the teaching hospitals it amounts to about £6,000 per annum.

RECORDS

Allocation of expenditure and unit of cost

Two main problems arose in the consideration of the records department. The first was the unit to be used. This was based on an approximation of the time taken in dealing with the records required by (*a*) a new out-patient, (*b*) a subsequent attendance in the out-patient department, (*c*) an in-patient admission, and (*d*) an in-patient discharge. It was thought that if (*a*), (*c*), and (*d*) were each counted as one unit, (*b*) should count as half a unit.

When deciding upon any unit of cost it is necessary to ensure that the method of counting the units will result in uniformity. For all patient statistics the definitions in the notes to S.H. 3 have as far as possible been adopted, but despite this there has been found a degree of discrepancy in the counting of new out-patients. Where an appointments system is in existence there seems to be little difficulty, but where there is no appointments system the counting of new out-patients and of out-patient attendances may not be so accurate and is not always in accord with the Ministry's definitions.

A second and greater problem in the case of the records department was the allocation of expenditure on salaries and wages. The functions and the extent of the control of the records officer vary from hospital to hospital and from group to group, and to base the cost of records on the staff controlled by the records officer would not give results which would be at all comparable. On the other hand, to include staff not under the control of the records officer was to depart from the principle that costing should follow the pattern of administration. After much discussion it was decided that the salaries of all staff dealing with records wherever situated and whether or not they were under the control of the records officer should, in the first place, be charged to records. At the same time a special note should be kept of those who, in special departments, might be under the control of the departmental head. When the cost of these special departments, or of the department under the control of the records officer, was being considered, the cost of these salaries could be deducted from records and added to the department concerned.

Summary of cost (Table IV, page 88)

The summary of cost shows that the unit is not a bad one, as a knowledge of the scope and size of some of the departments explains apparent differences in unit cost.

ELECTROCARDIOGRAPHY, ELECTROENCEPHALOGRAPHY, MEDICAL PHOTOGRAPHY, ETC.

Allocation of expenditure and unit of cost

It was found early in the experiment that the cost of these departments was comparatively low and represented a very small percentage of the total expenditure. They have not, therefore, so far been considered in any great detail. In every case the expenditure on them is not more than 0·3 per cent. of the total expenditure in the hospital.

Summary of cost (Table IV, page 89)

Electrocardiography is now carried out in most general hospitals, and therefore it is the only one of which a summary has been prepared.

WORKS AND MAINTENANCE

Allocation of expenditure and unit of cost

Maintenance is an item of expenditure which it is often necessary to allocate to other departments when arriving at their cost for various purposes, and it is therefore necessary when deciding upon the unit of cost to consider whether it will form a basis for departmental allocation. The scope of the problem involved depends largely on the size of the maintenance staff employed by the hospital or group. Where this is small and when any major jobs are done by outside contractors the records needed for costing will be far less. Allocation can be made to departments of the actual cost of a job as shown in the contractor's accounts, and the cost of the hospital's own staff (which will be mainly occupied on general and minor repairs) can well be spread on the basis of cubic feet.

On the other hand, in hospitals where the staff is large and deals with most if not all maintenance work, in the absence of job costing the cost will have to be spread on some agreed basis, but the results may not be at all in accord with the facts. Therefore wherever possible, when a maintenance staff is employed which is large enough to deal with most of the work of a hospital, job costing should be introduced at least for jobs over £50 and for all work of a capital nature. Apart from the needs of costing, it is important that the cost of the larger jobs should be known so that it can be compared with what it would have cost if done by an outside contractor.

For the experimental year a unit of 100 square feet was used, but when the Trust called upon the hospital engineers for their advice they thought that a unit of 1,000 cubic feet would be better as it would take into account the varying height of buildings, as this affected cost especially as regards cleaning, redecoration and maintenance of walls.

Summary of costs (Table IV, page 90)

As will be seen, there is extreme variation in unit-costs. The percentage of expenditure incurred on maintenance is in most cases between 5 and 10 per cent. of the total. It was suggested that some indication should be given of the age of the buildings, but it was found that in most cases the original hospital had been so adapted and added to that it was almost impossible to decide what the average age might be. The type of building is another factor which affects maintenance cost. When all figures are available for a year it will be easier to attempt an inter-hospital comparison. It may well show that some further investigation would be of value. When the cubic capacity of the buildings is known the unit-cost will be recalculated on this basis.

BOILER HOUSE

Allocation of expenditure and unit of cost

In the case of the boiler house, the Trust asked for the help of the engineers concerned as to the best way of measuring output and as to possible methods of allocating cost over other departments. As in the case of the works department, it was felt that the cost of steam and hot water is one of the overhead charges which would need to be known when building up departmental cost for any purpose. This would especially apply to the laundry and kitchen, both of which were amongst the heaviest users.

It was considered that 1,000 lb. of steam was the best unit for measuring production. It was realized that the British Thermal Unit might give a more accurate picture and would take into account variations in pressure, but it would be more complicated to calculate and would demand more gauges and meters than many boiler houses had. In those boiler houses with no metering arrangements it was impossible to arrive at a costing unit. The possibility of obtaining meters for test periods was discussed, but it was found that not only was this expensive but the meters were difficult to obtain. The Trust welcomed paper R.H.B. 52(7) which has been circulated by the Ministry as it has realized that, until meters have been installed, there is no method of judging the efficiency of the hospital boilers, and the cost involved amounts to some 5 to 10 per cent. of total expenditure.

The content of the expenditure to be charged to the boiler house was considered and it was decided that it should be limited to the cost of producing the steam or electric current at the time it left the boiler house. That is, it should contain the cost of maintenance of the building and machinery of the boiler house but not the cost of upkeep of the pipes, mains, or other means of conveying the steam or current to other parts of the hospital building. For each department the aim has been to use a unit the cost of which is not affected by factors outside a department; it was felt that the cost of conveying steam and current from the boiler house to the rest of the hospital depended to a large extent on external factors such as layout and height of buildings. It would be better to study separately the consumption of steam or electricity as related to the hospital service and to arrive, for the purpose of boiler-house costing, at the cost of production of a unit of steam or electricity.

The problem of the allocation of boiler-house cost to other departments depends largely on the extent of departmental meters. For the most part they are very few and in many cases non-existent. It is therefore necessary to use estimates. The engineers concerned in the experiment are considering the problem. They have made an interim recommendation that the cost of the boiler house should be added to

the cost of gas and electricity, and that the Ministry of Fuel fuel-units should be used as a basis of computation. They felt that the allocation should be made on an annual basis rather than a quarterly one, and that the percentage of the total units used by the various departments would be as follows, according to the type of hospital concerned:

1. *Laundry* General Hospital . . . . 10–15 per cent.
   Mental Hospital . . . . 20–25 ,,
2. *Main kitchen* . . . . . 6–10 ,,
3. *Dressing sterilizer.* It was not considered that this item, being generally less than 2 per cent., required a separate heading, unless dressing sterilization was done for outside services (C.D., municipal authorities), but that it should be combined with main theatres.
4. *Main theatres* . . . . . 5 per cent.
5. *Nurses' Home* . . . . . 20–30 ,,
   This would vary greatly with the hospital and the ratio of staff to beds.
6. *Ward kitchens.* This would, of course, vary with the amount of cooking done on the wards, but where the heat usage was for hot trolleys and hot drinks, an allowance of 3 per cent. would be adequate.
7. *Heating* . . . . . 40–60 per cent.
   varying with the type of hospital. It would obviously be higher in (*a*) T.B. and (*b*) mental hospitals, where (*a*) large heat losses occur through necessarily lavish ventilation, and (*b*) where open fires of low thermal efficiency were used for amenity reasons.
8. *Domestic hot water* . . . . . 15–20 per cent.
   This would vary considerably with the availability of exhaust steam from electric generation.
9. *Electric generation.* This was felt to be a particular problem for those hospitals so fitted.

It has not been possible to come to any final conclusion during the experimental year, but by the end of the second year it is hoped that trials of various methods will have been carried out.

Summary of costs (Table IV, page 91)

The expenditure on those boiler houses where no meters are available for measuring output has been omitted from the summary. It will be seen that there is some degree of variation in the unit-cost. A consulting engineer, who is advising the Trust on other matters, expressed an opinion that where the unit-cost for labour and fuel did not exceed 6*s.* to 7*s.* per 1,000 lb. of steam there was no need for further examination. This cost is not exceeded in many cases, and where it is in excess, the figures are being examined to ascertain that they are based on expenditure

arising within the period. Details of the actual fuel consumed have been obtained as this provides another factor on which boiler-house efficiency can be judged.

RENT AND RATES

Allocation of expenditure and unit of cost

This heading covers expenditure on rent and rates which, as part of the cost of a hospital, had to be considered. It was realized that it would be variable and fortuitous, and that no useful comparison would be possible. Some hospitals may rent houses for staff residences. The ex-municipal hospitals are often rated on a different basis from the ex-voluntary hospitals. Thus, although a unit of 100 square feet has been used as a unit of cost, it is realized that nothing will be gained by a study of these services. When the new rating assessment is in force the position may be different.

Summary of cost (Table IV, page 92)

These results show the impossibility of making any inter-hospital comparison of this expenditure.

GAS, WATER, ELECTRICITY

Allocation of expenditure and unit of cost

Under this heading has been aggregated expenditure on water, gas, and electricity, unless the latter is generated by the hospital's own boiler house. It can be argued that these items form part of departmental prime cost and it is obvious that they will often have to be allocated departmentally. On the other hand, by aggregating and comparing them on a unit basis it may give some indication of the effect on the items of cost of various types of hospitals and hospital buildings. One of the reasons for treating this expenditure in this way was that departmental costing for the purposes of the experiment had to be installed in a very short time, and it was felt that problems of allocation of this nature could well be left until the end of the experiment without greatly detracting from its results.

The advice of the hospital engineers as to the allocation of this expense is that it should be added to the cost of the boiler house in order to arrive at the total Ministry of Fuel fuel-units used during a year. The basis of allocation of the total cost of heating has been dealt with above in the section on the boiler house.

Summary of cost (Table IV, page 93)

The fuel-units will not be available until after the end of the experimental year and for the interim period the unit of 100 square feet of area

of building has been used. Page 93 shows the unit-cost of these services only, but on page 94 they have been added to the expenditure on the boiler house and the total compared on a basis of area and of available beds. A comparison of these columns demonstrates that the spreading of cost on a bed or patient basis may be quite misleading, since, as is the case here, other factors are hidden. The cost of heating the building, when compared with the number of beds, is completely upset by differences in the average area per bed.

General services

Allocation of expenditure and unit of cost

Unless a system of departmental costing is extremely detailed there will remain a small section of expenditure which is unallocated to departments. For the sake of simplicity it has been collected under the heading of general services. It has been found that the amount of expenditure involved is so small that this method of dealing with it is fully warranted. The main items are the salary of the chaplain and expenditure on the chapel, the cost of the hospital barber and sundry expenditure for or on behalf of patients. The unit of cost used is 100 in-patient days, as it was thought that the effect of the out-patient department on those comparatively small items of expense was so small that it could be ignored. The wages of telephonists and expenditure on telephone and postages were included under this heading, but they have now been segregated and shown in a separate summary.

Summary of cost (Table IV, page 95)

After the deletion of expenditure on telephone and postage the remaining expenditure is extremely small and the variations in unit-cost are, therefore, unimportant. Page 96 shows the cost of postage and telephone on a group basis and as a percentage of the income and expenditure of each group. It was felt that this basis of comparison was likely to be the best for this purpose.

Portering services

Allocation of expenditure and unit of cost

It has been one of the aims of the experiment to arrive at a system which would give essential information but would not entail a large amount of detailed work. For this reason, whenever possible, sections of the staff have been considered as a service rather than a part of the cost of the departments to which that service is given. Portering services are one of the best examples of this.

It would be possible, by introducing detailed time-sheets for the porters, to arrive at the actual cost of portering for each department, but it will be generally agreed that this is impracticable. Another method would be to obtain from each man, or from the head-porter, an estimate of the amount of time which should be charged to each department. This would obviously entail a considerable degree of general estimation and would also raise the problem of where to charge the service. (For example, the wages of a porter transferring linen from the wards to laundry, and vice versa, could be charged to wards or to laundry.) Moreover, the amount of analysis of the pay-roll which the wages office would have to make would be increased and would be time-taking. It was therefore decided that the cost of all general portering should be charged to one account.

This raised two problems. The first was the definition of the work of a general porter. It has been found that the work done by members of the staff designated as porters varies considerably from hospital to hospital. In one hospital there are ward porters, engaged wholly on work connected with the ward, which, in other hospitals, is carried out by ward orderlies. These are clearly a ward charge. Porters engaged solely on work within the laundry or the kitchen are also obviously a departmental charge. A definition was finally worked out which listed those duties which are considered to be general portering and those which are to be treated as departmental cost. It may be found that before uniformity is achieved this definition may need further amendment.

The remaining question was to decide upon a unit of cost. This was simple in the case of hospitals with no, or a very small, out-patient department, and the unit first used was 100 in-patient days. But where there was a full consultative out-patient department, it was not easy to assess the relationship between an in-patient day and an out-patient attendance. Therefore, the head-porter was asked to estimate the proportion of time spent on out- and in-patients. The total cost was divided on this basis and two units used, i.e. 100 in-patient days and 100 out-patient attendances.

When the quarterly comparison of unit-costs was compiled it was found that the basis of estimation used by each head-porter must have varied considerably as the out-patient proportion of expenditure in similar hospitals was very different. It was, therefore, decided to use as the unit in-patient days only. Thus a comparison was only possible between hospitals of a similar type with out-patient departments of a comparable size. The unit was then changed to that of area, as it was thought that the layout of a hospital building affected to a considerable extent the number of porters employed. Although it is still important that only similar types of hospital should be compared the unit of area seems to give better results.

Summary of costs (Table IV, page 97)

As will be seen the unit-costs vary considerably. In most hospitals the expenditure on general portering is quite considerable and it is clear that the figures require further investigation. It may be in some cases that the definition of the duties of a general porter has not been adhered to; it may be in others that differences in building layout may account for the variation. But when there are considerable differences between hospitals in the same group, in which case the same definition will have been used, some further examination is indicated.

CLEANING SERVICES

Allocation of expenditure and unit of cost

The reason for the allocation of expenditure under this heading was again an attempt at simplification by avoiding the detailed analysis of time-sheets. The problem of definition of staff to be charged here has been dealt with above under the heading of 'domestic wages'. It may be that the results of the experiment will show that the division of domestic labour between cleaning and purely departmental work is impracticable and that if any degree of accuracy is to be obtained it will be necessary to allocate all domestic wages departmentally, leaving under cleaning services only the cost of the time involved in cleaning corridors and rooms which are used by the hospital generally.

The unit used has been 100 square feet of area of hospital building. In some cases cleaning is done by the departmental staff and not by the general domestic staff, and in these cases no allocation of staff is made, but the area of the department concerned has been excluded from the total area of the hospital when arriving at the number of units.

Summary of cost (Table IV, page 98)

The cost of cleaning amounts generally to 5 per cent. of total expenditure and is not an inconsiderable item as in hospital B the total in a year would amount to nearly £40,000. This is one of the departments in which complete uniformity has not yet been achieved owing to the problem of definition of the staff to be charged to general cleaning and to the departments. This is being re-examined and it is hoped that future figures will enable a better comparison to be made.

OWN TRANSPORT

Allocation of expenditure and unit of cost

No great problem has arisen in the costing of a hospital's own transport. In most hospitals in the experiment the expenditure involved is not large. The unit is mileage. At present no differentiation has been made according to the type of vehicle, but experimentation is being

made in one hospital where a number of vehicles of different kinds are used. It may be that a weighted unit should be adopted for ambulances vans and cars.

Summary of cost (Table IV, page 99)

The most interesting point in this statement is not the unit-cost but the difference in the mileage used by the various hospitals.

