KING EDWARD'S HOSPITAL FUND FOR LONDON

THE HOSPITAL CENTRE

THE APPLICATION OF ELECTRONIC COMPUTERS TO HOSPITAL PRACTICE.

PART I. PAYROLL AND INTEGRATED ACCOUNTING FEASIBILITY STUDY.

KING EDWARD'S HOSPITAL FUND FOR LONDON

THE HOSPITAL CENTRE

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Introduction

Since the decision by King Edward's Hospital Fund in 1961 to undertake a study of the application of electronic computers to hospital practice a small committee consisting mainly of chief financial officers has been meeting regularly at The Hospital Centre to develop an integrated management information and accounting system suitable for operation by computers. The composition of the Committee is shown on the following page. In addition to the Computer Systems Manager, two seconded staff Mr. J.D.Evans, formerly of United Cardiff Hospitals and Mr. G.A.Kerr, formerly of Hammersmith and St. Mark's Hospitals, have been engaged full-time on the study.

The Committee is pleased to report that the study has received full support from the participating hospitals as well as from the many hospital officers, manufacturers and others who are interested in the subject.

The programme of work was designed to produce a feasibility report on the use of a computer for pay-roll and integrated accounting. Superannuation and F.S.S.N. and H.O. problems have been analysed and broken down step by step to see if, and to what extent, the subject of staff pensions can be usefully dealt with by computer. Visits have been made to the London Boroughs Joint Computer Centre which uses a Leo III and has, of course, many problems very similar to those of hospitals; also to the Scottish Home and Health Department in Edinburgh where, after detailed studies on the uses of computers, tenders from manufacturers are now being examined.

Two half-day courses for members of the accounting staff of the London teaching hospitals, one for deputy finance officers and the other for wages and and superannuation staff, were organised so that they could be brought more closely in touch with the problems affecting their work, and so as to obtain the benefit of their ideas and help.

January 1965.

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The composition of the Committee is as follows:-

P. H. Constable	(Chairman)
W. E. Hall	(Director. The Hospital Centre)
B. H. Ashworth	(Computer Systems Manager)
S. Baddeley	(St. Mary's)
R. Brinley Codd	(St. Bartholomew's)
L. O'Connor	(Middlesex)
J. W. Grayling	(Queen Charlotte's and Chelsea)
W. E. Harbord	(King's College)
R. Marsh	(St. George's)
J. W. Pearson	(St. Thomas')
D. Sherren	(London)
T. A. J. Tagg	(South Warwickshire Group)

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. It is feasible to provide a centralised computer service which, in addition to processing accounting information, would be available for other computer requirements of teaching hospitals.
2. Computers would provide speedy and accurate processing of routine payroll and accounting information.
3. Equally important would be their value to management in estimating and forward planning, and in the immediate reporting of aspects of hospital activity which were not proceeding in accordance with expectations.
4. The maximum effective use of computers will be obtained from a fully integrated system, of which this report is the first part.
5. The need for these computer facilities is urgent in view of the increasing complexity of pay arrangements and the difficulty of recruiting staff.

RECOMMENDATIONS

1. The service should be conducted under the auspices of King Edward's Hospital Fund for London, and be known as "The King's Fund Hospital Computer Centre". Participants would meet their appropriate share of the cost.
2. Enquiries should be made of the Boards of Governors of Teaching Hospitals to ascertain the extent to which they would wish to participate in this centralised computer service.
3. Manufacturers should now be asked to produce their proposals for equipment.

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RESULTS OF THE STUDY

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SECTION I

1. INTRODUCTION

The main features of a computer as distinct from other forms of mechanised accounting are its ability to store information and to carry out calculations at a very high speed with absolute accuracy in accordance with its program. The machine itself is able to make comparisons and indicate variances from any forecasts of performance, quantities or cost.

The ability of a computer to store, from one source, information to be used for a number of purposes can lead to highly integrated accounting systems. For instance, while processing wages, machines can be programmed to store automatically information for establishment control, expenditure analysis, production of tax superannuation and insurance card returns. The ability of the computer to summarise the variations from a pre-determinded plan can, in accordance with the principle of management by exception, free management from the burden of detailed control, thereby enabling management to concentrate on its main functions of supervision and planning.

The extent to which these advantages can be gained depends largely on the capacity of the computer chosen, and to obtain the advantages of a fully integrated system capable of supplying management with the information it needs, it would appear advisable for hospital authorities to combine their resources so that use could be made of one of the larger computers.

In the past because of design limitations there have been restraints on computer versatility, so that one processor has lent itself to scientific and engineering application, another to commercial data processing applications, or to process control or communications. All these apparently unrelated applications have more similarities than differences. For example, because of teleprocessing and other factors scientific applications require high speed input/output similar to that required by commercial applications.

The "third generation" computers announced in 1964 are single systems capable of dealing with all aspects of data procesing. Very easily they can be expanded or changed so as to handle additional or different operations, an Information Storage Unit can be added, and input/output and processing speeds increased. This Adaptability makes it possible to include, either initially or subsequently, a broad range of input/output devices and opens the way to the introduction of medical automation techniques and hospital information services based on one central installation. Although beyond the scope of this part of the study we have kept in mind the need for such services in defining the type of installation best suited to hospital requirements and anticipate that up to 60% of computer time could ultimately be made available for such applications.

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Introduction (Continued)

Manufacturers have come to recognise that the processing systems and programming systems should be integrated and not developed independently. Experience in the past ten years has proved that the most reliable method of producing results is with monitored operation; that is to say, the machines are self-controlled and are designed to minimize human intervention. This new concept opens the way for an operating system that not only monitors and controls but also provided for direct communication or input of data as well as for more common applications. In a scientific application, for example, many routine jobs (and many one-time jobs) will probably be involved. A monitored program will provide fast turnaround time by means of job stacking so that on completion of one job the system automatically turns to the next. The situation in which more than one program resides in the system at the same time is called "multiprogramming" (this is not to be confused with with "multiprocessing", which is the use of more than one processor with communications between processors.)