OUTSIDE TRANSPORT

Allocation of expenditure and unit of cost

As it was not known what proportion of the whole expenditure on outside transport would represent, it was treated as a separate department. It covers the cost of transport of groups of staff between hospitals and travelling expenses of members of committees. Travelling expenses incurred individually by members of the staff follow the allocation of their salary. It was thought that the only unit which could be used as any indication of the size of the hospital was 100 in-patient days. If it is found that the expenditure involved is not high, it could well be included under general services.

Summary of cost (Table IV, page 100)

As will be seen there is great variation in the unit of cost and this would be expected. The salaries and wages shown for hospital A are in respect of the salary of an ambulance liaison officer. In other hospitals these duties would be done in other departments such as almoners or administrators. The expenditure involved is so small that no adjustment has been made. In the case of hospitals C and L the unit-cost is high as inter-hospital transfer of staff is necessary at hospital C, which is built on two sites, and transport has to be provided for non-resident staff at hospital L.

LAUNDRY

Allocation of expenditure and unit of cost

No difficulties occurred in arriving at the prime cost of the laundry. This is, however, one of the departments of a hospital for which it is possible to attempt cost comparison with commercial concerns, and if this is to be done, all items of cost must be included. It will then be necessary to arrive at the cost of the steam, gas, water, and electricity used in the laundry. This problem has been discussed above. There also arises the question of a charge for depreciation and/or capital replacement. It should be possible to make some estimate of this in the case of a laundry, but the problem of depreciation in hospital accounts generally is dealt with extensively in the main report.

The unit used has been 100 pieces washed. It is realized that commercially this is a unit which does not give a complete picture of output, as the difference in cost in washing pieces of various types and sizes is considerable, and a better unit is 100 pounds dry weight of linen washed. This entails more detailed records than are kept in the majority of hospital laundries, and before asking for this extra work to be done it was decided that further study was necessary.

Advice has been sought from the Institution of British Launderers Ltd., from the British Laundry Research Association, and from laundry experts in the hospital service. By counting for test periods it is hoped that it may be possible to determine whether the pattern of work done in hospital laundries does vary, and if it does, what are the main factors giving rise to such variation. If it does not, then little will be gained by using a unit which makes extra work.

It is hoped by these studies, not only to determine the best unit of work, but to arrive at standards for hospital laundries which will enable hospital management committees and regional hospital boards to see in which of the laundries there seems to be a need for further detailed examination. It should also help in deciding on the optimum size of a hospital laundry and should be a guide to the economics of centralization.

Summary of costs (Table IV, page 101)

This summary shows that there is a large amount of variation in the cost of laundry in the various hospitals. Already as a result of the figures provided for the first two quarters, two hospital groups have examined their laundry arrangements and in each group two of the less efficient units are being closed and the laundry centralized at other nearby hospitals. The Trust is evolving a technique for the examination of laundry costs which is described in Appendix V. It is hoped that further economies will result.

This statement shows even more clearly than others the impossibility of inter-hospital comparison between general hospitals and mental and mental-deficiency hospitals. The use of patient labour, especially in the case of mental defectives, makes any comparison of expenditure useless. During the second year of the experiment consideration will be given to the evaluation of patient labour.

Catering

Allocation of expenditure and unit of cost

Expenditure on catering falls into three main divisions: the cost of provisions, the cost of preparing meals, and the cost of serving meals. The cost of provisions presents no difficulties and it is thought that it should show no great variation, although in practice this is not the case.

There may be some small variation for different types of patients, and as between patients and staff, and resident and non-resident staff, but if the standard of feeding of patients is satisfactory there does not seem to be any reason for a great difference in cost between staff and patients' food. In fact in those hospitals in which special studies have been done, it has been found that the average cost of a staff meal is slightly less than that of a patient's meal, although there may be considerable differences between the cost of feeding different types of staff.

The cost of preparation of meals is also fairly simple to ascertain and should show no great variation. In fact, any considerable variation from the average in the cost of provisions and in the cost of the preparation of meals would point to the need for further investigation.

The cost of serving meals is not so easy to arrive at owing to differences in the pattern of hospital organization. In some hospitals dining-room staff are under the supervision of the catering officer and then it is simple to arrive at its cost. In others it is under the supervision of the sister or warden in charge of the nurses' home, and then the work may be done by maids engaged part-time in other duties. In the case of the wards the serving of meals is usually carried out by the nursing staff or ward orderlies and it is impossible to separate the cost of this one function of their work. Therefore the units used for arriving at the unit-cost of serving meals should only be those in respect of staff meals, exclusive of patients' meals, and when any substantial variation in unit-cost is shown it will be necessary to examine carefully the basis of the expenditure.

The value in points given for each meal has been arrived at on an arbitrary basis, and it is hoped by some special studies of the actual cost of a number of meals to determine if the values are related to fact. Moreover, adjustment has had to be made for variation in local custom. In the north high tea is regarded as a major meal of almost equal importance to midday dinner, while in the south, tea is a very light meal and supper may not be much more. In fact, it is only within the last few years that the majority of hospitals have provided patients with an evening meal which is anything greater than a cup of cocoa and a piece of bread and butter.

For the general purposes of working out a diet day-cost, beverages have been disregarded, although where possible a note was made of the approximate number served. In view, however, of the rising cost of tea, coffee, &c., the insistence in some hospitals of nurses drinking milk at meals, and the gradual increase in the use of cordials, it may be necessary to consider this aspect more deeply.

Another problem in the costing of catering is the definition of a meal. The catering officer rightly demands to be credited with the number of meals which are prepared and this is the basis which has been adopted.

On the other hand it is necessary to determine whether the number of meals prepared is much the same as the number of meals eaten. For patients' meals the number can be compared with the statistics of in-patient days and should not show much variation. It is to be expected that the number of meals will be slightly more, as in the counting of in-patient days no account may be taken of a patient who is admitted or discharged on the same day, or of the admission of a new patient before the outgoing patient has left. For staff it is more difficult to arrive at a comparison, but the number of meals should be less than the total number of staff entitled to them as a proportion of the staff will always be on sick leave or holiday.

Summary of cost (Table IV, page 102)

The expenditure incurred in the cost of catering is considerable, ranging from 12 per cent. of the total in a general teaching hospital to 25 per cent. in hospitals for the chronic sick, and in one of the general teaching hospitals it accounts for a total expenditure of £110,000 a year. The cost of catering does, therefore, call for careful examination. As can be seen from the summary, there is considerable variation. In fact, during the first two quarters it was even greater, but as a result of the comparison an investigation was carried out in one group and economies have resulted, not only in the cost of provisions, but also in the cost of staff. The cost of preparing meals in a mental-deficiency hospital is not comparable owing to the use of patient labour in the kitchen.

STAFF RESIDENCES

Allocation of expenditure and unit of cost

The largest part of this expenditure will be on the nurses' home, although in some hospitals there are a few resident maids, and in all hospitals doing acute work there will be some resident medical staff.

A difficulty occurs in comparing figures of prime cost for a staff residence which is part of the hospital building with one which is separate from the hospital building and is self-contained. In both cases the cost will exclude the expenditure on provisions and the preparation of meals, which is included in catering, but when a home is self-contained it may be impossible to separate the cost of serving meals from that of cleaning. Heating and hot water may come from the hospital boiler house, or, on the other hand, it may be produced by domestic boilers within the home. It will only be possible to compare these costs if they are all built up to the same degree and all include the same items of expenditure. In the case of self-contained buildings care is needed to ensure that units in respect of these buildings are not included when arriving at the unit-cost of other departments, e.g. in the area for

cleaning service the nurses' home must be excluded if the home is cleaned by maids allocated to it for general domestic duties.

The number of resident days has been used as the unit of cost and is based on the number of rooms allocated to individual members of the staff rather than on the days of actual occupation, as it was thought that when a member of the resident staff was temporarily absent, it did not greatly affect the cost of residence especially as the cost of board was not included.

Summary of cost (Table IV, page 103)

As has been shown above, the difference in the expenditure allocated to this department makes comparison difficult and it will not be until the second year, when the allocation of overheads is attempted, that any true comparison can be made.

NURSES TRAINING SCHOOL

Allocation of expenditure and unit of cost

The training school has presented many difficulties, but it may not be necessary to consider them in too great detail until the effect of the Nurses Act on the finances of the hospital is seen. When expenditure on training is segregated for the purposes of the Act, some of the problems may disappear. Nevertheless they should perhaps be enumerated.

First there is the problem of differences in organization of the Preliminary Training School and of the subsequent training of the nurse. In some groups there is a group Preliminary Training School housed in a self-contained building with its own staff. Where there is a block system of training, the teaching staff of the Preliminary Training School may deal with the whole training of nurses. In other groups the subsequent training may be done under a sister tutor in the hospitals. For this reason the cost of all nurses' training has been included under the one heading. But as in the case of residences the difference in the basis of expense allocated to it may vary considerably according to the physical differences of building (i.e. a self-contained unit, as compared with one which is a part of the main hospital building) and differences of organization (i.e. a group organization for Preliminary Training School or a hospital organization covering all training).

Therefore, before attempting a comparison of unit-costs, much intensive study of the make-up of the costs is required, and this will not be carried out until it is seen how the requirements of the Nurses Act affect the position.

The unit of cost used has been the average number of nurses in training, excluding those in the Preliminary Training School. It was thought that the time a nurse spends in the school (including any payments made

to her during this time) is a part of the cost of her subsequent training and should be spread over the number of student nurses who are on the staff of the hospital. If it was possible to cost all Preliminary Training Schools separately, a unit based on the number of students in them would be used.

In the case of training schools for midwives, where they are attached to a maternity department in a general hospital, it has proved impracticable to assess the cost of training. In one special teaching hospital for women and children, with a large number of maternity beds, the cost of training has, however, been arrived at.

Summary of cost (Table IV, page 104)

There are considerable differences in the cost, and these will be examined when the effect of the Nurses Act is shown in the accounts of the hospitals for 1952–3. In most cases it has not been possible to separate the cost of training schools for Part I and Part II of the Central Midwives' Board Examinations and only one example of this cost is given. One group in the experiment was running a pre-nursing course and the cost of this is shown as a matter of interest.

NURSING ADMINISTRATION

Allocation of expenditure and unit of cost

For the first quarter nursing administration was included with general administration, but it was found that this was by no means satisfactory, especially in the large general hospitals when the cost of administering the nursing staff was not affected by the same factors as the cost of general administration. It was therefore subsequently separated. For the second quarter it was considered in relation to the number on the nursing establishment, but it was realized that a large nursing establishment showing a cheaper unit-cost might, in fact, be large because of inefficient administration. Therefore the unit was changed and for the third and fourth quarters the number of available staffed beds was used.

In some cases a group matron has been appointed and where this has occurred it was necessary to produce costs on a group rather than on a hospital basis.

Summary of cost (Table IV, page 105)

The amount of variation in the unit-cost is fairly large. It seems to be affected by two factors, the type and size of hospital.

GENERAL ADMINISTRATION

Allocation of expenditure and unit of cost

To find a basis of comparison of the cost of administration has been one of the most difficult tasks in the experiment. It was regarded as

important because the cost of the administration of the hospital service has been the topic of much comment and contention. The 'colossal' number of clerks employed, the three tiers of administration, have all been stressed in the press and in evidence given to the Select Committee. It was therefore all the more important that as far as possible the costing experiment should seek a way of presenting the true facts of the case.

First it was necessary to arrive at a definition of the expense to be charged to administration and it was decided that it should cover the secretary, finance officer, and supplies officer and their staff, including the cost of general stores. It would be better if these three services could be separately shown and this can easily be done in individual hospitals and groups; and if departmental analysis is used as a basis of budgetary control, this would be necessary. But for purposes of inter-hospital comparison it is impossible, because of differences in the organization. In some groups there is no supplies officer and the secretary is responsible for all buying; in some the stores accounting is in the charge of the supplies officer, while in others the finance officer is responsible for stores control. It is only by aggregating the cost of all three functions of administration that a comparison is possible.

Then there are differences in the organization as between group and group, varying mainly with the degree of centralization. In some groups there is a central store, in others buying is done at each hospital and stores accounts are kept at each hospital. The staff of one finance officer may do all wages preparation in a central office, in another group the pay-roll may be compiled by clerks working in the individual hospitals. These problems could have been overcome by breaking down central group expenditure to hospital level, but if this was done it was necessary to find a satisfactory and generally agreed basis for the allocation. It was therefore decided that expenditure on administration should be built up to group level. The cost of the central office of the group was easily ascertainable, and to this was added the cost of administrative staff employed at all hospitals within the group.

The final problem was to decide on a unit of cost, and this has been extremely difficult. The factors affecting the cost of administration are so varied—the type of beds, the number of individual units, the distance of hospitals from the group centre, the size and number of out-patient departments. For the time being the income and expenditure of the group has been taken as the best indication of its size and complications and the total cost of administration for the group has been expressed as a percentage of this. Free monies have been excluded as, especially in the case of teaching hospitals, the cost of administering free or endowment funds is not in the same proportion as the cost of administering the hospitals, and the extent of such monies varies with past benefactions and not with the size of existing hospital groups.

Summary of cost (Table IV, page 106)

The most interesting feature of this summary is the fact that the teaching hospital groups seem to be slightly cheaper to administer than the non-teaching hospital groups, while the mental and mental-deficiency hospitals are more expensive. The reason obviously is that the expenditure on the teaching hospitals is higher, and so the unit of cost appears lower, whereas in the mental hospitals the expenditure is so much lower due to the small pay-roll resulting from the use of patient labour, that the unit cost of administration appears unduly high.

Thus a hospital which was uneconomically administered might show a low percentage of administrative cost and the efficient hospital a high percentage. Therefore in attempting to make any inter-hospital comparison it is essential that all unit-costs of each hospital should be studied.

In order that this difficulty might be overcome consideration was given to the use of a points basis weighted according to the types of beds in each group. It was found, however, that the assessment of a points value was so arbitrary that the resulting figures might well be misleading.

MENTAL AND MENTAL-DEFICIENCY HOSPITALS

It must again be emphasized that it has been impossible to make any useful comparison of cost between these hospitals and any other hospitals in the experiment. Nor with only one of each type has it been easy to assess the individual problems of the mental hospitals. There was no way of knowing whether conditions in the hospitals in the experiment were similar to other hospitals of the same kind, or whether the pattern of work would vary from area to area.

There is, moreover, the problem of the effect on cost of patient labour. By the employment of patients in all departments of the hospital, vocational therapy and training is made available to them. Good-conduct payments are made to the patient, but these are not intended to have any relation to work done. In the mental hospital about 30 per cent. of the patients were in full or part-time employment and in the mental-deficiency hospital over 60 per cent. did some amount of productive work. It can be seen, therefore, that the salaries and wages paid to the employed staff give no true indication of the actual cost of running the hospital. This is only possible if the value of patient labour is taken into account, and this might be done in the following ways:

(*a*) Charging to departments the good-conduct money paid to patients employed in those departments. This would absorb all the actual expenditure of the hospital over departments but would not give a true picture of real cost.

(*b*) Estimating what would be paid to patients were they employees of

the hospital. This would give an excessive cost as the efficiency of patient labour varies considerably and time is taken in the training of the patients. In fact, some departments are set up solely for that purpose.

(*c*) Estimating what paid staff would be required to run a department up to the level which would be required for the ordinary purposes of the hospital. This is obviously the most equitable method if it is possible for the estimation to be made. For cost purposes the estimate would be added to the departmental cost as shown in the cost ledger solely as a memorandum and would not be included in the financial books.

These are not the only problems which are peculiar to the mental hospitals. There is the question of the necessity to subdivide wards for costing purposes. It has to be decided whether a simplification of the list of departments to be costed is possible. None of these problems have as yet received sufficient consideration. But during the second year, when costs for three mental hospitals and three mental-deficiency hospitals are available, it will be possible to consider all these questions and it is hoped that a useful system of departmental analysis may result.