2. Factors governing the study

In making its review of the application of computers to hospital accounting requirements the Committee has taken the following points into consideration:-

(a) The aim should be to give the maximum benefit to the hospitals in both the processing of routine tasks and the prompt provision of management information, with the least difficulty in installation or operation;

(b) The computer should be used as a computer, not merely as a fast calculator or typewriter;

(c) All payroll and accounting arrangements should be completely reviewed with the object of obtaining the maximum use of the computer's capabilities;

(d) So far as possible information should be entered on documents once only, and in a form which the computer can read optically without the need for punching and verifying;

(e) There should be the minimum intermediate processing of information by the hospital; and

(f) The principle of management by exception should be adopted (i.e. the computer should inform management where cost or quantities were not in accordance with a predetermined plan. Detail should be printed out by the computer only when specifically required)

3. Provision of a centralised service

From an examination of hospital payroll and accounting requirements it became evident that a centralised service would be advisable for the following reasons:-

(a) The task of the initial programming, and the subsequent urgent reprogramming that will arise from Whitley awards, retrospective awards and changed service conditions, can best be met by a highly trained central staff.

(b) For many purposes random access facilities to stored information will be required; this will involve expensive peripheral equipment.

Investigations have shown many variations in the accounting procedures of the London Teaching hospitals and that complete standardisation of procedures may not be desireable or necessary.

4. Extent of standardisation required

(a) All hospitals are subject to the same conditions of service for their staffs, and from April 1966 will be subject to the same accounting and costing scheme. A large degree of standardisation is therefore possible without in any way lessening the independence of the participating authorities.

(b) It will be essential for input and output forms to be standardised, but in view of the different sizes of the participating hospitals and the varying degrees of development which exist, not only between hospital and hospital but between departments in the same hospital, different levels of participation would be needed in the accounting system. The system has been designed so that the accounts of a hospital with departments at different levels of participation can be co-ordinated and processed as an integrated whole.

(c) A standard structure for the financial codes will be necessary in order to avoid complex and uneconomical programming and control problems. Some variation will be possible to meet local requirements for sub-analysis. The size and grouping of the code structure and the layout of the code number will be decided when final decisions have been made by the Ministry of Health on the revised accounting and costing scheme.

(d) It is envisaged that assistance in installing systems at participating hospitals will be given by systems analysts on the staff of the King's Fund Computer Centre.

The next two paragraphs outline the proposed system for payroll and accounting requirements. This is described in more detail in Sections Two and Three of this report.

5. Payroll

In designing the computer system for payroll work, certain particular problems arose,

(i) Conditions of Service

The Conditions of Service were difficult to interpret, and the Ministry of Health circulars on pay matters have recently become more numerous and complex. In the Ancillary Staffs Conditions of Service, for example, there are approximately three hundred and eleven male grades and one hundred and thirty six female grades; and in the course of the system study no less than one hundred and eighteen circulars were analysed for Nurses Conditions of Service alone.

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5. Payroll (Continued)

(i) Conditions of Service (Continued)

Nevertheless, a full and detailed breakdown of the Conditions of Service was produced. The System Study Officers are confident that the Conditions of Service can be programmed for a computer for the Ancillary Staff and for most aspects of the Nursing Staff and, arising from this, for all other grades of staff.

At each point of the study, problems and queries were discussed with the Whitley Councils and the participating hospitals, and discussions have been held with officers of the Ministry of Health about the possibility of submitting superannuation details to the Superannuation Division on magnetic tape or punched cards.

(ii) Input

Clock cards are widely used at present as the basic documents for pay information. In most hospitals the hours shown on the clock card are re-calculated into basic and over-time hours, and these are either written on the clock card and forwarded to the machine room, or written on to a separate document.

Preliminary studies and field trials have been made of input documents, but more detailed investigations of this subject will be required at a later date. Meanwhile, good progress has been made in designing a clock card machine which will print the hours worked in characters which can be read optically on-line (straight in) to the computer. Day-to-day information about absences, irregular allowances, etc. would be shown by the Head of a Department in pencil, pen or biro on the clock card. In this way, information on the hours worked can be properly controlled by the authorised Head of Department. Interpretation of the Conditions of Service would then be controlled by the computer program.

(iii) It is the intention to program the work so that the computer will provide, as part of the task of processing salaries and wages, all information required for national insurance, graduated pension, superannuation, income tax and government statistical returns, together with expenditure analysis and other information required by the hospital. It is possible that superannuation details could be sent to the Superannuation Division on magnetic tape or punched cards and, with the growing use of computers, ultimately information could be sent in this form to other Government departments.

Conclusions

(i) Conditions of Service, except points of entry to salary scales, can be applied by the computer and so provide a largely automatic system making full use of the computer's capabilities.

(ii) The salaries and wages sections of the hospital finance departments will be relieved of many of their tedious routine duties.

(iii) Providing the variable payroll input is correct, all calculations of salaries and wages will be accurate.

(iv) The detailed pay slip will enable employees to see exactly how their pay has been calculated.

(v) The provision of management information will assist Finance Officers, Administrators and Heads of Departments by indicating current adverse trends and will ensure more precise estimating and control of expenditure.

6. Integrated Accounting System

(a) The accounting system has been reviewed as a whole to ensure that payroll, annual accounts, budgetary control, costing and other management information can be provided directly by the computer from standard and prime document information with the minimum intermediate processing.

(b) The use of a computer will result in a far speedier processing of all routine functions, and the machine can be programmed so that while engaged on these taskes, it will store information for control by quantity as well as by cost, make comparison with a previous period or with management's expressed intention, determine trends, and will help to explain why variances have occurred.

(c) We will report later on the details of the management information which can be provided, but would emphasise the advantages to be gained in having prompt information for estimating and forward planning, and in the ability to report immediately to management, at the appropriate level, aspects of hospital activity which are not proceeding in accordance with expectations, whether as regards volume or cost.

(d) The accounting system proposed offers three levels of participation in the expenditure procedure (commitment accounting, or expenditure analysis at goods received or payment of invoice levels). At all stages, in addition to the production of an expenditure analysis, the remittance advices and payment documents would be prepared. As well as providing for commitment accounting, supplementary programmes will be available for matters such as a register of standing charges, control of special allocations, travelling expenses, capital expenditure and job costing.

(e) Traders accounts can, after approval by the hospital authority, be paid centrally. A large proportion of traders are common to all hospitals and there would be a considerable saving in labour, stamp duty and postages.

6. Accounting System (Continued)

(f) Two levels of participation are provided for income (full income accounting including maintenance of debtors account, or cash receipts analysis). Supplementary procedures will be available for the control of recoverable expenditure.