THE SMALL SINGLE-PURPOSE HOSPITALS

In the main report details have been given of the system used for the small hospitals and Table V gives a comparison of their unit-cost. There are certain parts of this cost which can be compared with the figures given in the main summaries. For example, the estimated cost of out-patients consists only of staff and materials, and it can be seen that in some cases it is much higher than the cost of the out-patient department of a general hospital. The cost of medical salaries and nursing salaries appears to be higher than that in the larger hospitals, though when there is an operating theatre this may be partly due to the cost of operating sessions. It is also affected by the inclusion of all nursing salaries in the unit-cost per patient-day. The diet day-cost can be compared with other hospitals, and in most cases does not seem to be very different. Another feature of the comparison is that though the average length of stay differs little from that in a general hospital, the average occupation tends to be lower.

Appendix III

STANDARD PRICING

In the report reference has been made to standard pricing for stores accounting, and in Appendix VI details are given of the system in use in Manchester and Cheltenham. By this system the standard price of all articles is fixed at the beginning of the financial year on the basis of the cost of the article at that date. All stock purchases are debited to a stores control account at the standard price, and all issues are priced at the standard price and credited to this account. The resulting balance on the control account then represents the stock on hand at standard price.

It is difficult to assess whether there is any saving of time and labour when operating stores accounts on the standard price basis, but an experiment at Glasgow Royal Infirmary and in the Cheltenham group encouraged the Trust to recommend its use for at least one other group in the experiment, and it was adopted by the Manchester United Hospitals. The system in use in the Cheltenham group has been extended and stabilized during the experimental year.

The advantages and disadvantages from an accounting point of view may be summarized as follows:

Disadvantages

1. The invoices for goods purchased have to be re-priced at the standard price.
2. The variance between actual and standard prices has to be calculated and entered in the books of account.
3. Some method has to be found of writing off the variance within the framework of the regulations which govern hospital accounts.
4. Valuation of stock at the end of the financial period has to be made at old and new standard prices.

Advantages

1. Stores accounts can be kept in quantity only, as debits and credits to the control accounts are made at the same price.
2. The work involved in calculating average price, or the price to be used under other systems of stores accounting such as first in, first out, is avoided.
3. When stores accounts are being instituted, entries in the stores ledgers and the pricing of issues can be begun at once without

having to wait for opening stock records if they are not ready or for the calculation of issue prices.

Thus it can be seen that for accounting purposes there is little to choose between the standard and other methods of pricing. But from the point of view of financial control, of inter-hospital comparison, and as a basis for fixing national or regional standards, the advantages seem to outweigh the disadvantages, for the following reasons:

1. Differences in departmental or hospital consumption will be clearly shown, as in all cases the value of the goods consumed is at the standard value and so any variation is in the quantity which has been used.
2. The variance between actual and standard prices will show the trend of price-changes and their effect on hospital estimates and so can assist in the preparation of the estimates for the ensuing years.
3. The variance when two hospitals are using the same standard can show differences in buying prices and buying methods.
4. When departmental estimates are based on standards any differences caused by changes in price level are left out of the departmental cost accounts, and thus comparison between actual and estimated expenditure due to changes in consumption of materials is disclosed.

On the other hand, there may be two problems arising from the system:

1. When there is a large price variance, it needs careful adjustment in the financial accounts or total expenditure may appear to be less or more than it actually is.
2. When departmental heads are buying their own materials (for example, in the case of a catering officer), standard pricing of issues will prevent the actual results of careful buying from being reflected in the unit-cost, unless some adjustment is made for the variance. (This would not apply to many departments as most of them will not be concerned with buying.)

During the second year, when an attempt will be made to arrive at standards for certain departments, the standard pricing techniques will, it is hoped, be applied to salaries and wages for costing purposes, thus deleting from the cost accounts differences arising from national changes in salary scales.

From what has been seen of the working of the system during the year, it seems as if for accounting purposes the use of a standard price enables stores accounts to be introduced with the minimum amount of disruption and delay. The work involved is certainly no greater than

that for any other method of stores accounting, and in the groups where the system is established it is believed that more staff would be required for the other methods, and that the work involved in the re-pricing of invoices is more than offset by the time saved in keeping stores ledgers in quantity only. Where a regional installation of punched card machines is used for stores accounting, the standard price appears to offer a further advantage as, if the standard price is fixed at the beginning of the year, the use of the multiplying punch enables the regional office to supply the group with full details of stores issues and purchases at standard price with the minimum delay.

It has also been found that in a group in which the individual hospitals carry out their own buying, interesting and useful information is produced by the adoption of standard prices. For some of the goods purchased comparison may not be possible owing to difference in quality and type, and in these cases a group standard price cannot be used, but for a proportion of the commodities bought there can be no difference in quality and the standard will show the difference in price at which each hospital is buying. This has proved of value in one of the groups in the experiment.

When the experiment began it was feared that, in a time of rising prices, the variance accounts which show the difference between standard price and actual price would be so large that they would present an accounting problem. If the variance was too great, it was thought that the departmental costs of materials would be too unrealistic and that there would be a danger of overlooking the variance when presenting monthly statements of expenditure for comparison with the estimates. This has, in fact, not been the case, as is shown in the following list of purchases and variances in two hospitals.

	Hospital A			*Hospital B*		
Type of expenditure	*Purchases at standard price*	*Variance actual—standard*	%	*Purchases at standard price*	*Variance actual—standard*	%
	£	£		£	£	
Staff uniforms . .	4,590	235	5·1	3,491	10	0·3
Patients' clothing . .	249	21	8·4	669	41	6·1
Hardware and crockery .	2,432	100	4·1	897	13	1·4
Bedding and linen . .	14,221	873	6·1	5,226	113	2·2
Cleaning and chandlery .	4,718	99	2·1	2,390	22	0·9
Printing and stationery .	4,001	63	1·6	3,054	208	6·8
Dressings . . .	14,279	2,012	14·1	9,403	120	1·4
Maintenance of buildings and equipment . .	12,112	345	2·8	1,187	129	10·9

Whether it would be possible to set up group, regional, or national standard prices depends to a large extent on buying policy. In Scotland,

where many materials are purchased on the basis of regional contracts, it should be comparatively simple to prepare regional standard prices. In England this system of buying has not yet been developed to any great extent, and the setting up of standards for hospitals buying individually presents difficulties. One hospital may decide to use a different type of crockery for patients or staff from another hospital. One may buy bulk stores in large containers, and another smaller hospital prefer to buy similar goods packed in a smaller size. The fixing of a standard price acceptable to all would not be an easy job. But if national and regional central purchasing is extended there would be many advantages in extending the use of standard pricing for hospital accounts.

Appendix IV

OUTLINE OF A SYSTEM FOR DEPARTMENTAL ANALYSIS OF EXPENDITURE AS THE BASIS OF FINANCIAL ACCOUNTS

SECTION 5 of the report deals with the use of departmental costing for financial control and points out that, until estimates are built up departmentally rather than by a subjective analysis of expenditure, full budgetary control is not practicable, as to prepare estimates on both bases would be a considerable task and a waste of time.

Table II (in the main report) and Form B (following this Appendix) give a summary of the expenditure of a hospital based on a departmental analysis. This summary is in a simple form which it is easy to understand. If the estimates were prepared on a similar basis they could be used as a measure of control at all levels of the hospital service. Table III and attached Form A show departmental cost statements on the same principle, and Form E builds up the accounts of a group based on a departmental analysis. By building up group accounts in this way those services which are on a group basis give a better comparison than would be afforded by a consideration of the figures for individual hospitals and the arbitrary allocation of salaries over the various hospitals is avoided. An outline of the system which would be required to provide this information is set out below.

The first step is to prepare a chart of organization to show which functions are organized on a group or sub-group basis and which are controlled at hospital level. It then has to be decided which hospitals call for a departmental analysis (for the purpose of this paper it will be assumed that this is all hospitals in the group of over 100 beds, but there may be other hospitals in the group which, by reason of the service they give, need not be included in this category). The next step is to agree upon the departments to be separately costed in each hospital. The degree of departmental analysis, as has been shown in this report, must necessarily differ with the various types of hospitals. It may also vary with the amount of information the committee may desire, and with the extent to which departmental heads are to be kept in touch with the results. The main object is to give to everybody in the service who is responsible for the use of staff and materials sufficient information to enable him to assess what is happening to the expenditure within his control. Regard must, nevertheless, be paid to the time involved in

producing intensive details of cost, and the chief factor to be considered is whether the amount of the expenditure involved is so small that any possible savings would not be large enough to warrant the necessary work. For example, when the use of a certain type of stores in a ward amounts to only a few shillings in a quarter, it will be sufficient to supply details of quantities used without any evaluation. In fact, this way of treating information on materials consumed may be thought sufficient for all purposes, but it has been found that for expensive items of stores it is well to make those using them aware, not only of the quantity, but also of the cost. It may be that when this is known ways will be found of using cheaper substitutes.

A subjective analysis of expenditure will be used for the departmental accounts, but at no higher level, and it will follow the sections in which the hospital stores are kept, and items of direct purchases not going through the stores will be analysed under the same headings. It may be that there will not be exact uniformity from hospital to hospital as stores are organized in different ways, but if only broad headings of expenditure are adopted there will be little difference. When inter-hospital comparison is made, the cost of materials will be shown in one total and only if a detailed investigation appears necessary will any further information be required at hospital or group level. The subjective heads of expenditure required for departmental accounts would probably be as follows:

Medical materials: Drugs, dressings, instruments, X-ray films, anaesthetic gases, repairs and renewals of apparatus, and sundries.
Domestic materials: Provisions, furniture, linen, hardware and crockery, cleaning and chandlery.
Other materials: Stationery, patients' clothing, staff uniforms.
Other expense and overheads: Travelling, advertising, gas, water, electricity, postage and telephone.

These headings would not be needed for all departments, and for some departments there would be others specially applicable to the department. These are shown clearly in the code of expenditure which is attached. Similarly for salaries and wages the main headings of medical, nursing, and other staff will appear in the hospital accounts, but in the departmental accounts the other staff will be split over the main types of personnel in the department.

Thus departmental estimates will be built up in detail in the order of the headings shown in Form A (page 187), and hospital estimates under the headings shown in Form B, and the accounting system will follow this pattern. The financial ledger will contain control accounts for all sections of stores and departmental accounts with analysis. When the system is a manual one the ledger can be kept in a loose-leaf book,

each page having analysis columns, and when the system is mechanical each department may have a number of ledger accounts for each heading of expenditure. Salaries and wages will be posted departmentally from an analysis of the weekly and monthly totals, including the hospital's share of superannuation and national insurance. They will be based on gross salaries before deductions for board and lodging. Other expense will be posted from (*a*) summaries of issues from stores, the total being credited to stores control, (*b*) direct purchases for a department from an analysis provided by a form of invoice summary, and (*c*) other payments from the cash or petty cash books. Purchases for stores will also appear in the invoice summary and will be debited to stores control accounts. It is important that the departmental expense should be based on consumption and not purchases of materials, and that it should contain expense relating only to the financial period of the accounts.

Complete departmental cost statements should be prepared quarterly, though it may be necessary in some cases to consider unit-costs for a shorter or a longer period; Form A is suggested for this purpose. The headings of expenditure and the necessary statistical information would be different for each department. The example attached is for a ward, but from other examples, included in the main report as Table III, it can be seen what variation is needed. During the course of the experiment a whole range of forms to cover every department has been designed. To be of the maximum service for financial control the statements must meet the following requirements:

(*a*) They should be ready as soon as possible after the end of the quarter. To ensure promptness it is not always necessary that the quarterly statements should be wholly complete. For example, estimates should be included for outstanding bills rather than delay the production of the statements.
(*b*) They should be in as simple a form as possible.
(*c*) Any assumptions made in their preparation should be clearly stated.
(*d*) The reasons for difference in expenditure should be shown if they arise from extraneous causes. If the accounts are based on standard prices and standard wage-rates, the differences arising from changing prices and salary scales will in any case not appear in the departmental accounts.
(*e*) The statement must, as well as showing expenditure, show the amount of work which the department has done and the cost of a unit of work. When the amount of work directly affects any item of expense, a change in the estimate to reflect this variation will provide a better comparison between actual and estimated expenditure.

A copy of the statement will be sent to the department concerned.

The statements will be summarized (see Form B) for the information of the house committee of the hospital and of the finance committee of the group. A statement of departmental expenditure as compared with estimates and of unit-cost can then be prepared for all the hospitals of over 100 beds in the group (see Form C), and this would provide the management committee of the group with the necessary information on the finances of the individual larger hospitals. Direct credits should be deducted from the total cost of the department concerned.

The information to be provided for the smaller hospitals has been set out in the main report. In effect each would be treated in the accounting system as a department and similar information would be provided. From the total expenditure the estimated cost of out-patients would be deducted and the balance treated as the expenditure on in-patients. Special figures of diet-day costs would also be shown. The form necessary for this purpose is shown as Form D for individual hospitals and Form E for a group summary.

It was said earlier that some of the functions of the hospital service are better considered as a group service. Despite this, it is necessary to have a departmental head for that function at each hospital so that that part of the expenditure which is incurred at hospital level may be controlled. The total cost for the group can then be built up by adding together the expenditure under the appropriate department at each hospital and including expenditure incurred at the centre for the group as a whole. It will similarly be necessary to add together the units of work of all the departments and then arrive at a unit-cost for the group. The functions to be so treated will vary from group to group, but examples would be: administration, pathology when there is a consultant in charge of all the laboratories in the group, and medical records when there is a group records office.

Thus the final picture of the finances of a group will show those departments which have been treated as a group service and those which function at hospital level, and to this must be added the expenditure on the smaller hospitals. Form F is a way of setting out the final position.

If standards are introduced the system outlined above would be basically applicable, but the following changes would be necessary:

1. Materials would be charged to departments at the standard price, the difference between standard price and actual price being shown under the heading of each stores section for the hospital as a whole.
2. When salary scales changed, the increase in rates would not be charged to the departmental accounts but the cost of the increase would be shown for the hospital as a whole or, alternatively, the departmental standards would be increased and such increase separately indicated.

For other than manual methods of book-keeping it is generally necessary to use a code of expenditure, and even when the system is a manual one, such a code may be of use as a basis for the analysis of expenditure. In any case, a code is a useful way of ensuring uniformity in the allocation of expense. Therefore a code of expenditure to meet the system outlined above is appended. It will show the degree of analysis required and that this is less than is needed if the financial accounts are kept under intensive subjective headings and departmental costing is regarded as a separate accounting process.

In Section 4 (v) of the main report the necessity for the spread of departmental cost over in-patients and out-patients is considered, and it is agreed that for the purposes of the Ministry of Health only this should be done at the end of each financial year. Once the bases have been determined and the units have been arrived at, all that is required is an arithmetical calculation which will not form part of the accounting procedure. This can most easily be done in a memorandum form (Form G) which will ensure that the cost of the service departments is fully allocated to those departments dealing directly with in- and out-patients.

Code of expenditure

A number will be given to each of the hospitals in the group and to the central organization. These numbers will form the first two digits in the code.

A number will be given to each department to be separately costed. These numbers will form the second two digits in the code.

A number will be given to the subjective analysis to be shown under each department. These numbers will form the third two digits in the code.