(g) One level of participation only is provided for the stores system, which will be fully integrated with the financial accounts. Management will be advised when items should be re-ordered or when items exceed the authorised maximum holding level. Quantity controls can be maintained for selected items or departments, and consumption trends plotted.

7. Expenditure

It is estimated that the cost of the capital equipment written off over eight years, plus programming, accommodation, etc., will give an annual expenditure of £145,000 - £165,000. Using as a basis the revenue of say 25 Teaching Hospitals this means an expenditure of £2,500 per £1m revenue. This is one way of estimating but until the degree of participation by hospitals and the number of hospitals participating is known then this is a very rough guide that will be subject to considerable variation. It should be realised that of this amount approximately 40% will be for financial work and 60% available for medical and research work.

8. Savings

There will be some saving in both staff and other costs to offset against the share of the cost of the Central Service; this saving will depend on the degree of participation in individual hospitals. More significant than this are the economies that will derive from the application of current statistical information to management.

9. Future uses of the computer.

(i) Hospital Activity Analysis

Analysis of work done by Consultants.

Number of patients discharged during the period.

Average length of stay.

Number of deaths.

Bed occupancy, etc., etc,

(ii) Hospital Information Service

This would involve a joint study with a specific hospital to reduce the clerical load of Nursing Staff and to study the general services of a hospital, porters, X-ray dept., etc.

(iii) Allocation of Nurses to wards and Student Nurses to their programmes. Experiments are under way and it would appear that considerable savings in both time and normal effort can be achieved.

(iv) Critical Path Scheduling, PERT (Program Evaluation Review Techniques). A rebuilding project in a hospital to being studied at the moment using PERT techniques on the computer.

(v) Research. A computer of the size and power that is envisaged will provide research computing facilities. It is intended to add digital/analogue converters and with a core capacity of 64,000 positions the machine will be capable of dealing with simulation and timetabling problems.

(vi) Simulation of hospital conditions, wards and departments.

(vii) Data Collection from hospital departments.

(viii) Bills of quantity.

(ix) Medical records. Cathrode ray displays and microfilm input to the computer are, for example, two of the aids that will be considered.

(x) Education. It is hoped that Doctors and people employed on re-

Future uses of the computer (Continued)

search and others will learn to program the computer. Facilities will be provided for training.

(xi) Information retrieval.

(xii) Menu planning: Programs are being obtained from the U.S.A to enable experiments to be carried out.

Separate documents can be obtained giving full information on any of these topics by reference to The Hospital Centre.

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INTEGRATED ACCOUNTING

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APPLICATION OF COMPUTERS TO HOSPITALS

INTEGRATED ACCOUNTING SYSTEM

OBJECT

To ascertain the feasibility of using a centralised computer to provide an integrated accounting system for the London Teaching Hospitals.

For this purpose we have interpreted an integrated accounting system to mean the bringing together into one system of all the accounting arrangements of a hospital so that the annual accounts, budget comparisons, and other management requirements can be provided directly by the computer, from standard and prime document information, with the minimum intermediate processing by the hospital.

FIELDS OF STUDY

The study was divided into the following fields:-

1. The Use of a Computer for Accounting Procedures and Provision of Management Information.

   Modern computer capabilities and techniques, including input systems, were examined generally to see how they can be applied to the following accounting procedures and the provision of management information.

   Expenditure and Income Analysis
   Payment of Accounts
   Payment of Salaries and Wages
   Stores Accounting
   Income Control

2. Extent of Standardisation.

   Consideration was given to the extent to which standard procedures would be necessary or desirable in the participating hospitals.

3. Accounting System.

   An integrated system has been designed suitable for adoption by all hospitals.

CONCLUSIONS.

The Use of a Computer for Accounting Procedures and provision of Management Information.

1. The use of a computer will result in a far speedier processing of all routine functions and will enable accounting, budgetary control and costing, and the provision of other management information to be treated as a whole and not as separate problems. While engaged on routine financial tasks the machine can be programmed to store information for control by quantity as well as by cost, to make comparison with a previous period or with management's expressed intention, to determine trends, and to give reasons why variances have occured.

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The Use of a Computer for Accounting Procedures and provision of Management Information (Continued).

We will report more fully on this subject later, but would emphasis the advantages to be gained in the provision of information for estimating and forward planning, and in the ability, in accordance with the principle of management by exception, for the immediate reporting to the appropriate departmental head of aspects of hospital activity which are not proceeding in accordance with expectations, with regards to volume or cost.

Standardisation

2. The different sizes of the participating hospitals and the varying degrees of development which exist not only between hospital and hospital, but between departments within the same hospital make it necessary to provide for more than one level of participation in the accounting system.

3. The different levels of participation must be co-ordinated so that the accounts of a hospital with departments participating at different levels can be processed as an integrated whole.

4. A standard structure for the financial codes of participating hospitals will be necessary in order to avoid complex programming and control problems. This should not present any major difficulty as all hospitals will be on a common accounting and costing system from April 1966. The main subjective and cost account heads must be standard, but some variations will be possible to meet local requirements.

5. In addition to a standard financial code the use of standard forms of input will normally be essential to ensure the most economic use of the computer.

Accounting System

6. An integrated accounting system has been designed allowing for three differing levels of participation in the payment of accounts procedure (commitment, goods received or invoice level) and two levels in the income procedure (debtors & income and analysis). In addition, special procedures will be available to deal with the control of special items, job costing preparation of remittance advices, etc.

RESULTS OF THE STUDY

EXPENDITURE AND INCOME ANALYSIS (EXCHEQUER FUND)

Hospital authorities are required to maintain a subjective analysis of all financial transactions which, together with the cash and control account balances, constitute the annual accounts of the authority. In addition a separate cost analysis is required in respect of hospital maintenance expenditure; thus creating the need for a dual analysis of most of the transactions.

Ministry allocations, estimates and monthly budgetary statements are at present prepared under subjective heads of expenditure, but with the change in the costing scheme starting in April 1966, expenditure control on an objective basis is likely to become increasingly important.

However, with the flexibility of a modern computer the form of the analysis is unimportant and whatever degree of analysis is required can be provided.

Coding Structure.

To obtain maximum benefits from a computer a degree of standardisation within the computer procedures is essential. These procedures will be controlled by the coding structure and it therefore follows that all participating hospitals will be required to adopt common code numbers in respect of the main subjective and cost headings.

The size and grouping of the code structure and the layout of the code number will be decided when final decisions have been made by the Ministry on the revised accounting and costing system.

An important consideration for the participating hospitals will be the variation in the coding structure which will be permitted to meet local requirements. It is impossible to be specific on this point at the present time, but it is anticipated that all subjective heads appearing in the annual accounts and all departmental cost codes will need to have a common identification, thus limiting the scope for variations.

Endowment Fund.

A separate study will be made of the application of computers to the Endowment Fund accounting procedures.

Results of the Study. (Continued)

2. PAYMENT OF ACCOUNTS.

Payments of Accounts in this context refers to all payments from Exchequer Fund other than salaries and wages. The majority of these payments are made to traders in respect of goods received or services rendered and it is the requirements of this aspect of the work which form the basis of the proposed procedures.

To achieve the maximum benefit from a computer system, and to obtain prompt management information, expenditure should be brought into account as soon as an order is issued. However, to meet the requirements of hospitals who are not in a position to operate a Commitment Control of this nature in respect of all their spending departments, alternative levels of participation must be available.

The procedures have therefore been designed to provide three points of entry:-

1. Commitment Level - expenditure brought into account when an order is placed (see Appendix D, page 1.)

2. Goods Received Level - expenditure brought into account when goods have been received or services rendered. (see Appendix D, page 2)

3. Invoice Level - expenditure brought into account when a remittance advice is prepared. (see Appendix D, page 3)

Each hospital will be able to decide at which level or levels it wishes to participate. It will be possible for a hospital to participate wholly in one level or in a combination of levels depending on local circumstances. In order to provide this service it is essential that the next highest level incorporates and is complementary to the level or levels that precede it.

System.

The three input documents are:-

1. Official order.
2. Goods received note.
3. Invoice.

Results of the Study. (Continued)

In the highest level of participation - Commitment Level - all three will be processed; in the next - Goods received level - the goods received note and invoice will be processed, and in the lowest level only the invoice will be processed.

It is necessary for the computer system to identify the type of document and its level of participation. This identification will be achieved by a combination of source reference and a prefix or suffix to the document serial number.

The following tables briefly indicate the basic system that would be provided:-

INPUT DOCUMENT	INPUT REQUIREMENTS		
	Commitment Level	G.R.N. Level	Invoice Level
Official Order	1. Expenditure/Cost Code or Stores Catalogue No. 2. Quantity, price and discount of items ordered. 3. Trader's reference No. 4. Anticipated delivery date.	-	-
Goods Received Note.	1. Date of receipt. 2. Quantity received. 3. Official Order No.	1. Expenditure/Cost Code or Stores Catalogue No. 2. Quantity & estimated value of item received. 3. Trader's Reference No. 4. Date of Receipt. 5. An indication that order wasnt processed.	-
Invoice.	1. G.R.N. number. 2. Amount for payment.	1. G.R.N. number. 2. Amount for payment.	1. Expenditure/ Cost Code. 2. Amount to be charged to each head. 3. Invoice total. 4. Trader's reference No.

Results of the Study. (Continued)

OUTPUT	DETAILS OF OUTPUT		
	Commitment Level	G.R.N. Level	Invoice Level
Remittance advice and payment documents.	1. A remittance advice in respect of each trader. 2. Credit transfer documents or cheques together with supporting schedules.		
Periodical Print Outs.	1. Analysis of payments. 2. Analysis of outstanding accounts 3. Analysis of unfulfilled orders.	1. Analysis of payments. 2. Analysis of outstanding accounts.	1. Analysis of payments.
Exception Print Outs.	1. Outstanding deliveries details of items not received within 7 days of expected delivery date. 2. Cost fluctuations between order and invoice over agreed % 3. Outstanding Accounts details of items unpaid one month after delivery; complete print out as at 31st. March. 4. Unmatched items.	- - 1. Outstanding Accounts details of items unpaid one month after delivery. Complete print out as at 31st. March 2. Unmatched items.	- - - -

Results of the Study. (Continued)

In addition to the basic system shown above other supplementary procedures will be available capable of integration with it. These are outlined briefly below.

Special Items Control.

If details of the amounts set aside for special purchases and the decisions how this money is to be spent is supplied to the computer a complete special items control can be maintained. This control will ensure that any overcommitment is brought to notice immediately and also that a review of unordered items will be automatically provided. (See Appendix D Page 4.)

Standing Charges.

Given the necessary information a Periodical Payment Register will be maintained in the computer to record the various transactions and to indicate if amounts have not been paid by the due date. It will also be possible, if the hospital requires it, to prepare Remittance Advices and to make the appropriate payment in respect of charges that are standard. The standing charges register will also be used to allocate expenditure over the appropriate period. (See Appendix D, Page 6.)

Travelling Expenses.

A record of official mileage payments made to approved users can be maintained by the Computer. This record would enable the amount due in respect of mileage claimed to be calculated in accordance with the regulations and will also provide the correct allocation of the amount paid. (See Appendix D, Page 6.)

Patients Appliances.

A supplementary program will be available linked to both Payment of Accounts and Income procedures to provide an automatic control of the prices charged for the Patients Appliances and to check that the appropriate patients' contribution is received. (See Appendix D, Pages 7 and 8.)

Capital Expenditure.

A supplementary program will be available to provide all necessary controls and analyses of capital expenditure. (See Appendix D, Page 9.)

Central payment to Traders.

If a sufficient number of hospitals are prepared to participate payment of traders' accounts can be made directly from the Computer Centre after approval by the appropriate authority. A large proportion of the traders paid by each hospital are common to all and in addition to the saving in labour there would be an appreciable saving in stamp duty, bank charges and postage. (See Appendix D, Page 10.)

Results of the Study. (Continued)

INCOME.

Finance Officers have a statutory obligation to ensure that all income is collected and duly recorded in the books of account.

Income is derived from a number of sources, but can be considered administratively under the following headings:-

(1) Recurring Income, e.g. Rents, Sale of swill, collections from Telephone Call Boxes, etc.

(2) Occasional Income, e.g. Income which arises as a result of a particular circumstance, e.g. recovery from another authority the cost of a purchase made on behalf of that authority.