The following example is given for a group of eleven hospitals:

Hospital Code 1–99

Hospital A	1
„ B	2
„ C	3
„ D	4
„ E	5
„ F	6
„ G	7
„ H	8
„ X	9
„ Y	10
„ Z	11
Management Committee	12

Departmental Code

Wards: 1–20

Medical	1
Surgical	2
Maternity	3
Long-stay	4
Chronic	5
Other specialties	6–20

Medical departments: 21–50

Out-patients	21
Casualty	22
Operating Theatres	23
Radiology diagnostic	24
Radiotherapy	25
Laboratories	26
Physiotherapy	27
Dispensary	28
Almoners	29
Records	30
Occupational-therapy	31
Electrocardiology	32
Other medical departments	33–50

Service departments: 51–90

Works and maintenance	51
Boiler house	52
Gas, water, and electricity	53
General services	54
Rent and rates	55
Portering	56
Cleaning	57
Own transport	58
Outside transport	59
Laundry	60
Catering: General	61
Dietetic	62
Residences: Nursing	63
Maids	64
Medical	65
Nurses' Training School	66
Administration	67
Other departments	68–90

Trading Accounts: 91–99

Sewing-room	91
Buffet	92
Shop	93
Farms and gardens	94
Other trading accounts	95–99

Subjective analysis code for departmental accounts

Salaries and wages: 1–50

Medical

Consultants	1
Registrars	2
Housemen	3
Other	4

Nursing

Staff directly allocated to departments	5
Student nurses to be allocated on nursing days	6

Other staff	7

In many cases the departmental code will provide sufficient analysis. A code number in the third place of digits is only necessary where a further analysis within a department is necessary. These will be as follows:

Clerical	8
Domestic	9
Kitchen staff	10
Dining-room staff	11
Orderlies	12
Porters	13
Technicians	14
Dispensing opticians	15
Orthoptists	16
Speech therapists	17
Chiropodists	18
Psychiatric social workers	19
Other classes of staff for which separate figures are required within departmental totals	20–50

Materials and other expense: 51–99

Medical materials

Drugs	51
Dressings	52
Instruments	53
Medical sundries and renewal and repairs of minor equipment	54
Renewals and repairs to major equipment	55
X-ray films	56
Anaesthetic gases	57
Other medical materials	58–60

Domestic materials

Other materials and expense

FORM A

DEPARTMENTAL COST STATEMENT

Group..... Department..... Wards

Hospital ..... Unit of cost.....

Period from.....to.....

Beds available..... *Percentage occupancy*.....

Available In-patient days..... *Patients discharged*.....

Actual In-patient days ..... *Average length of stay* .....

Expenditure headings	*Estimates*	*Actual expenditure*	*Unit-cost*
	£ s. d.	£ s. d.	£ s. d.
Salaries and wages			
Medical			
Nursing (including ward orderlies)			
.....			
.....			
Stores issues and direct purchases			
Dressings			
Cleaning materials			
Instruments			
Hardware and crockery . .			
Printing and stationery . .			
Bedding and linen			
.....			
.....			
.....			
.....			
.....			
.....			
.....			
.....			
Total.			

FORM B

HOSPITAL SUMMARY OF DEPARTMENTAL COSTS

Group..... Hospital..... Period from.....195 to 195

No. of staffed available beds..... Type of hospital.....

Departments	*Estimate for the period*	*Salaries and wages*			*Total*	*Materials and other expenses*	*Total expenditure*	*Units*	*Unit-cost*	*Percentage of expenditure*
		Medical	*Nursing*	*Other*						
	£	£	£	£	£	£	£		£ s. d.	
HOSPITAL SERVICES										
Medical departments										
Wards: Medical . . .										
Surgical . . .										
.....										
.....										
Out-patients										
Casualty										
Operating theatres . . .										
Radiology: diagnostic . .										
Radiotherapy										
Laboratories (show below if a group service) . . .										
Physiotherapy										
Dispensaries										
Almoners										
Records (show below if a group service)										
Occupational therapy . .										
.....										
.....										

Non-medical departments										
Works and maintenance . .										
Rent and rates . . .										
Boiler house										
Gas, water, and electricity . .										
General services . . .										
Portering services . . .										
Cleaning services . . .										
Own transport										
Outside transport . . .										
Laundry										
Catering: General . . .										
Dietetic . . .										
Residences										
Nurses Training School including P.T.S.										
Ornamental gardens . . .										
Nursing administration (show below if a group service). .										
Trading accounts										
Sewing-room										
Farms and productive gardens .										
Shops and buffet . . .										
Group services										
General administration . .										
.....										
.....										
Total										

FORM C

COMPARISON OF HOSPITAL COST FOR THE LARGER HOSPITALS

Group..... Summary of departmental costs for period.....195 to 195

Department	*Hospital A*			*Hospital B*			*Hospital C*			*Hospital D*			*Hospital E*		
	Esti-mate	*Total exp.*	*Unit-cost*	*Esti-mate*	*Total exp.*	*Unit-cost*	*Esti-mate*	*Total exp.*	*Unit-cost*	*Esti-mate*	*Total exp.*	*Unit-cost*	*Esti-mate*	*Total exp.*	*Unit-cost*
	£	£	£ s. d.	£	£	£ s. d.	£	£	£ s. d.	£	£	£ s. d.	£	£	£ s. d.
HOSPITAL SERVICES															
Medical departments															
Wards: Medical															
Surgical															
.....															
.....															
Out-patients															
Casualty															
Operating theatres															
Radiology: diagnostic															
Radiotherapy															
Laboratories (show below if a group service)															
Physiotherapy															
Dispensaries															
Almoners															
Records (show below if a group service)															
Occupational therapy															
.....															
.....															

Non-medical departments													
Works and maintenance													
Rent and rates													
Boiler house													
Gas, water, and electricity													
General services													
Portering services													
Cleaning services													
Own transport													
Outside transport													
Laundry													
Catering: General													
Dietetic													
Residences													
Nurses Training School including P.T.S.													
Ornamental gardens													
Nursing administration (show below if a group service)													
Trading accounts													
Sewing-room													
Farms and productive gardens													
Shops and buffet													
Group services													
General administration													
Total													

CONFIDENTIAL

FORM D

SMALL SINGLE-UNIT HOSPITALS COST STATEMENT

EXPENDITURE FOR THE THREE MONTHS ENDED

GROUP..... HOSPITAL.....
TYPE.....

O.P. Attendances.....
O.P. specialty sessions.....
Maternity—no. of births.....
Operating theatre hours.....
No. of radiological examinations.....
No. of pathological investigations.....

Available beds.....
Available I.P. days.....
Actual I.P. days.....
Number of resident staff.....

% occupancy.....
I.P. discharges.....
Average stay.....

	Estimate for period	*Salaries and wages*	*Other expenses*	*Total*	*Estimated O.P. cost*	*Cost per O.P. attendance*	*In-patient cost*	*Cost per I.P. day*
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Medical and Nursing Care								
Medical salaries								
Nursing salaries and staff uniforms (including ward orderlies)								
Drugs and dressings								
Medical and surgical appliances								
X-ray films and apparatus								
Professional and technical salaries								
Catering								
Wages and provisions (see note)								
Household and building expenses								
Garden wages and expenses								
Works and maintenance wages and expenses								
Fuel, light, and water								
Domestic renewals and repairs								
Rent, rates, and tithes								
Laundry								
Other Expenses								
Salaries:								
Admin. and clerical								
Other (domestics, porters, &c.)								
Printing, stationery, post, and telephone								
Transport								
Other								
Less Credit for Board and lodging of staff								
Total								

Note: No. of diet days..... Cost per diet day.....

FORM E

COMPARISON OF HOSPITAL COST FOR THE SMALLER HOSPITALS

Group..... Period from.....to.....

Hospitals	*Available staffed beds*	*Esti-mates*	*Total exp.*	*Salaries and wages*			*Materials and other expenses*	*Unit-cost*						*Type of hospital and services given*
								In-patients		*Out-patients*		*Catering*		
				Medical	*Nursing*	*Other*		*I.P. days*	*Unit-cost*	*O.P. days*	*Unit-cost*	*Diet days*	*Unit-cost*	
		£	£	£	£	£	£		£ s. d.		£ s. d.		£ s. d.	

FORM F

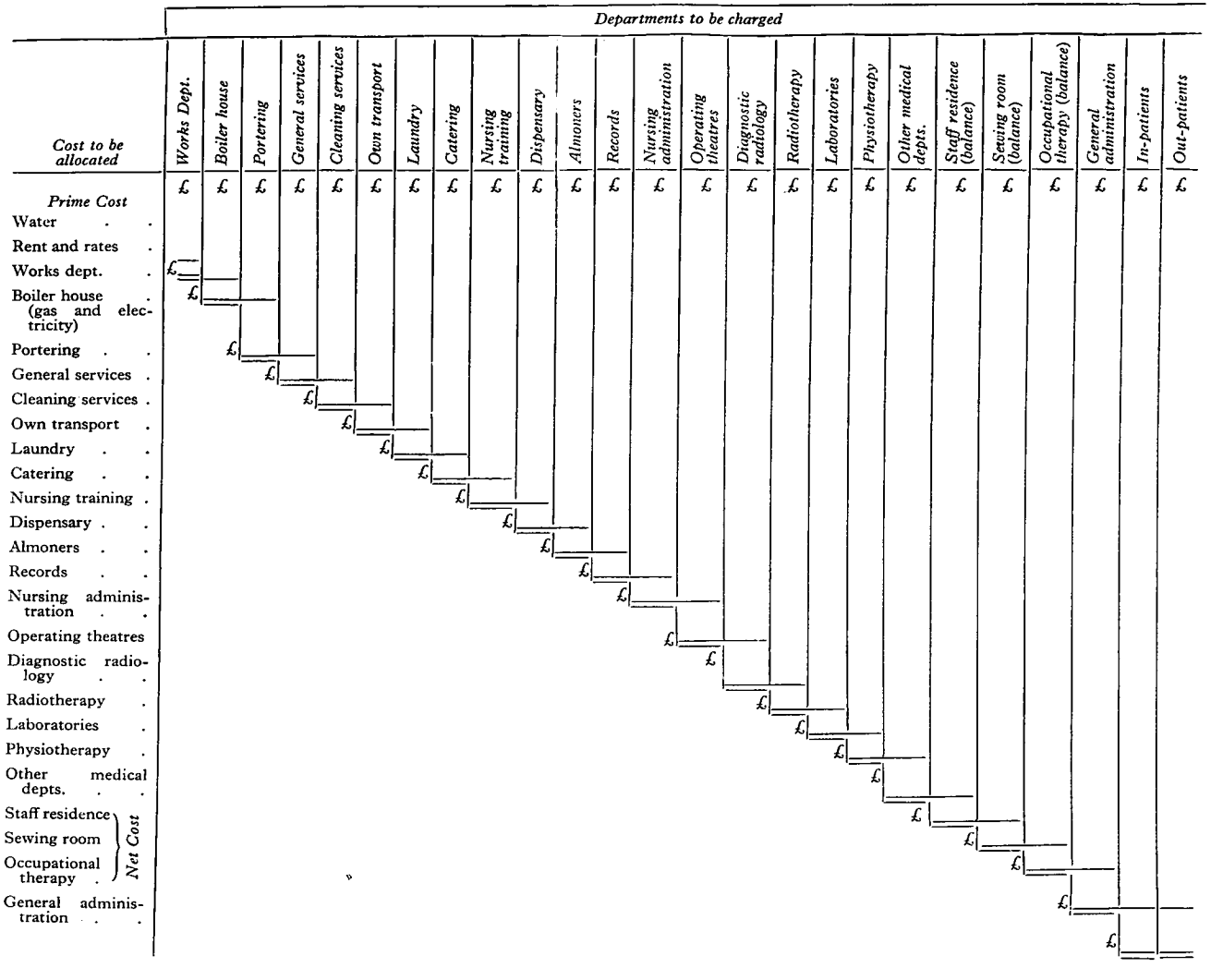
SUMMARY OF GROUP EXPENDITURE

Group..... Period.....

	Estimate	*Total expenditure*	*Salaries and wages*			*Materials and other expenses*	*Group service unit-cost*	
			Medical	*Nursing*	*Other*		*Units*	*Unit-cost*
	£	£	£	£	£	£		£ s. d.
Group Services								
Administration								
Pathology								
Records								
.....								
.....								
Expenditure in the larger hospitals as per Form B								
Hospital A								
Hospital B								
Hospital C								
.....								
.....								
.....								
Expenditure in the smaller hospitals as per Form D								
Hospital S								
Hospital T								
Hospital U								
.....								
.....								
.....								
Total								

FORM G

ALLOCATION OF DEPARTMENTAL COST TO IN-PATIENTS AND OUT-PATIENTS



Appendix V

SPECIAL STUDIES UNDERTAKEN DURING THE EXPERIMENT

ONE of the objects of the Trust in agreeing to conduct this experiment was to demonstrate the usefulness of functional costing in hospitals allied with the setting up of standard costs. Before this could be done it was necessary to get costing in the form of a departmental analysis of expenditure operating in the hospitals in order to find out the amount of work involved, the cost of costing, and what were appropriate units of cost. During the year it became clear that functional costing in hospitals was a possibility and did not entail any great expenditure of time or money if it was integrated with the existing system and based, as far as possible, on existing information. It was decided, therefore, to institute certain further studies which would help in arriving at standards, and would show what investigations could be done when the costing system demonstrated that any department of a hospital seemed to be above or below the general average or, when it was available, the standard.

It was realized that standards could not be arrived at within the year, but it was hoped that the hospitals concerned would be willing to continue their co-operation for a second year so that further studies could be made.

(*a*) SALARIES AND WAGES

As the costing experiment was carried out largely in the finance department, it was felt that a study of some part of the work of that department would be of interest. The problems and work involved in the payment of salaries and wages are common to all hospitals, and it was hoped that an intensive study of them would provide a basis for a broader study in other hospitals and would demonstrate the advantages or disadvantages of mechanization.

The groups invited to co-operate were, therefore, one with a wholly manual system, one with some slight mechanical aid, and one using accounting machines.

This work was carried out by the time and motion engineer attached to the Trust's team investigating the functions and design of hospitals. By assessing the rate of work of the clerical staff in each wages department he was able to calculate for each system the time taken to pay 100 monthly or weekly paid employees on the basis of 100 per cent. working

efficiency. He also showed what part of the total procedures required for the payment of wages could be mechanized, and the proportion that the time taken by these procedures bore to the total time for the whole system.

The work of the wages department falls into three main divisions: (i) initial preparation of the pay-roll, (ii) calculating the wages, and (iii) pay preparation and delivery and departmental records. It is difficult to make hard-and-fast comparisons of the work under each of these divisions because of the differing natures of the systems used and of the variations in the organization of the work in each group, but sufficient data was compiled to show broadly the times taken for each section of each group.

From this study the following broad conclusions have been drawn:

(i) *Initial preparation of the pay-roll*

1. That the calculation of gross hours and gross pay is best done in a centralized department by staff who are experienced in it and who are not called upon to deal with other work while doing the calculations.

2. The design of clock-cards and time-sheets is important. It is possible for these to be so planned that the calculation of gross hours for pay can be included on them and so that the minimum amount of writing by the wages clerk is necessary. As far as possible no details should have to be written more than once during the preparation of the pay-roll.

3. Where it is available a small printing machine is of use for printing the names on clock-cards and time-sheets. A comparison of 68 minutes per 100 wages for handwritten clock-cards as compared with 14·5 minutes per 100 wages for printed cards is a measure of the saving to be expected.

4. The preparation of a modified ready reckoner would assist the wages staff. This could take the form of a double-sided list with the varying number of hours running vertically down the right-hand and left-hand sides of the page and the twelve or so most common rates extended horizontally across the page. Both sides of the sheet should be used, and if it is kept in a perspex cover it will take a great deal of wear.

5. Improved and standardized stationery and forms for the notification of the engagement and resignation of staff would assist the wages office.

(ii) *Calculation of wages and writing up the pay-roll*

1. An individual pay record card is in general use and is of value. Where this is kept separate history cards or records of staff should not be necessary and the pay record card should be designed to give all necessary information. Unless the form of pay-roll automatically shows

cumulative totals of pay, income-tax, and superannuation for the current financial year, a pay record card should be written up when the pay-roll is prepared as an integral part of the process.