The problems of ensuring collection can be dealt with by maintaining a Periodical Income Register for Recurring Income and by using a coding control in respect of Occasional Income. Both these methods can be effectively applied by using a Computer.

Levels of Participation.

There are two levels of particiaption.

1. FIRST LEVEL.

   Debtors and Income. (See Appendix D, page 11)

2. SECOND LEVEL.

   Income. (See Appendix D, page 12)

Each level will provide the required analysis of income received and also update the appropriate control accounts. The First Level will in addition, make available, the following supplementary procedures:-

(i) Periodical Income Register.
(ii) Debtors' Control.
(iii) R.T.A. Control.
(iv) Control of recoverable expenditure.

Periodical Income Register.

The relevant details will be placed on a Master File within the Computer.

Processing of accounts raised (Debtors) and Receipt documents will enable the following service to be provided:- (See Appendix D, page 13)

Results of the Study. (Continued)

1. A reminder will be printed and sent to the hospital if an account has not been raised or income has not been received by the due date.

2. A complete record of all accounts raised and cash received will be retained on file. A print out of this information will be made at agreed intervals providing a 'hard copy of the Register' and the opportunity for editing.

3. Income will be automatically credited to the appropriate heads in the correct periods of account.

4. Arrangements can be made, at the request of the hospital, to program the computer to produce automatically accounts in respect of standard recoveries.

Debtor Control.

A Debtor Control Account will be maintained within the Computer and updated automatically when receipts are processed. Reminders in respect of overdue accounts will be raised at agreed intervals. (See Appendix D, page 14)

R.T.A. Control.

An R.T.A. Register will be maintained within the Computer. The program will undertake the necessary recording and hastening action in respect of Emergency Treatment Fees and Inpatient and Outpatient Charges. (See Appendix D, page 15)

Control of Recoverable Expenditure.

This can be established by allocating a number or series of numbers within the expenditure code for recoverable items. The initial charge and subsequent recovery will be analysed to the same code.

Printouts will be made at frequent intervals identifying the items that have not been recovered.

STORES ACCOUNTING.

This section deals with the maintenance of records for stores items where issues are recorded, evaluated and charged to the appropriate expenditure head. Items which are charged as the difference between the opening stock plus purchases and the closing stock can be accounted for by the allocation of a 'sub code' within the coding structure.

Results of the Study. (Continued)

The system is based on the following principles:-

(i) Management by exception.

(ii) Standard coding of items and standard units of issue.

(iii) The use of the catalogue number as the code debiting the value of purchases in the financial ledger.

(iv) Average pricing.

Although in accordance with the principle of management of exception, the information provided for hospitals will not be a record of each and every transaction this information will be on file in the Computer and available on request. (See Appendix D, page 16) Only one level of participation is provided.

Goods Received.

The receipt of items into stores will be recorded on Goods Received Notes indicating quantity and catalogue numbers of items received and the reference number of the supplier.

If the receipt is in respect of an order that has previously been processed (see section dealing with Payment of Accounts) the receipt will be temporarily valued at the price shown on the order. If it does not relate to an order previously processed it will be valued at the current or last known average price.

Invoices submitted for payment will show the Goods Received Note number, the stores catalogue number and the actual amount paid in respect of the item. The effect of this will be to update the temporary value shown in the stores ledger in addition to debiting the stores control account head in the financial accounts.

At the end of each accounting period the temporary values within the stores will be printed out and their total will be reconciled by the computer with the difference between the financial accounts and stores ledger balances.

Issues and Returns to Stores.

Wherever possible issues vouchers will be preprinted and a standard catalogue will enable all hospitals to use identical forms with consequent savings in printing costs. The quantity and catalogue numbers of items issued will be shown on the issue notes submitted for processing.

Generally speaking each stores item is peculiar to a particular subjective expenditure head and it will therefore only be necessary to indicate on the requisition the department and cost code to which the issue should be charged. Items which may be chargeable to more than one

subjective head will be given a distinct cost code indicating that further analysis is necessary and the appropriate information should be submitted on the stores issue note. Identical information will be shown on Stores Returned Notes which, of course, will not be preprinted.

Stores Re-Order Procedure.

Each stores item will be allocated a Maximum holding level and a Stores Re-order level, the latter being established with regard to the time that is likely to elapse between the notification that a re-order is necessary and the delivery.

When an item reaches or falls below the re-order level the computer will print out a re-order instruction indicating the catalogue number, re-order level, quantity held and complete details of the previous delivery. If an order in respect of the item has already been processed it will also indicate that a delivery is awaited.

Information Provided by Computer.

Periodical Information.

At the end of each month or at intervals to be agreed upon the following information will be supplied in respect of each stores ledger.

1. Quantity and value totals of:
   - (a) Balances at the beginning of the period.
   - (b) Receipts during the period.
   - (c) Issues during the period.
   - (d) Returns to store during the period.
   - (e) 'Write offs' during the period.
   - (f) Surpluses brought on charge during the period.
   - (g) Balances at the end of the period.

2. An analysis of the items 1(c), 1(d), 1(e) and 1(f) indicating in total the expenditure/cost codes and Control Accounts which have been credited or debited. These will be automatically posted to the financial accounts and no further action will be necessary by the hospital.

3. A detailed schedule of items which require further analysis.

4. A detailed schedule of items which have not moved over a period. The length of this period will depend on the type of store.

5. A schedule of receipts which have a temporary value and an indication that the total of these values reconciles the stores and financial ledger balances.

Results of the Study. (Continued)

Exception Print Outs.

1. Re-order advice when an item reaches the Re-order Level.
2. A detailed print out of all transactions since the end of the previous period in respect of items which show a credit balance.
3. Details of balances in excess of the Maximum Holding Level.

Stocktaking Print Outs.

It will be possible to provide an overnight processing service for stocktaking purposes. A statement of balances, printed in the form of a stocktaking schedule, would reach the hospital early in the morning updated in respect of all the transactions submitted to the computer for processing at the end of the previous day.

In addition, arrangements could be made to print out each week the quantity balances of items which have moved during the week in order to assist a continuous stocktaking programme.

Statistical and other Management information.

The issues made from stores are usually considered in financial terms. A quantity control could also be maintained if for selected items and departments a quota was established and provision made for the computer to give an exception print out if the quota was exceeded. In addition trends of consumption could be plotted thus providing assistance in contracting arrangements and preparation of estimates.