2. This is the only part of the work of the wages office which can be mechanized. It is therefore of interest to note that in the two groups in which the pay-roll was written by hand it accounted for only 11·0 per cent. and 14·8 per cent. of the total time spent on wages (in the group in which the pay-roll was mechanized it accounted for 5·6 per cent. of the total time).

3. It was estimated that the introduction of a mechanized pay-roll would result in a saving of at least 88 minutes per 100 wages and salaries paid.

4. The staff engaged in pay-roll writing and in the calculation of pay and allowances should be specially trained and experienced so that it can be done with the minimum reference to other sources of information and so that any errors which may occur will be quickly picked up.

(iii) *Pay preparation and delivery and departmental records*

1. It is economical in time for the wage packets to be made up as far as possible in a centralized wages office. For example, when it is done in the individual hospitals a number of journeys have to be made to a bank for the cashing of the wages cheque, each occupying some 30 minutes. The preparation and clearing-away time may in those units with a comparatively few staff constitute as much as 50 per cent. of the total time taken to do the job. Moreover, it is not always possible to obtain in the hospitals that privacy and quiet which is an essential if this job is to be done accurately and at the maximum speed.

2. The introduction of transparent pay envelopes is economic despite the small additional cost as there is then no need to write any information on the outside of the envelope.

3. The system of receipt for pay should be examined and simplified as far as possible. If wages are paid by a departmental head in the presence of a member of the finance officer's staff it is not always necessary to obtain personal receipts except for those who are not present at the pay parade and this results in a considerable saving of time.

4. Attendance at pay parades and the time of the parade should be studied. In one case 515 minutes were taken to pay 243 nurses at six separate parades, while in another hospital 270 nurses were paid at two parades taking only 243 minutes of the time of the wages staff.

5. The three groups studied were using a manual system for stamping insurance cards and the time taken was found to be about 120 minutes for each 100 cards. Thought was given to other ways of doing this job, but the disadvantages of mechanizing by impressed stamping were great. There is, however, a method which has been tried out by one

hospital group of direct payment to the Ministry of National Insurance. It has been introduced by the Ministry first to reduce the time spent in stamping cards and secondly to lessen the risk of loss in the handling of cards and of a large number of valuable stamps. It was not possible to do a detailed study of this method, but it seems that some saving of time might result.

6. Consideration has been given to the problem of the payment of monthly salaries by cheque or traders' credits. If the latter are prepared with the help of a small printing machine (which can at the same time be used for a number of other jobs), according to the time studies taken in these three groups it is more economical than payment by cheque. The traders' credit and the lists for the bank can be pre-printed and only the figures filled in by hand and only one cheque for the total amount has to be signed. It has the additional advantage of saving the time of each member of the staff in paying in the salary cheque. Alternatively the introduction of a cheque-signing machine at an approximate cost of £150 might be considered.

7. The complications arising from the superannuation regulations are very great and it is essential that the clerk or clerks who are dealing with superannuation records and problems must have a full understanding of their work and the reasons for the records required.

General comments

The following general comments may be of interest:

1. When a time-and-motion study is undertaken in industry the effectiveness of work is assessed by allocating to an experienced worker when performing the task in an industrious manner and at a speed that can normally be maintained, a speed rating of a 60-minute hour. By deviating from the normal by a greater or lesser degree so will the rating alter, for example to a 75-minute hour or a 35-minute hour. It is usual for people engaged on the basis of a fixed return, as opposed to payment by result, to work at a speed which is rated at a 35-minute hour. In many instances it is less than this, but seldom is it exceeded. During this study no individual ratings were made, but the efficiency and industry of the wages team as a whole was rated. In every case it was above the level expected in industry and in some cases was as much as a 55-minute hour.

2. The wages problem in a hospital is far more complicated than that in industry. Hospitals have to be staffed 24 hours per day, 7 days a week, and overtime, shift-work, and split duties all lead to complications in rates of pay. There are at least 18 different sets of pay-rates and conditions to administer, each divisible into many sections and these are constantly changing. A yearly average of 50 per cent. turnover of staff

presents another major problem, especially as regards the weekly wages. There is therefore little that is static from week to week. In one group out of a total weekly paid staff of 620 there were 413 changes in the week under review. In another, 65 per cent. of the total staff paid by the wages department had some form of adjustment to be made during one month. It is clear that the skill and experience of the wages staff are important factors in the efficient organization of the office.

3. The greatest single factor affecting the efficiency of the wages office was the need to provide for the clerks conditions of working in which noise, movement, and distractions of all sorts were eliminated or drastically reduced. The accommodation for those of the staff who are engaged primarily on compiling the wages should be separate from machine personnel. Many instances were recorded during the study of wages clerks who had to make five or even six attempts to balance a total or calculate a sum of money solely because of external distraction or interruption. By an alteration in the working conditions this can be avoided. Another factor which in some cases can make for speedier working and a more pleasant office is the introduction of improved filing systems.

4. In an O. & M. bulletin in April 1950 dealing with pay-roll procedure it is stated that weekly pay should normally be calculated at a time-cost not exceeding 25 hours per week per 100 accounts and 40 hours per month per 100 accounts, that is 15 minutes per weekly wage and 24 minutes per monthly salary. This paper does not state whether the pay-roll procedure covers the whole of the work of a wages office including such tasks as superannuation records, costing analyses, &c., and it may well be that the problems met in a hospital wages office are considerably greater than in the pay branches studied by O. & M. It is therefore interesting to measure the results of the study by the standard set out above. For weekly wages one group was slightly below the standard and the two others somewhat above. For monthly salaries, on the other hand, the group using a mechanized pay-roll was slightly below the standard, but the other two were considerably above. Detailed reports have been made to each of the groups and an estimate has been prepared of the average times which might result by an amalgamation of the best points in each system and by the introduction of the minor improvements outlined above. It is hoped that it might then be possible to produce a weekly wage in 10 minutes and a monthly salary in 20 minutes at normal working speeds.

(*b*) Stores accounting and financial control

With the co-operation of the United Bristol Hospitals, a firm of accountants who specialize in financial organization were invited to examine the system of stores accounting and financial control with the

object of determining the economics of punched-card accounting, and, if it proved to be economic, the most efficient use which could be made of it for stores accounting in hospitals. They also considered the integration of departmental costing with the usual financial accounting and its use as a means of financial control.

Their report advocates financial control by means of informative accounts prepared for the local management off the same records as are used for the expenditure returns to the Ministry.

It shows how this can be done at Bristol, the control being exercised by relating expenditure, both in total and departmentally, to performance. This is measured in units appropriate both to the separate functions and to the work of the hospital as a whole. Standard pricing is suggested as a useful technique in stores accounting, and that ultimately full budgetary control may usefully be developed.

It was interesting to find that this examination of the accounting problem of a hospital by an independent firm of accountants should result in a report which is so much in accord with the findings of the experiment and the proposals contained in the Trust's report.

(*c*) Laundry

The laundry is one of the departments of a hospital for which it should be possible to arrive at standards of cost and performance which might be comparable throughout the hospital service. It was therefore thought that a special study of laundry costing would be of use and interest.

Advice was sought from the British Laundry Research Association, from the Institution of British Launderers, and from others within the hospital service who had special knowledge of and interest in this problem.

With the help of the experts the following problems will be studied and it is hoped that some standards of performance may be agreed.

(i) It has to be determined whether it is necessary for pieces washed to be counted under the various types of articles so that the pounds dry weight of linen laundered can be calculated. This is the unit which is used for commercial and research purposes, but if it can be proved that the pattern of work in similar types of hospitals does not vary to any great extent, then a simple count of pieces washed may be sufficient, unless the unit cost shows that further investigation is necessary.

(ii) In the absence of meters it is necessary to find a method of estimating the amount of steam, water, and electricity used by laundry machinery.

(iii) The method of counting articles needs examination in order to determine the simplest way in which adequate control of linen

within the laundry and between the laundry and departments can be ensured.

(iv) There are certain agreed standards of performance which can be applied to laundries and the costing system must be organized to produce the information which will enable actual performance to be compared with these standards.

(v) When the centralization of laundry services is being discussed, factors other than laundry cost have to be considered. For example, the cost of collection and delivery by the hospital's own transport or outside transport must be included. It is necessary to ensure that all such factors are known and a basis for the estimation of their cost has to be laid down.

Since the introduction of costing, there has already been within the groups an examination of their laundry costs resulting in the closing-down of uneconomic units and the transfer of the work done by them to other nearby laundries. In another case the laundry of a small hospital which was sent to outside contractors is now done at a neighbouring hospital at a much lower cost. It is estimated that in one group the annual saving may amount to £1,500.

(*d*) CATERING

Expenditure on the catering department varies between 14 per cent. of the total expenditure of a general teaching hospital to over 21 per cent. of the total expenditure of a hospital for the chronic sick. In some types of hospitals (as for example, tuberculosis sanatoria) one would expect a rather higher unit-cost, but that the variation would not be great. It seems that this is a department in which a comparison of unit-cost should be possible and useful. Moreover, the expenditure is of a considerable size, and any economies which can be made without departing from a reasonable standard must be considered.

The Trust therefore felt that study of the cost investigation of the catering department was of importance and the procedure necessary for such an investigation has been drawn up and is now being utilized in one of the hospitals in the experiment. It has already, without any change in the standard of the meals provided, led to a reduction in the expenditure in the catering department.

The steps which will have to be taken are as follows:

(i) *A check of the counting of meals*

This involves:

(*a*) An actual count of the meals prepared in each kitchen divided into courses or sections, following exactly the method of preparation. It must be seen whether all dishes are prepared according to

approved recipes or by an estimation of the quantity of ingredients required. Any part of the meals which are prepared in the ward kitchens must be similarly investigated.

(*b*) A check of the number of persons for whom meals are prepared. This can be done by studying the following sources of information:

1. Daily returns of in-patient days received from the wards.
2. Daily diet list received from the wards.
3. Number of resident staff.
4. Number of non-resident staff and when they are on duty and take meals.
5. Number of staff requiring meals at night.
6. Food returns made to the Ministry of Food.
7. Ration books held by the hospital authorities.

This investigation is often complicated and should include a study of whether the staff who can have meals in the hospital do, in fact, avail themselves of the facilities.

(ii) *Costing of menus*

The cost of recipes based on units of 100 meals must be calculated. To carry out this procedure, which is basic to the investigation, as full information as is possible regarding quantities must be produced. From this the average cost of a breakfast, lunch, tea, and supper can be worked out. The costing should be based on a period of at least a week.

(iii) *Costing of each individual kitchen*

This is necessary where any food is sent in an unprepared or partially unprepared state to any kitchen or department. It involves:

(*a*) Taking stock at the commencement and end of the period of the investigation, in the main kitchen stores, dining-room, and ward serveries. This is an arduous task and entails something more than mere calculating ability. It can, however, show immediate benefits as hospitals are often unaware of what stocks they really have.

(*b*) Pricing (i) food requisitioned by the main kitchen during the test period from the provision stores, and (ii) perishable goods received direct from suppliers.

(*c*) Pricing food issued in quantity from general provision stores to wards, dining-rooms, out-patient and other special departments, nurses' and maids' homes, matron's residence, doctors' residence, &c.

(*d*) As a double check it is advisable to get the kitchen to note details of all the food they have used each day. This should agree

(subject to shrinkages of meat, and other goods) with details of the food received on requisitions from the stores, outside suppliers, and from the kitchen's own stock.

(*e*) The weight of all goods received must be checked by the kitchen staff whether the goods are received from outside suppliers or from stores.

(iv) *Checking of waste*

The amount of waste can be checked by ascertaining the weight of the swill sold to contractors and comparing it with the number of persons fed. In general it should not exceed 8 ounces per head per day.

Another method is to ascertain the weight of all food issued to the kitchen, and other departments, and compare this with the weight of the waste. The value and percentage of food wasted can be effectively shown by graphs or charts which will indicate where weaknesses may lie.

(v) *Buying*

This study falls into two parts:

(*a*) An investigation as to whether the hospital or group is buying in the best markets at the best prices.

(*b*) A study of whether the hospital is buying goods of a class and at a price which, without loss of nutritional value and bearing in mind the need to offer some variety, could be replaced by foods in lower price-levels. As a general and useful control the food purchased should be sub-classified according to the major types of food, viz. meat, fish and poultry, milk and cream, butter and fats, eggs, fresh fruit and vegetables, canned fruit and vegetables, and bread and pastries. The percentage each class bears to the total is important and a study of it in one hospital indicated extravagance which was quickly counteracted.

(vi) *Study of the cost of milk, beer, spirits, and soft drinks*

There is evidence of extravagance in some hospitals in the use of these items and it requires special study. The preparation of graphs, however, to show the extent of milk consumption per person fed gives an example of a simple method which will show whether there is a need for such a study to be made.

(vii) *Examination of labour efficiency*

The efficiency of labour should be studied, and any difficulties which tend to prevent its better use should be considered. A percentage of the cost of wages to the cost of provisions serves as a rough guide, but other methods such as job-analysis, a study of kitchen plant layout, and time-and-motion study may be called for.

(viii) *Measurement of overhead charges*

The use of steam, gas, and electric power may, in certain instances where waste is indicated, have to be measured.

It is shown above that the procedures necessary for an investigation are diverse, and they need the personal attention of the investigator for continued periods. However, the mere fact that it was realized that a control was being exercised has, in at least two hospitals in the experiment, resulted in actual and substantial savings.

During the institution of departmental costing it has been impossible to undertake more than a superficial examination of these problems, but in one case where a detailed investigation was started the resulting saving, estimated at £4,000–£5,000 a year, shows that such studies are worth while.

It must, however, be stressed that the purpose of an investigation is to provide detailed information concerning the purchase and consumption of provisions and not to lower the standard or quality of the diet.

Appendix VI

THE PROGRAMME AND BACKGROUND OF THE EXPERIMENT

1. The groups in the experiment

Before dealing with the details of the work carried out during the experiment it may be helpful to give a broad picture of each group.

(*a*) *Aylesbury and District Hospital Management Committee*

The only hospital in this group to be included in the experiment was St. John's Hospital, Stone, a mental hospital of 650 beds formerly administered by the Bucks County Council. The accounting system was based on that used in mental hospitals before the introduction of the National Health Service, but the proposed costing system was based on a system which was to be introduced into St. John's Hospital in the near future. This had been evolved by the finance officer for general use throughout the group.

The problems of the mental hospital are very different from those of the general hospital. Many of the patients may spend the rest of their lives in the hospital and facilities have to be provided for their recreation and occupation. They can often help with the working of the hospital, especially in the kitchen and the laundry, and on the maintenance and farm staff. There are certain departments, such as tailoring and shoe-making, mainly provided with the object of training patients. It is impossible, therefore, to compare mental hospital costs with the costs of any other type of hospital.

(*b*) *The United Bristol Hospitals*

The group consists of seven separate hospital buildings—the Royal Infirmary and the General Hospital, which together make the Royal Hospital, two convalescent homes and special hospitals for diseases of the eye, for sick children, and for maternity cases—a total of 967 beds, of which 641 are in the Royal Hospital.

It was decided that for the first experimental year costing should be confined to the Royal Hospital. In some ways there are problems in Bristol not met with in other places and these arise from the division of the main hospital into two buildings two miles apart. There are thus two pathological departments, two radiological departments, and several nurses' homes. On the other hand, the use of the basement of Bristol General Hospital as a central store and factory has enabled a completely

centralized stores system to be evolved which was considered sufficiently large for the introduction of punched cards for stores records.

The Bristol teaching group serves a wide area and several of its departments cater for a large part of the South Western Region. For radiotherapy it acts as a regional centre which is linked with the university for teaching and research. As with all teaching hospitals, the financial relationship between university and hospital work, and between research, teaching, and the care of the patient, is impossible to evaluate.

Except for the convalescent homes all the hospitals are within a radius of five miles and a high degree of financial centralization has been possible.

(c) Cheltenham Hospital Group Management Committee

Eleven hospitals are contained in the group with total beds of 1,059. There is a general ex-voluntary hospital, a large ex-Public Assistance Institution, several smaller hospitals, now used for the chronic sick, a tuberculosis sanatorium, two maternity hospitals, and several cottage hospitals. The General Hospital is an ex-voluntary local hospital of 223 beds with a large out-patient department. The ex-Public Assistance Institution of 433 beds presents a problem for the purpose of departmental costing as its functions are constantly changing and its beds are being used more and more for acute cases.

The hospitals between them cater for most of the needs of the Cheltenham area. They are situated within a radius of 10 miles from Cheltenham, and owing to this distance and to the fact that the main hospitals are short of room, it has not been thought desirable to set up any central store, except that the General Hospital directly controls and supplies some of the smaller units.

All hospitals were included in the experiment, but it was decided that, for those with less than 50 beds, no departmental costing should be attempted as it was hoped that the extension of a code of expenditure which the finance officer had worked out would give sufficient information for the costs of these hospitals to be compared under the main subjective headings.

An unusual feature is that the finance officer holds a joint appointment and deals with the finances of two other groups in addition to Cheltenham. His department is, therefore, physically separated from that of the Secretary of each of the groups. Dealing with three committees naturally entails extra work since each of them has to be treated as a separate entity involving attendances at three sets of committee meetings, preparation of three budgets, three sets of final accounts, and so on, and care has to be taken to prevent any loss of personal contact between the finance officer and the increased number of hospitals. On the other hand, the larger volume of work to be done makes possible the

mechanization of the accounting system and the employment of higher-grade staff with, it is claimed, economy in financial administration.

(*d*) *Huddersfield Hospital Management Committee*

This group controls thirteen hospitals divided into four sub-groups with a total of 1,535 beds. Sub-group No. 1 contains all beds for acute cases centred on the Royal Infirmary. Sub-groups 2 and 3 consist mainly of long-stay and maternity beds housed in two ex-Public Assistance Institutions. There are also in these groups a cottage hospital, a convalescent home, and a small mental deficiency institution. The fourth group deals with infectious diseases and tuberculosis, together with a post-operative recovery hospital.

When this survey was made stores accounts had been instituted in the larger hospitals in groups 2, 3, and 4, and it was decided to confine cost accounting to these hospitals in the first place. It was clear, however, at the end of the first few months that it would not be possible to give a comprehensive picture of the cost of the group, or of the cost of the hospitals in it without including the Royal Infirmary in the system, as many of the special medical services were provided from the infirmary. It was realized that the costing of the infirmary and the institution of complete stores accounts would be a considerable task, but it was undertaken and the system was introduced in the infirmary on 1st October 1951.

(*e*) *United Manchester Hospitals*

There are three main in-patient hospitals in the teaching group with total beds of 1,295. These were all included for the purpose of departmental costing, although the Private Patients' Home of the Royal Infirmary and Barnes Hospital for orthopaedic and similar cases were regarded as single-purpose units and as departments of the infirmary. Of the total beds 829 are administered by the Royal Infirmary, 266 by St. Mary's Hospital for Women and Children, and 200 by the Royal Eye Hospital.

Though stores records were in existence, stores accounting had been instituted only at St. Mary's Hospital, and so it was necessary to institute stores accounts for the Royal Infirmary and the Royal Eye Hospital at the same time as departmental costing was introduced. Each of the three hospitals had remained for stores purchasing and accounting purposes a separate entity, but after discussion it was decided that stores accounting and costing should be organized on a group basis, and the cost accountant at St. Mary's Hospital became cost accountant for the group. To begin stores accounting and cost accounting at the same time needed a considerable amount of organization, and the opportunity was taken of experimenting with a system of standard pricing. In view of its

importance as one of the essentials of standard costing this system is dealt with in detail in Appendix III of this report.

(*f*) *The Pewsey Hospital Management Committee*

This group, which is concerned solely with mental deficiency, consists of five institutions one of which had not been opened at the time of the survey. As the Pewsey Hospital, with 436 beds, was the largest of the existing institutions, and as it provided all the central services, it was agreed that departmental costing should be confined to it.

As in the case of the mental hospital it was clear that the cost of a mental deficiency institution would give no comparison with any other type of hospital, even a mental hospital. The degree of patient labour is greater than in a mental hospital and the quality of patient labour higher. There is also the work involved in dealing with the affairs of patients out on licence and those who work daily for outside concerns. At the time of the survey special departments were being started for the active treatment of certain types of cases. The amount of building work undertaken and the area of farms and gardens is much larger than that for a similar sized general hospital, as these departments together with the sewing-room, the tailor, and the shoemaker serve as vocational training centres for the patients.

(*g*) *Reading and District Hospital Management Committee*

This is a large, widely scattered group of nineteen hospitals with 2,301 beds. For ease of administration it has been broken up into nine sub-groups on a geographical basis. The first group covers the Reading area and includes the major hospitals, the Royal Berkshire Hospital, an ex-voluntary county hospital of 315 beds which had always catered for the greater number of acute cases from the area, and Battle Hospital, an ex-municipal hospital, mainly used for the chronic sick but doing a certain amount of general work. This hospital is being adapted for more and more acute cases and at no time during the experiment have its costs or its functions been static. The small hospitals in this sub-group are for maternity and infectious diseases. Other sub-groups include the hospitals in the Henley, Wokingham, Newbury, and Wallingford areas which are for the most part ex-Public Assistance Institutions and Cottage Hospitals, except for a small Children's Hospital and a small General Hospital of 87 beds. The seventh group consists solely of a Tuberculosis Sanatorium of 242 beds which contains a unit for thoracic surgery.

The work involved in the introduction of costing in a group of this size was considerable. Though accounting is centralized in Reading it has been necessary for stores and stores accounts to be kept at the largest hospital in each sub-group, and it was decided that it was only by spread-

ing the work of pricing stores requisitions over hospitals that costing was possible. It has been found that this has worked well.

2. The system in use before the introduction of costing

The preliminary surveys had shown that there was a wide divergency in the accounting systems in use, but only in one case had stores accounts to be started. In all the others they were already in existence, and in most cases were already incorporated in the financial accounts. At Aylesbury and Pewsey the system was wholly manual. Manchester and Reading were using some small degree of accounting aids in the form of Adrema addressing machines and Anson pay-roll methods; Bristol was using Hollerith punched cards for stores and Remington for wages, while Cheltenham was highly mechanized, having Hollerith punched cards for stores and National Accounting machines for wages and invoices. The addition of cost accounting to the existing financial system was, therefore, a different problem in each group. It had been agreed that as far as possible costing should be integrated with the existing system, and the outline of some of the systems in use at the end of the experiment will show how little is the change that has had to be made.

Another reason for variation in systems and for variation in the methods of introducing cost accounting was the degree of centralization in each group. The methods employed by the Reading group, with its hospitals scattered over an area with a radius of 18 miles from the centre, and the Bristol teaching group with fewer hospitals, most of them only a few miles one from another, must necessarily be very different. The degree of centralization of stores must vary, not only with distance, but because of the impossibility in many hospitals of finding a building sufficiently large to house a central store. When this is the case each of the larger hospitals will usually hold its own stores and may keep its own stores accounts, and may be able by the use of marginal labour to deal with the evaluation of stores requisitions for costing purposes.

3. The programme of the experiment

(*a*) *Preliminary work, September to December 1950*

It was realized from the outset that the co-operation and help of all concerned was of great importance and that without it the experiment must fail. The first step was therefore to visit each group and discuss with the chairman and officers the objects of the experiment, the proposed method of carrying it out, and the hospitals to be included. This was begun in September 1950.

Following this a broad survey was made of the existing accounting systems and of the hospitals in which functional costing was to be introduced. For this purpose an outline questionnaire was prepared

which was completed by members of the Trust's staff working in the groups.

The reports on the accounting systems outlined the methods of the payment of salaries and wages, of stores accounting, and of the passing and payment of invoices. The reports on the hospitals gave a brief sketch of the departments in each hospital which it was felt should be individually costed.

When these reports were in draft, a plan was made by the Trust of a way of integrating cost accounting with the existing system in each group. The plans were then discussed with the finance officers. Changes were made to meet their views and their knowledge of the local situation, an agreed plan was evolved, and a final report prepared incorporating the proposed costing system. Copies of these final reports have been given to the Ministry of Health as an addendum to the main report.

(b) Oxford Conference, January 1951

At this stage it was felt that it was important to discuss the experiment with the groups concerned and to agree on the departments which should be costed and the unit of cost to be used, and an invitation to attend a week-end meeting in Oxford in January 1951 was extended to the chairmen, secretaries, and finance officers of each board of governors and hospital management committee, and the treasurers of those regions in which the groups were situated.

In the experiment at the Radcliffe Infirmary the idea of standards had been introduced and the Trust was interested to hear that an experiment in stores accounting based on standard pricing had begun at the Glasgow Royal Infirmary, and one session of the Oxford meeting was occupied by hearing an outline of this system and by a discussion of it. As a result, the United Manchester Hospitals decided to adopt standard pricing for the experiment. The rest of the conference was spent in a discussion of the units to be adopted for various departments.

(c) Organization of the experiment, January to March 1951

These three months were spent in preparing for the introduction of departmental costing on 1st April. The plans already agreed had to be put into action, forms devised, and accounting methods prepared. The heads of most departments had to be seen and arrangements made for the counting of units. In many cases this involved devising a way of getting the necessary information without making additional work or disrupting existing systems.

One of the most difficult tasks to be faced was the definition of the expenditure to be allocated to departments and of costing units. In an attempt to prepare the necessary definitions a summary was prepared of what had been agreed at the Oxford conference and this was discussed

with each finance officer. Many amendments were made and it was hoped that it would provide a sound basis on which the experiment could start. It was in fact necessary to change or enlarge many of the definitions during the first nine months of the experimental year, and it was not until January 1952 that the final form set out in Appendix I was arrived at.

The problems met and overcome were many, but everybody regarded the experiment as a job of national urgency and all realized that it would need the full year before the system was perfected and that there was an imperative need that the experiment should start on 1st April, the beginning of a financial year.

(*d*) *The work and results of the first quarter, April to June 1951*

The work entailed in the introduction of cost accounting was considerable despite the preparatory work. Staffs had to become accustomed to new forms and new methods. There were many items of expenditure on which a decision had to be made as to their departmental allocation. Cost ledgers had to be opened and cost summaries prepared. And all this was happening at a time when the normal work of the finance department was at a peak with the preparation of annual accounts. In those cases where it had been decided that some additional staff was necessary it had not been possible to find and formally appoint that staff.

Another considerable volume of work arose in the organization of the collection of units. In most cases the statistics providing the units were already kept, but it was necessary to arrange for a regular flow of information to the finance office and to examine the basis on which it was prepared. In the process of doing this, other problems were met and adjustments had to be made in the allocation of expenditure and in the units of cost to be used.

It had not been possible before 1st April to arrive at agreed units of cost for the medical diagnostic and treatment departments, such as pathology, radiology, physiotherapy, and radiotherapy. During this period the Trust invited the consultants and departmental heads concerned with these specialties to meet them and asked for their help.

It is a demonstration of the enthusiasm and keenness of all concerned with costing in the hospitals that, despite all difficulties and with the problem of coping at the same time with annual accounts and estimates, the system did really get started and the first quarter's departmental costs were available by early September.

The Trust had prepared and issued forms for the return of the figures of the first quarter. These forms were designed to give (*a*) details of departmental cost, (*b*) a summary of the departmental cost of each hospital showing the percentage of total expenditure which arose in

each department, (*c*) comparative unit-costs for each hospital group, (*d*) expenditure on non-costed hospitals under Ministry headings, (*e*) summary of hospital cost showing a reconciliation with the financial accounts.

When the completed forms were received summaries were prepared for each department giving comparative unit-costs, total expenditure, and total units for every hospital in the experiment, and these summaries were discussed at a meeting of finance officers held in early October. It was realized from the outset that the figures for the first quarter were unlikely to give any reliable basis for inter-hospital comparison and they were regarded solely as an exercise in method. It was therefore gratifying to find that there was even at this early stage a large degree of uniformity. Nevertheless it was clear that much remained to be done, but it was too late for changes to be made in the costs for the September quarter. It was agreed, therefore, that the December quarter should be regarded as the first reliable costing period. The June quarter figures had shown, first, the need for improving definitions and, secondly, the importance of ensuring that even when the definitions were understood and adhered to, diverse methods of counting did not mask the desired uniformity. This problem arose particularly in such departments as laundry and catering.

(*e*) *The work and results for the second quarter, July to September 1951*

During the three months, July to September, the routine bookkeeping of the costing system had been going on in preparation for the September quarter cost statements, although the main thinking and planning on the experiment had been concerned with the June quarter results. It was clear that during the second quarter the demands of costing on the finance officers' staff had lessened considerably as the building up of costs had become a part of the accounting routine and the initial difficulties in starting a new accounting system had been overcome. Moreover, the units of cost were in many cases being automatically produced and passed by departments to the finance office. It was therefore possible to prepare the cost statements in a shorter time and they were ready before the end of November. It had not been found necessary to make any great change in the form in which they were presented and the summaries for this quarter followed the same pattern as for the previous one.

Despite the fact that it had not been possible to embody in this quarter's figures many of the changes agreed upon at the previous meeting, it was clear that there was an improvement in the results due to the experience gained by all concerned in the first three months. Many of the minor problems seemed to have been solved and only a few major ones remained for discussion. Among these was the basis of allocation of medical salaries which had been shown as one item of the total

expenditure, and it was agreed that further detail was necessary, and that expenditure under this heading should be divided as between consultants, registrars, and residents. There was also a difficulty in arriving at a definition of the staff to be charged to cleaning services. The dispensary still provided a problem, and it was decided that a meeting of the pharmacists concerned should be held to obtain their help and advice.

A discussion took place on the necessity for spreading the cost of overheads (such as electricity, gas, and water) and the cost of such general departments as boiler-house and building maintenance. Again it was felt that the co-operation of the departmental heads would be invaluable and that a meeting of hospital engineers should be called.

(*f*) *The work and results for the third and fourth quarters, October to March 1952*

During this period special work was carried out on the cost of small hospitals. Special studies were made of the methods used in some of the main departments for counting units. This was done with the object of ensuring that the number of units given on the cost statements were uniform and reasonably accurate.

The cost statements for the December quarter were received before the end of February and it was possible to hold a meeting to discuss them in early March. As had been hoped, the results seemed to be moderately reliable, and it was agreed that not only should they be used as a basis for the first draft of the report to the Ministry, but that they should be confidentially presented to the governing bodies of the hospitals. Before finally adopting the figures they were further scrutinized and a list of items which appeared to need examination was sent to each group. It was found that the intensive analysis of medical salaries had presented difficulties and raised problems. These were discussed and it was agreed that another attempt should be made to prepare for the December quarter a statement of the actual hours charged to each department of the three categories of medical staff. There was a discussion on the future of the experiment, and all concerned intimated their willingness to continue working with the Trust for another year. It was felt that an inter-hospital comparison for mental and mental deficiency hospitals would be of great value, and it was decided that an invitation should be sent to two additional hospitals of each type to join the experiment as from 1st April 1952.

Further meetings were held of pathologists, radiologists, and physiotherapists and minor amendments were made in the weighted units for these departments. Meetings were also held of pharmacists and engineers. In both cases it was decided that further study was needed of various aspects of the problems affecting these departments and that

it would not be possible for the results of these studies to be introduced until the second year of the experiment.

A draft report was considered at a meeting in Harrogate in May 1952 of the chairmen, secretaries, and finance officers of the groups concerned, together with the regional treasurers in whose regions the experiment had taken place. The draft was discussed and, except for minor amendments, was adopted and the Trust gladly accepted a statement by the senior officers of the groups to that effect.