SALARIES AND WAGES (See Appendix D, page 17)

The preparation of salaries and wages and the ancilliary benefits that would accrue if a Computer Payroll system was adopted is dealt with in detail in the report covering the Payroll Study.

It is not the intention to repeat this information here, however, it does seem appropriate to emphasise the tremendous flexibility of the analysis that can be achieved under the proposed system. The developments in computers now make it possible to consider individual employees as single units and not as part of a 'section' of the payroll. The most obvious advantage of this is that the gross charge of an employee can if necessary be apportioned to more than one expenditure or cost code. Equally it provides the opportunity for more sophisticated statistical control enabling adverse trends to be analysed in such detail that the causes can be pinpointed acurately.

Results of the Study. (Continued)

INTEGRATION OF PROCEDURES

The processes which have been outlined in the previous sections of the report must be integrated to produce the financial accounts of the authority, budget comparisons and other management information. This integration will be achieved by the use of an Expenditure and Cost Analysis File which will be linked to the computer during every process.

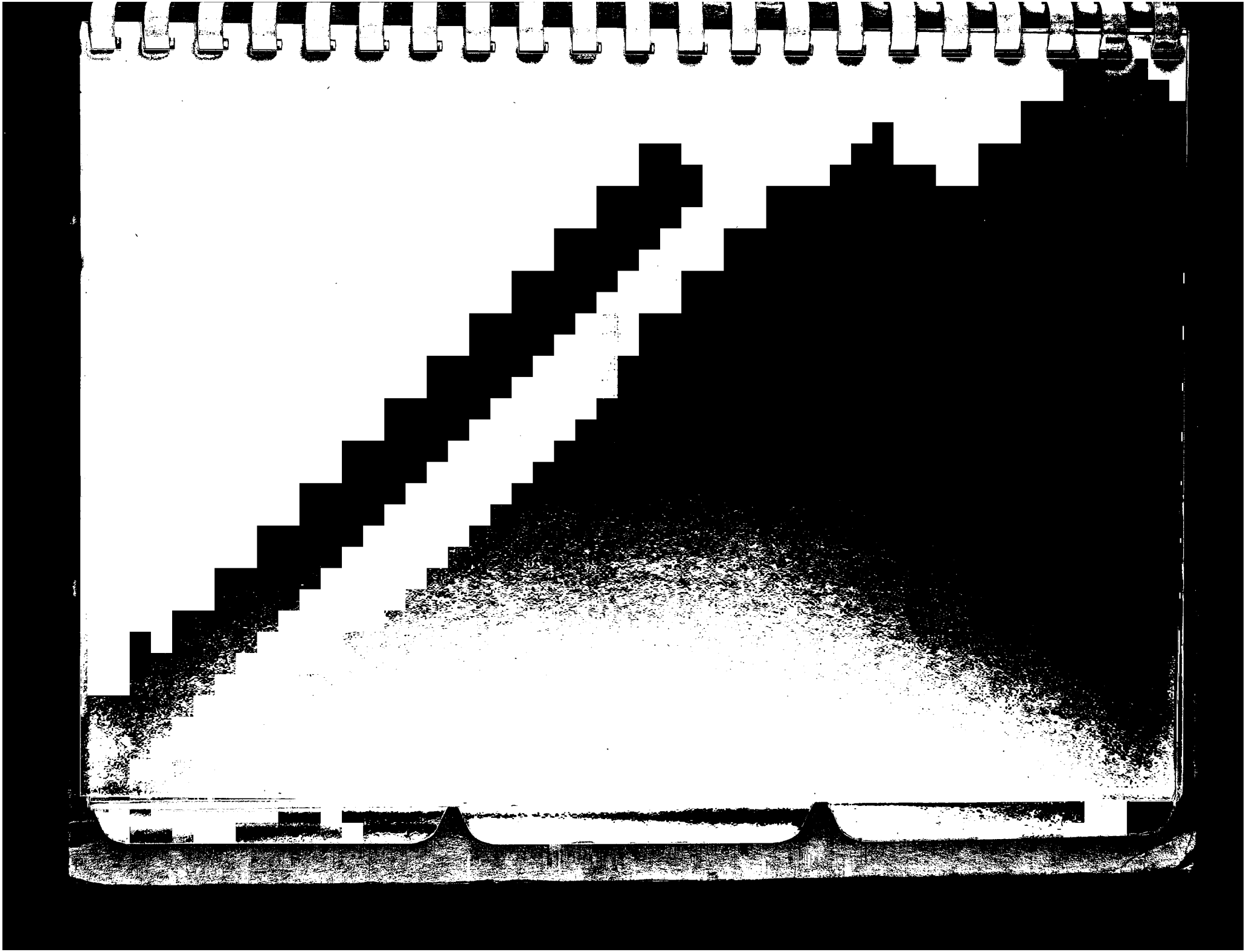
It is intended that Journal Transfers in respect of coding adjustments and subsidiary accounting transactions will be processed directly to this file.

At agreed intervals this file will be processed to produce the necessary information (See Appendix D. pages 18, 19 and 20).

CONTROL ACCOUNTS

It is intended that all necessary Control Accounts will be maintained and that Revenue and Capital Cash Reconciliations will be provided.

SECTION THREE



COMPUTER PAYROLL STUDY

OBJECT

To ascertain the feasibility of using a centralised Computer to provide a complete and economic Payroll Service, fully integrated with the financial accounts, for the twenty-six London Teaching Hospitals.

FIELDS

The intention is to make full use of a Computer's capabilities and not to use it merely as a fast calculator. With this in mind the Study was divided into the following fields:

1. Conditions of Service

The interpretation and application of the Conditions of Service for the various categories of Staff employed by hospitals, was considered an essential part of a Computer service; otherwise full economies of labour and time would not be achieved. In order to examine the programming difficulties of this proposition it was decided that the Conditions of Service for Ancillary Staff and for Nurses and Midwives, being the most complex of all the categories of staff, should be analysed in detail.