When the March figures were completed they were examined in detail at a meeting of secretaries and finance officers and the tables in the draft report were amended and, as far as possible, the figures given in the tables were based on the results of at least six months of the experimental year.

4. Systems in use at the end of the experiment

In the preliminary survey of each group the accounting system in use at the beginning of the experiment, together with the way in which cost accounting was to be grafted on to it, was set out in detail. In most cases these plans have been adhered to and the change in the accounting system has been small. For this reason only a brief account is given here of some of the individual developments which have taken place in the methods of accounting. It is hoped that they will indicate that departmental costing is practicable whatever the accounting system.

United Bristol Hospitals

The outstanding features of the centralized system used in the United Bristol Hospitals are the organization of the central stores and central purchasing, and the method of preparation of the pay-roll.

Central stores and central purchasing

The purchasing for all hospitals and departments (except for the Clerk of Works) is carried out by the supplies officer in accordance with their requirements. The purchase of goods other than day-to-day consumable commodities has to be authorized by the appropriate committee or the secretary to the Board. In this way strict and centralized control over purchasing is effected.

With central purchasing and a large central store for all commodities it is possible to deal at one point with the receipt of requisitions and stores issues, and to facilitate the summarizing and pricing of issues by the use of punched cards.

Centralization for the group makes possible:

(*a*) Specialization in purchasing.

(*b*) The use of various markets and sources of supply.

(*c*) Full advantage can be taken of reduced prices for bulk buying and goods can be purchased from wholesalers.

(*d*) It is possible to organize departments for the manufacturing of pharmaceutical supplies and other items such as confectionery, floor-polish, and fruit drinks, and to buy meat by the carcass which can then be dealt with in the butchery.

Records of stores issues and direct purchases are based on code numbers for:

1. Each type of stores denomination (these are very similar to the Ministry of Health expenditure headings).
2. Each ward and department of the Bristol Royal Infirmary and the Bristol General Hospital.
3. Each of the other hospitals in the group.

This enables a departmental ledger to be kept showing monthly issues by commodity in total and details of direct purchases. The supplies department is thus enabled:

A. To anticipate, as far as possible, the normal consumable commodity requirements of all units and departments of the United Bristol Hospitals.

B. To supply an adequate maintenance and repair service for all equipment—domestic and surgical.

C. To prepare an annual financial budget for all supply, maintenance, and repair services.

D. To prepare annual estimates and a budget for any necessary capital equipment replacement or new equipment supply.

E. To maintain records of all purchases, goods held in store, and of all issues to wards and departments.

F. To exercise close scrutiny upon all stores demands and issue summaries.

G. To place before the finance committee each month a full statement of the value of stocks, purchases, and issues of all commodities and such summaries of departmental financial cost and commodity consumption as may be demanded.

Pay-roll preparation

The pay-roll is prepared on a Remington accounting machine by which means the employee's personal record, the pay-roll sheet, and pay advice slips are completed simultaneously. Special features are:

(*a*) The amount of information shown on the top of the employee's personal card, viz.

1. Tax code.
2. Weekly or monthly tax-free pay.

3. Information regarding:
   (i) Grade.
   (ii) Date of appointment.
   (iii) Scale or rate of pay.
   (iv) Increment date.
4. Superannuation and National Health deductions. These are conveniently placed just over the appropriate column for entering the current information.

(*b*) The working out of weekly or monthly tax-free income, which together with registers on the accounting machine obviates the necessity for the operating clerk to refer to Table A in the tax code tables.

(*c*) Control by variation. Each salary and wages sheet is controlled as to total by:
1. Variation from standard due to lost time and sickness.
2. Variation from standard due to overtime and holidays.
3. Changes due to additions or reduction of staff.

By this system of control differences are brought to light immediately and not allowed to accumulate until the end of a period.

Cheltenham Hospital Group Management Committee

1. *Wages and salaries*

Pay-rolls are prepared on a National accounting machine and special forms have been designed to help in the work. These cover appointments, resignations, time-sheets and clock cards, and returns of absences from duty.

The departmental wages analysis is obtained in the following way:

The entries on the pay sheets are arranged in objective groups to simplify functional costing. The totals of each section are automatically posted to ledger expenditure control cards in the mechanical process of pay-roll preparation.

In addition, an actual list of medical staff, sisters, staff nurses, and number of student nurses, &c., is entered on the reverse side of the departmental cost analysis. This ensures that when there is any need for investigation of salary and wages cost the complete information needed to answer all questions is available. Although a simple method it is extremely useful.

2. *Coding*

Coding is most important and the code employed allows complete integration of objective and subjective cost.

The code for analysis of expenditure is a six-digit code divided into three pairs as under:

(i) The first pair of digits represents the reference number of the hospital concerned.

(ii) The second pair of digits covers all the requirements of the subjective analysis of expenditure required by the Ministry of Health, with certain refinements to allow of the analysis of provisions (under groceries, fats, bread, cake, fruit and vegetables, meat and fish (including rabbits), poultry, milk, alcoholic and soft drinks), and an analysis of fuel, light, and power (under coal, coke, and wood (including oil-fired boilers), oil, petrol, grease, gas and electricity, other expenses).

(iii) The third pair of digits is used to allocate expenditure over wards and departments for purposes of costing. It is also used for control accounts for subsidiary records such as stores and job costing.

3. *Payment of invoices and analysis of expenditure.* While payment is made at monthly intervals, scheduling and analysis of expenditure are done weekly. This has the dual advantage of maintaining a steady flow of invoices and providing an expenditure analysis ahead of payment.

Scheduling is carried out on a '3000 class' National accounting machine, which produces at the same operation:

(*a*) schedule of invoices;
(*b*) remittance advice;
(*c*) cumulative invoice summary for each tradesman;
(*d*) analysis slips giving the invoice schedule reference, the code number and amount of the invoice or credit note.

The code analysis slips are tabulated by code number on punched cards. The totals under each expenditure head are automatically accumulated monthly, and posting to main ledgers is thus eliminated until the final account stage at the year end.

In general, debits are divided into two categories:

(*a*) They either refer to a general stores, in which case they are charged to the respective stores control account, or

(*b*) They represent purchases for the direct use of the department, in which case they will be charged direct to the departmental card of the hospital concerned which shows also the subjective category of the goods purchased.

At monthly intervals the cumulative remittance advices form the basis of the committee approval list, cash-book sheets, and cheques, which are prepared at one operation on the accounting machine.

4. *Stores accounts*

By means of coded requisition and goods received notes, standard prices and the use of a punched card service:

(i) The secretary and administrative staff at the individual hospital are relieved of the task of keeping stores ledgers, goods inwards book and bin cards (unless by special preference).

(ii) The supplies officer and store keeper at each hospital are supplied with:

(*a*) Weekly list of receipts and issues (quantities only) of each commodity.

(*b*) Monthly stock (quantity) returns of each commodity showing stock on hand at the beginning of the month, receipts and issues during the month, and stock at the end of the month.

(iii) The automatic production is possible of:

(*a*) Monthly stock accounts (in total and subdivided by hospital, store section, and commodity) showing quantities and values of stock on hand at the beginning of the month, receipts and issues during the month, and stock at the end of the month. (This entirely replaces the usual stores ledger.)

(*b*) Aggregate priced issues, under expenditure and cost heads, cumulative in value month by month.

(*c*) Complete integration of financial accounts and stores accounts.

This information is obtained by entering against each individual item on every issue-note a stores code number which identifies the stores item. This commodity reference has also been designed to reveal automatically the subjective expenditure head. A further code number on the requisition identifies the hospital and department to which the issue is made.

As the expenditure code and the stores code interlock, the details given on the issue-note are sufficient for the expenditure code to be readily apparent to the punch-card operator, and there is no necessity to specify the expenditure code against each item of issue.

As already indicated, this monthly statement of issues is cumulative and provides the media for posting against stores control accounts and to expenditure accounts in the financial ledgers.

5. *Standard pricing technique*

Standard prices are fixed for all commodities. This enables goods received and issued to be automatically priced by a multiplying punch and in turn makes possible the automatic production of monthly stock accounts in quantities and values (see 4 (iii) above).

Each quarter a difference account is mechanically produced representing the difference between goods purchased at actual prices (per invoices) and standard prices (per goods received notes). This difference is spread over the quarter's issues and the stock at quarter end.

The stores code incorporates two digits showing the class of commodity within the main type, e.g. provisions (main type) is split into twenty-two classes, the commodities in each class having economic similarity. In dealing with price adjustments one would ideally deal with each commodity separately, but the volume of work would be considerable and the adjustment is therefore made on a class basis.

The standard price is not changed throughout the year. One of the further advantages of standard prices is that increases or decreases in cost arising from price fluctuations through market conditions or buying arrangements are readily apparent.

6. *Agreement of subjective and departmental analysis*

(*a*) To obtain total expenditure analysed over subjective heads of expenditure, all expenditure allocations with the same middle digits are collected and added together. When a split as between hospitals is required, all cards with the same first and middle pair of digits are collected and totalled.

(*b*) To obtain total expenditure incurred by specific departments in each hospital, all the expenditure ledger cards with the same first and last pair of digits are collected and totalled and the departmental cost is automatically divided into subjective headings of expense.

If all the requisite expenditure cards (excluding stores control accounts) are totalled first under hospital subjective headings and then under hospital department headings, automatic agreement of totals results.

Manchester United Hospitals

The financial accounts of the three in-patient hospitals in the group are kept by the individual hospitals. The system used in all hospitals is not uniform; although it is in all cases a manual one. Buying is also carried out at hospital level. With the introduction of the experiment, however, a group office was set up for stores accounts and costing. The stores accounts office receives copies of all orders, of all goods inwards notes, and records of stores issues where possible summarized in quantity by commodity and department.

Upon receipt of the goods inwards notes, if the goods have gone into store, the stores ledgers are written up in quantity only and the standard price of the articles purchased is calculated. If the goods are a direct purchase for a department, the standard price is not used and no action is taken. When invoices are received they will have been checked by the purchasing department as to price, quantity, and quality. The copy order and goods inwards notes are affixed, and the invoices are listed on a purchase summary having columns for:

(*a*) Empties charged and empties credited.

(*b*) Direct purchases and the department to which they should be charged and the code number of the commodity. An analysis of this column provides the information for the posting of the cost ledger.

(*c*) Purchases for stock with columns for the standard value and for the difference between the actual cost and the standard. The first column forms the basis for the charge to stores control accounts at standard price.

The summaries of issues are posted to the stores ledger in quantity only. They are then priced at standard price and charged departmentally in the cost ledger, and in total to the stores control account. The balance on this account should then equal the total of the stock as shown in the stores ledger when priced at standard price.

The price variance is posted to an account for each section of the stores. At the end of the year the standard price is adjusted and the closing stock revalued at the new price. The difference between old and new standard prices is transferred to the variance account and any balance on this account is transferred to the appropriate expenditure account.

The cost office is supplied with a departmental analysis of wages by each of the finance officers in the group and also with details of petty cash and other payments not included in the invoice summaries. Thus all information required for the cost ledger is received and posted.

The system has worked well despite differences in forms and methods used in each hospital. Had it not been for the adoption of standard pricing for the stores accounts it would have been impossible to begin costing and stores accounting at the same time as the pricing of requisitions would have had to await the opening of the stores ledgers so that average price could be calculated.

Reading and District Hospital Management Committee

The Reading group covers a wide area and consists of eighteen hospitals divided into seven groups. Efficient financial and cost control has been effected by decentralization of responsibility to the supervising officials at hospital and departmental level and by the greatest possible use of marginal labour.

The monthly budget of expenditure is agreed with the unit administrators and departmental heads and this is compared with actual expenditure, both on a cumulative and on a month to month basis. Every effort is made to make the individual hospitals cost conscious and to see that they do not exceed their budgets.

An outline of the system is given below:

A. *Invoice routine*

The prime object of the system is to ensure that a regular daily flow of invoices reaches the central office from individual hospitals. This has the following advantages:

(*a*) Total liabilities for purchases can be ascertained at any given time.

(*b*) A comparison of actual incurred expenditure can be compared with the budget at any time by individual hospitals either under the subjective headings required by the Ministry of Health or by objective or departmental headings.

(*c*) The work is always kept up to date and monthly financial and cost statements can be promptly prepared.

This system works as under:

(i) At hospital level:

(*a*) The invoices are sent direct from the suppliers to the hospital.

(*b*) At the hospital the code number is marked on the order, goods received notes, and invoice. (The code shows hospital number, departmental number, and a number denoting the subjective allocation of expenditure.)

(*c*) The unit price on the invoices is checked and initialed.

(*d*) The invoices are summarized on a daily list.

(ii) At central office:

(*a*) The invoices are numbered on receipt and go first to the supplies assistant for him to check the prices being paid for the various types of goods.

(*b*) The invoices are linked with orders and goods received notes and their arithmetical correctness checked by comptometer. They are then sorted alphabetically each day and scheduled on a special carbon (Anson) which prepares at one operation:

1. Summary of invoice list.
2. Remittance advice for the supplier.
3. Supplier's personal record.
4. Posting slip.
5. Stores reconciliation.

The coded posting slips are analysed by hospital, department, and subjective headings of expenditure by a punched card service.

Thus posting to the general ledger is reduced to a minimum, remittance statements are gradually and automatically prepared during the month, and regularity of work reduces the need to work overtime at the month end.

B. *Stores accounts*

The detailed stores accounts are kept in quantity only by the individual hospitals. The basis of the receipt into stores is the goods received note and all issues from stores are made by requisition. Both these documents bear the standard code number. The individual hospitals value and code all issues from stores and summarize them weekly. These weekly summaries are then combined by the hospital or department into a grand monthly summary and submitted to the central office.

The hospital storekeeper or clerk has to enter the price of goods purchased in the stores ledger, and on this basis the issues are priced. The advantages are:

1. The stores ledgers are kept in close proximity to the stores themselves.
2. By being aware of the price and cost of issues, the individual hospital administrator becomes price conscious.
3. Marginal labour is employed for the purpose of pricing issues at the individual hospital which reduces the clerical labour at the central office. If stores ledger accounts were maintained at the central office, the number of stores ledgers to be maintained would be enormous and the expense would be large, whether the accounts were kept manually or by the use of a punched card service.
4. At the end of the financial year, and in fact if required at any time during the year, the stock balances in quantity as shown on the hospital stores ledgers can be valued and agreed with the summary stock account in the cost ledger maintained at the central office.
5. The individual hospitals are able to carry out perpetual checks as between the stores ledger and the physical stock. Thus the stock list at the end of the year can be prepared from the stores ledger.

To avoid fraud and to ensure that the stores accounts at the individual hospitals agree with the stores control account at the central office, the internal auditor when visiting the individual hospitals tests whether the invoices debited to the stock control at the head office have in fact been debited to the hospital stores ledger and the proper details of price inserted, and that issues credited to the stores accounts have been shown on the summary issues and calculated at the proper price.

C. *Cost-ledger reconciliation account*

Stores control accounts are kept in the cost accounts as the group did not wish to deviate from their methods of charging all purchases direct to the subjective Ministry heading in the financial ledger. The advantage is that in this way actual expenditure can be compared with the budgeted amount, thus bringing any over-purchasing immediately to

light. The complete interlocking or reconciliation of the cost and financial account has been maintained throughout the experimental period.

D. *Salaries and wages*

When submitting the salary list for monthly personnel, and time-sheets for weekly personnel, the matron or administrative officer in charge enters against each name by means of a code number the department to which the employee should be charged (in certain cases such as night nurses, and nurses on holiday, these have to be charged to a pool).

This method of coding proves a very great help in tracing exactly where the employees in the hospital group are in fact working, and it is proving very satisfactory.

E. *Coding*

Coding has proved of great importance at Reading, as in other hospital groups, and a seven-digit code is in use. The first two digits represent a hospital, the second two digits a department, and the last three a subjective heading.