2. Computer Input

The quality of the service which can be provided depends, to a large extent, on the data supplied by the participants and the speed with which it can be accepted by the Computer. We decided, therefore, to concentrate on the following aspects:

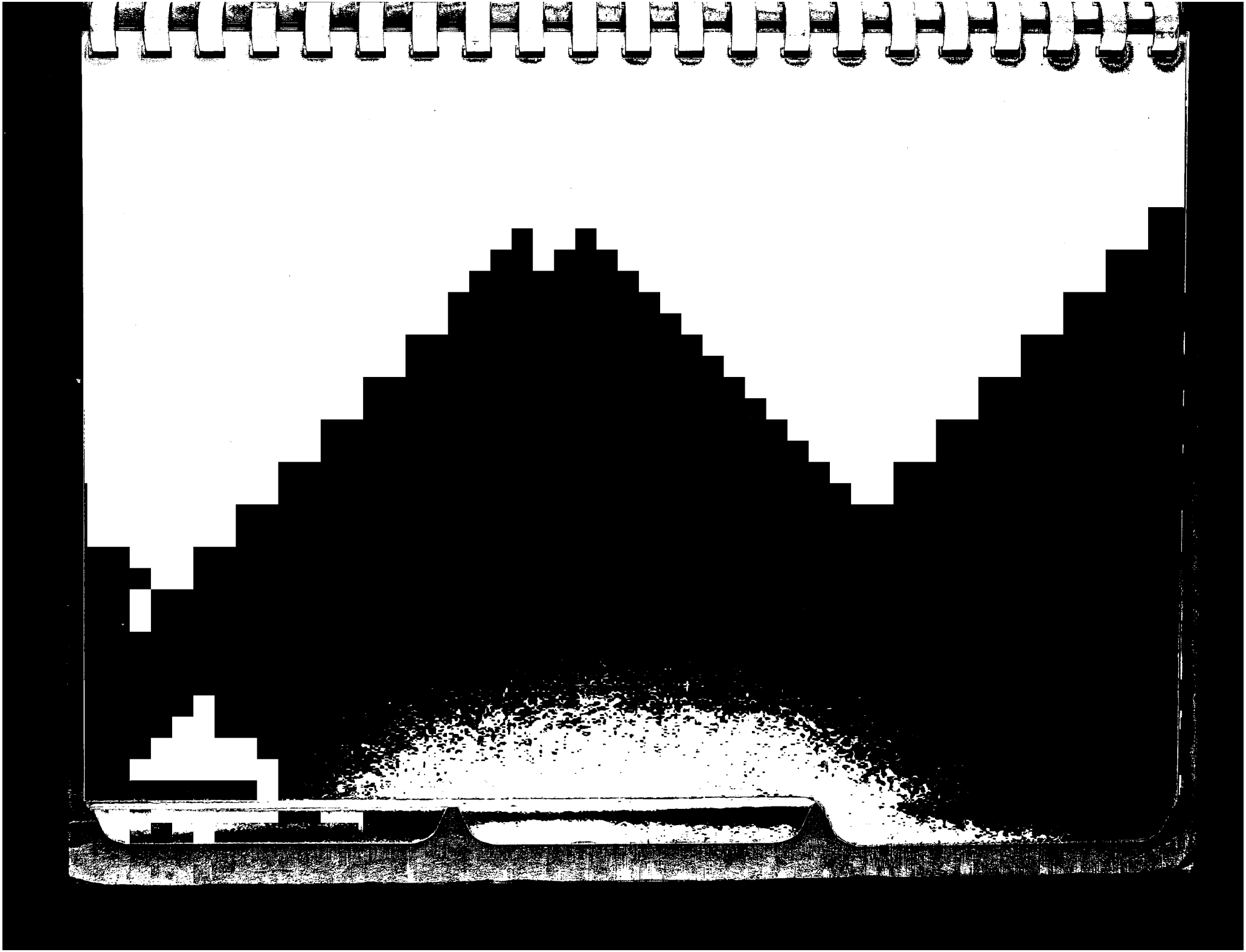
(a) The input information essential to the automatic production of the payroll and ancillary records.

(b) The design of the input documents.

(c) The use of modern input techniques for a Computer i.e. Optical Character Reading and Mark Sensing equipment.

3. Payroll System

In order to make full use of a Computer's capabilities it was necessary to design a system which incorporated all the essential aspects of a payroll service and which provided the maximum benefits to the participating hospitals and their employees.



S E C T I O N T H R E E

PAYROLL

COMPUTER PAYROLL STUDY

OBJECT

To ascertain the feasibility of using a centralised employee and economic Payroll Service, fully integrated with all accounts, for the twenty-six London Teaching Hospitals.

FIELDS

The intention is to make full use of a Computer [illegible] to use it merely as a fast calculator. With this [illegible] divided into the following fields:

1. Conditions of Service

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(b) The design of the input documents.

(c) The use of modern input [illegible] Character Reading and Mark Sensing [illegible]

3. Payroll System

In order to make full use of a Computer's [illegible] ary to design a system which incorporated all [illegible] a payroll service and which provided the maximum [illegible] peting hospitals and their employees.

COMPUTER PAYROLL STUDY

CONCLUSIONS

1. It is feasible to provide an economic and complete Payroll Service from a centralised Computer.

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2. To keep the expensive programming costs to a minimum it will be necessary to standardise on the methods of input and Computer output for the participating hospitals.

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3. Conditions of Service, except points of entry to salary scales, can be applied by the Computer and so provide a largely automatic system making full use of the Computer's capabilities.

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4. The Salaries and Wages Sections of the Finance Departments will be relieved of many of their tedious routine duties.

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5. Providing the variable payroll input is correct, all calculations of Salaries and Wages will be accurate.

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6. The detailed pay slip will enable employees to see exactly how their pay has been calculated.

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7. The provision of management information will assist Finance Officers, Administrators and Heads of Department by indicating adverse trends and will ensure more accurate estimating and control of expenditure.

RESULTS OF THE STUDY

1. ANALYSES OF THE CONDITIONS OF SERVICE

The Conditions of Service for Ancillary Staff and for Nurses and Midwives have been analysed and are shown in Appendices A and B respectively.

Meetings were held with the senior Salaries and Wages Clerks of the participating hospitals and these were most useful in determining the problems which are encountered in applying the Conditions to the calculation of Salaries and Wages. It was immediately apparent that standard interpretations of certain complex regulations were required and it has been necessary to consult the Management Sides of the respective Whitley Councils and the Ministry of Health Superannuation Division.