The subjective headings are in accordance with the latest Ministry of Health requirements, but in addition further subdivisions have been provided, e.g. provisions are analysed under the following categories:

1. Meat.
2. Fish and poultry.
3. Bread, cakes, biscuits, and flour.
4. Vegetables and fruit.
5. Tinned and bottled foodstuffs.

Drugs and dressings are divided into:

1. Drugs (general).
2. Penicillin.
3. Streptomycin.
4. Chloromycetin.
5. P.A.S. (Para-amino-salicylic acid).
6. Medical gases.
7. Dispensary sundries, dressings, &c.

Huddersfield Hospital Management Committee

The main point of interest in the system used by this group is the form of cost ledger which has been evolved which easily spreads expenditure over the four quarters of the financial year.

In the report of the Huddersfield groups, reference was made to the analysis journal which was divided into two sections, viz.

(1) Control section covering total payments for the group analysed under hospitals.
(2) Hospital totals analysed under Ministry subjective headings.

A third section has been used for the departmental analysis during the first six months, but while adequate for the smaller hospitals it was found that insufficient detail was available when the Royal Infirmary was brought into the experiment and a separate cost ledger has been opened for the Infirmary only.

This ledger has been designed by the finance officer and contains some novel features. As the methods adopted are still in an experimental stage the ledger sheets have been duplicated at the hospital, thereby avoiding high printing costs.

The ledger contains a section for each department and is made up of loose-leaf column sheets with the following ruling:

A. *Left-hand page*

1. Month of payment.
2. Committee schedule reference number.
3. Invoice date.
4. Supplier's name.
5. Particulars of commodity or expense.
6. Invoice net total.
7. Date delivered or period covered.
8. Quarter (i.e. 1, 2, 3, or 4).
9. Source of charge:
   (*a*) Pay list (invoices).
   (*b*) Salaries and wages.
   (*c*) Other (store issues, journal adjustments, &c.).
   (*d*) Total.

The total is transferred to a control account which will itself agree in total with section 2 of the analysis journal.

B. *Right-hand page*

This page is divided into three sections, viz.

1. Previous quarter.
2. Current quarter.
3. Next quarter.

Each of these sections is ruled as follows:

(*a*) Stores issues, type and value (1 column).
(*b*) Direct charges (4 columns, headed manually under the main headings of expenditure peculiar to the department, e.g. the radiology sheet might have separate columns for films and

chemicals, and the catering sheet separate columns for meat, fish, &c.).

(*c*) Salaries and wages (type and amount).

Writing up of cost ledger

All invoices are coded both for Ministry and costing purposes and after scheduling are sent to the cost office, and each one is individually posted to the appropriate sheet in the cost ledger. As the totals of the postings are transferred to the control account complete integration with the financial accounts is automatic.

In addition to the departmental sections of the cost ledger three other sections are necessary to ensure that the total entries in the cost-ledger agree with the financial books:

1. *Stores control section.* This covers all items bought and passed into those stores which are subject to stores accounts. The ruling of the left-hand page is the same as for the rest of the ledger, but the right-hand page merely has a succession of columns to cover the different stores headings. Purchases are entered in black ink and issues are recorded in red.
2. *'Semi-Stores' section.* This section which is called 'semi-stores' for the want of a better title is designed to cover items which are bought and passed into stores but which are not subject to stores accounts (bedding and linen, medical instruments, staff uniforms, and patients' clothing). Stores records are kept of these articles in quantity only and for the purpose of the quarterly cost statements these issues are summarized, valued, and entered on the cost statements.

   It is intended that after the annual stocktaking and valuation any difference revealed between the quarterly cost statements and the actual consumption over the year will be spread proportionately over the departments.
3. *Other items.* A further section covers other items such as recoverable charges, non-costed departments, suspense accounts, &c.

Closing of cost ledger

The sections for stores control, semi-stores, and other items are closed off annually, but all other sections are closed off quarterly when the cost statements are prepared. A column for the previous quarter was included and it was thought that a number of late invoices would have to be dealt with, but in fact this has not been the case and apart from salaries and wages the section is practically unused.

The ledger is not closed until approximately six weeks after the end of the quarter, and during this period invoices relating to the quarter just ended will still be entered in the 'current quarter' while others referring

to the six weeks' period will be entered in the 'next quarter' section. At the end of this period the ledger is ruled off and the totals of the 'current quarter' section are transferred to the cost statements, while the totals of the 'next quarter' section are carried down to the 'current quarter' section.

The experience so far gained is that this period of six weeks is sufficient to clear the major proportion of normal expenditure and to allocate it to the period to which it relates. An exception to this generalization would apply to a few items of annual or bi-annual expenditure, such as rates, &c., but these are few and usually the annual charge is known in advance and an appropriate proportion allowed for on the cost statements.

Banbury and District Hospital Management Committee

The Banbury and District Hospital Management Committee offered to prepare departmental costs for inclusion in the experiment as from 1st October 1951. No report had been prepared when the experiment began and so brief information about the group is given below.

This is a widely scattered group of relatively small hospitals, with the financial control centre at the Horton General Hospital, Banbury. The group consists of the following hospitals:

Horton General Hospital (acute general)	180 beds
Neithrop Hospital (maternity and long stay)	105 ,,
Banbury Isolation Hospital (infectious diseases)	31 ,,
The Elms Maternity Home	15 ,,
Brackley Cottage Hospital (acute and maternity)	13 ,,
Bicester Cottage Hospital (maternity and convalescent)	10 ,,
Chipping Norton and District War Memorial Hospital (acute and maternity)	32 ,,
Moreton-in-Marsh District Hospital (acute and maternity)	32 ,,
Bourton-on-the-Water Cottage Hospital	17 ,,
	435 ,,

Figures for the Horton General Hospital have been included as from 1st October 1951, and it is hoped that costs for Neithrop Hospital will be available at a later date.

The present accounting system

1. *Salaries and wages.* The Anson system is used for the preparation of the pay-roll. A weekly or monthly summary provides the information for posting for Ministry headings and for costing purposes.

2. *Payment of invoices.* An adaptation of the Anson wages system has been adopted also for the preparation of invoice schedules, creditors ledger, remittance advice note, and analysis strip. An essential feature of the system is that a senior member of the staff is responsible for coding

all invoices, the code providing information as to the hospital concerned, the Ministry heading, and the departmental charge for costing purposes.

After coding the invoices are entered individually and by the use of the Anson writing-board and carbon paper the schedule of invoices for a given period is prepared, and simultaneously the creditors ledger cards and remittance advice notes are built up while an analysis strip for each invoice is produced.

A manual system has thus been achieved which produces similar results to the more expensive mechanical systems used in larger organizations.

3. *The analysis strip.* With one exception which is noted below, an analysis strip is automatically produced as a direct copy of the entries on the schedule of invoices. For accountancy purposes these strips are sorted by hospitals and Ministry heads of expenditure. Each group is listed on an ordinary listing and adding machine, the totals giving the analysis of the particular schedule of invoices for posting purposes.

The same strips can then be re-sorted for departmental cost purposes. In this way the strips become the manual counterpart to the punched card system of tabulation.

The exception referred to above covers invoices relating to more than one hospital or department. In place of the respective codes the words 'sub-divide' are written. A rubber stamp panel is put on the strip in which the full analysis is recorded. Additional strips of a different colour are made up for each 'sub-division' recorded on the original strip and these are used to complete the analysis.

4. *Stores accounts.* Stores ledgers are made up from ledger cards—one for each commodity. The finance officer has devised special apparatus which enables both receipts and issues of stores to be recorded on the ledger cards while providing simultaneously a proof sheet of postings.

Balances on the stores ledger cards are proved periodically with the financial accounts.

For costing purposes all requisitions are analysed manually on rough working sheets.

The system briefly referred to above is an interesting one which might be appropriate only to a relatively small group. The ingenious use of simple aids means that during busy periods the routine recording and preparation of invoices for payment can proceed while the information for analysis purposes will accumulate on the analysis strips which can be dealt with in 'off-peak' periods.

Appendix VII

JOINT STATEMENT SUBMITTED TO THE MINISTER OF HEALTH BY KING EDWARD'S HOSPITAL FUND FOR LONDON AND THE NUFFIELD PROVINCIAL HOSPITALS TRUST

1. WE have exchanged and discussed copies of our reports with a view to interlocking them to form a joint report. By independent methods we have arrived at the same principal recommendations. Due to the difference in our approach to the investigation our respective reports discuss many matters that are not common to both. Consequently, we submit separate reports together with this joint statement which forms part of, and should be read in conjunction with, the report.

2. We are in complete agreement on the following points and recommend:

(*a*) that the existing accounting system based on subjective analysis of expenditure, as prescribed in Statutory Instrument No. 1414, be discontinued;

(*b*) that an accounting system based on the departments and services of the hospital be substituted, modified where necessary for small hospitals;

(*c*) that the expenditure of departments be reduced, where appropriate, to costs per unit of work performed;

(*d*) that the budget and budgeted unit costs for each hospital follow the accounting pattern referred to in (*b*) and (*c*) above;

(*e*) that normal accounting principles be introduced, including the preparation of an income and expenditure account and a balance-sheet.

3. We regard the adoption and carrying into effect of these recommendations as an essential step towards the effective development of hospital accounting as an integral part of hospital administration and a reliable method of budgeting for, and control of, hospital expenditure. The defects of the present system and the advantages of the departmental system are discussed in our respective reports.

4. The matters upon which we are not in complete agreement concern more particularly: (*a*) the stages by which the departmental system should be introduced; and (*b*) the nature and complexity of the units of

cost to be introduced. Our respective views on these points are as follows:

(*a*) Stages by which the departmental system of hospital accounts should be introduced

(i) *King Edward's Hospital Fund*

5. Although, as the results show, the complete system recommended in its report has been worked successfully in the seven hospital groups co-operating in the investigation, the King's Fund is of opinion that the most effective method of introduction of the system is by progressive self-contained stages, with gradually deepening objectives, which will ultimately result in the comprehensive scheme outlined in Stage III. Some finance officers of the larger hospitals co-operating in the investigation have suggested that the full scheme may be introduced almost immediately. The King's Fund welcomes this confidence in its scheme, but it cannot fail to have regard to the fact that these and other hospitals co-operating in the investigation have had the great advantage of the expert help and advice of investigators especially qualified in departmental accounting, costing, and time studies, who have worked in daily contact with finance officers and their staff and who, in addition, have helped materially in securing the co-operation of heads of departments, professional and other officers in the carrying out of the system. This advantage will necessarily be denied to the great majority of hospitals on the introduction of a departmental system of accounts. The recommendation that the system be developed in stages does not lessen the effectiveness of its control over expenditure as each stage will develop the financial responsibility of heads of departments—an important factor in the system—and, through suitable and practical yardsticks, control the expenditure by comparisons of actual results with these yardsticks.

6. The King's Fund is further of the opinion that a distinct separation should be made between patients' accounts (wards, X-ray, operating theatres, &c.) and those of the general service departments which provide service of a lay or domestic character to the patients' accounts (laundry, boiler house, kitchen, &c.) and provision is made for this separation. But, after prime costs have been obtained for each account, provision is further made for the distribution of these general service expenses to the patients' accounts in order that the total cost of each of these may be ascertained as part of the normal routine accounting procedure. The King's Fund prefers this method as opposed to the numerous additional *ad hoc* investigations which are rendered necessary when such complete costs are not automatically available. Moreover, effective comparisons between hospitals are only possible if the compared services include their proper share of the general service expenses

which they incur. Without this, the results obtained from any system will depend more upon the accidents of organization than upon the degree of operating efficiency of the various departments.

(ii) *The Nuffield Provincial Hospitals Trust*

7. The Trust, with the co-operation of the finance officers, and after a preliminary survey of each group, introduced departmental costing on a uniform basis as part of the accounting system from 1st April 1951, thus affording in some forty hospitals of all kinds a full year's experience of the system used.

8. The Trust is of opinion that the system outlined in its report is sufficiently simple for it to be introduced into hospitals without the necessity for a preliminary stage.

9. The system envisaged by the Trust does not go further than Stage II of the system outlined by the Fund. The Trust holds that Stage III should not be obligatory, that the production of detailed costs of wards and clinics should be optional, and that in most cases it would be sufficient to examine the expenditure of individual wards and clinics by quantity statistics and special studies.

10. The Trust evolved a system of departmental accounting which has been working for twelve months in seven hospital groups and it feels that in the national interest a start should be made on the basis of what has been found workable and has, to some extent, been proven. It is of opinion that as the result of watching the introduction and working of the system in the seven hospital groups, the hospital authorities and their finance officers possess the requisite knowledge and experience to allow of this being done.

11. The Trust regards the production of departmental cost on a prime cost basis as the first essential. If the pattern of the costing system follows the pattern of the administration of a hospital, a separation of expenditure on patient departments from general service departments is automatically made, and each responsible member of the staff is made aware of expenditure incurred by him for his department and of variations in that expenditure which can be controlled by him. Cost over which he has no control is excluded. The spread of expenditure on any one department over all other departments served by it is of lesser importance, and in fact only necessary for special purposes, and for the calculation of the total cost of an in-patient and out-patient at the end of each financial year.

(*b*) NATURE AND COMPLEXITY OF UNITS OF COST

(i) *King Edward's Hospital Fund*

12. The selection of units of cost is one of the most difficult tasks emanating from a system of departmental accounts. Unless these units

of cost are suitable and practicable they will not be accepted and the time spent in their calculation is wasted. With a view to the selection of appropriate units, the King's Fund has carried out a number of time-and-motion studies and from the results of these it has experimented with various units of cost. In addition, it has also carried out an experiment in 'specialty' costing with a view to ascertaining unit costs of treating patients suffering from certain types of diseases, &c. A list of units is given in the Fund's report, with the advantages and disadvantages of each of the more important ones. Following a consideration of all the factors involved, the King's Fund is not, at this stage, prepared to accept any of the more elaborate units of cost as being of greater value than the most simple ones, either for the control of expenditure within a hospital or for comparisons between hospitals. The King's Fund is of opinion that until considerably more experience is gained the most suitable units of cost to be used as yardsticks are the most simple ones suggested in its report. Standard costs have been given full consideration, but those imply a blue-print precision which is obviously impossible of attainment in the treatment of patients—which, indeed, could be obtained only on the emergence of the standard patient. The King's Fund, therefore, recommends that the yardsticks, both for purposes of national finance and for controlling hospital expenditure, should be the budgeted units of cost for each department, against which the actual costs will be compared. Allocation of funds to hospitals may be made on the same basis.

(ii) *The Nuffield Provincial Hospitals Trust*

13. The Trust, not without past practical experience of unit costing, from the outset on 1st April 1951 used units of cost arrived at after three months' previous study and discussion with those concerned in the experiment. This means that units of cost had been defined and were applied at the beginning of the experimental year. During this year definitions were constantly under examination, discussed with various groups of experts in the hospital field (e.g. pathology and radiology), modified, and applied in new form. As finally agreed, these definitions are contained in the Trust's report and are accepted by those taking part in the experiment as suitable and practicable.

14. The Trust, therefore, feels that the units of cost in use at the end of the experimental year as set out in its report are simple enough and would serve as a basis for the introduction of departmental costing. If, as the result of time-and-motion studies or other techniques, more appropriate units of cost are found, the Trust would agree that any necessary changes in the units it proposes should be made.

15. The Trust is of opinion that the yardsticks to be used will be

devised through, ultimately, the introduction of standard costs, adjusted to meet local conditions. This would provide the best basis upon which to build up the national hospital budget and on which to allocate equitably national funds and would at the same time provide a method for the effective control of those funds. It would agree with the Fund that much more experience of departmental costs and much further study of the factors which affect cost is necessary before any attempt to introduce standards could be made successfully. The Trust is continuing the experiment with the groups who are already co-operating with it with a view to attempting to determine standards for certain departments. In the interim it would agree with the Fund that budgeted units of cost should provide the initial yardsticks.

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