A. Ancillary Staff (Appendix A)

This analysis was based on the current Handbook and the subsequently published circulars up to and including A.S.C. 82.. One of the major difficulties with this category of staff is the number of allowances and enhancements which affect pay entitlement and an opportunity has been taken to classify these into the following categories:

(i) Those of a permanent or semi-permanent nature.

(ii) Those of a variable nature.

(iii) Those calculated from the days and hours worked.

We are pleased that, when the analysis was sent to the hospitals in advance of this report, this classification was of immediate benefit to a large number of Salaries and Wages Sections.

B. Nurses and Midwives (Appendix B)

At present, there is no published Handbook on the Conditions of Service for Nurses and Midwives and this analysis was based on all the published circulars up to and including N.M.C. 118. This proved to be a difficult task because circulars do not wholly supercede those previously issued and, in certain cases, there is a lack of precise rulings.

Results of the Study (Continued)

2. INPUT DOCUMENTS

The analyses indicated the variable information which must be submitted to the Computer for the calculation of Salaries and Wages. The necessary input documents, which are shown in Appendix C, have been designed to provide this information in the most efficient manner having regard to the following requirements.

(a) Ease of completion

(b) Avoidance of duplication i.e. the prime document will be used as input.

(c) The need to provide legible copies for the information of hospitals and employees.

(d) The use of modern Input techniques for a Computer.

These requirements can be met by the use of documents designed for acceptance by the Computer through Optical Character Reading or Mark Sensing equipment. This obviates the need for costly and time consuming punching and verifying. Equipment of this type has been viewed, tested and discussed with various manufacturers. At present, a limitation is placed on the size of the document, the amount and spacing of the information contained on it and the type of character or mark which can be read. However these disadvantages are more than outweighed by the ease of completion and the fast and accurate processing of the documents. This equipment is therefore admirably suitable for variable payroll input, particularly for Ancillary Staff.

A time record, being the prime document for the calculation of weekly wages, presented the most difficult problems of design and several types were drafted, discussed and rejected before the final lay-outs were agreed. A novel approach was made necessary because some hospitals were reluctant to accept any proposals to discontinue the use of clock cards. The manufacturers of Time Clock equipment were asked to consider the production of a machine which, operating in the normal way, would print times, in a legible type acceptable to an Optical Character Reader, with extreme accuracy on the required position on a clock card. This proposition had never before been put to these manufacturers and it is exciting, therefore, to report that at least one manufacturer has stated that this is a practical suggestion and such a machine can be produced at a cost comparable to existing machines.

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(b) Avoidance [illegible] input.

(c) The need to provide [illegible] and employees.

(d) The use of modern [illegible]

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Results of the Study (Continued)

3. PROPOSED PAYROLL SYSTEM

The Computer will automatically apply the conditions of service in calculating Salaries and Wages from the standard information contained within each employee's personal record and from the variable information reported weekly. In addition, the system provides for the fullest possible information to be made available to both hospitals and employees. All these factors are explained more fully in the following four sub-sections:

A. Personal Record Details

B. Ancillary Staff

C. Nurses and Midwives

D. Computer Output

The relevant documents are listed at the beginning of each sub-section, with a reference to the page number of Appendix C on which they are shown:

A. Personal Record Details

Documents:

Personal Record Card	Page 1	Appendix C
New Appointment Notification	Page 4	Appendix C
Staff Transfer Form	N.H.S. Form	
Notification of Absences	Page 5	Appendix C
Request for Payment of Salary by Credit Transfer	Page 6	Appendix C

A complete record of the necessary information in respect of each employee will be maintained on file within the Computer. This information will be obtained and updated as follows:

New Appointment Notification

This document will be prepared by the employing officer and the Finance Department. Following processing by the Computer a Personal Record Card will be printed out in duplicate and returned to the hospital.

Variation of Personal Record Details

The duplicate copy of the Personal Record Card will be used by the Finance Department to notify the Computer Centre of changes simply by printing the new information in a space immediately below the details to be amended. The Finance Department will be given a guide to the various important changes which can occur e.g. Marriage, Leavers, etc. showing the series of amendments to be made and new information to be reported. Again the Computer

Results of the Study (Continued)

will print out a consecutively numbered Personal Record Card in duplicate (a) to show that the amendments have been correctly incorporated, thus providing an up to date record, and (b) to make available a copy on which to notify future changes.

Routine changes arising from age, incremental scales, length of service etc. will be applied by the Computer without the need to feed 'variation' information and a new personal record card produced automatically for major changes.

Employee's Pay Record

To avoid unnecessary documents, the payroll will not be duplicated by printing an employee's pay record on the personal record card. However such a record will be available on request for Audit purposes.

Staff Transfer Form

This form will not be necessary for staff transfering between hospitals within the Computer Scheme. The established National Health Service Form will be used for staff coming within the Computer Scheme from other reckonable employments and it is envisaged that the request for this information will be printed out by the Computer. When employees leave a hospital and the Computer Scheme, a Staff Transfer Form will be automatically produced for all salaried staff and will be available on request for weekly paid staff.

Notification of Absences

Administrators and Heads of Departments or Authorising Officers will submit this form weekly in respect of their staff. Further processing by the Finance Department should not be necessary as the Computer will check entitlements and print out unacceptable information. At agreed intervals an Absence Record Form will be sent out to the Finance Department.

Request for Payment of Salary by Credit Transfer

Employees will complete this form and it will require only a small amount of extra information from the Finance Department before it is submitted to the Computer.

Results of the Study (Continued)

B. Ancillary Staff

Documents:

Clock Card	Page	7	Appendix C
Time Sheet	Page	10	"
Return of Work in a Higher Grade	Page	12	"
Extra Duty Payments to Building Craftsmen and Labourers	Page	13	"
Return of Slaughtering	Page	14	"
Return of Assistance at Post Mortems	Page	15	"
Return of Mechanical Truck Driving	Page	16	"
Return of Stoving	Page	17	"
Return of Instruction and Care of Patients (Psychiatric Hospitals)	Page	18	"

Ancillary Staff wages will be calculated by the Computer from the standard information contained in the personal records and the variable information reported weekly. The prime document on which the calculation is based is, of course, a time record and a choice of either Clock Cards or Time Sheets will be available to a hospital or departments within a hospital. These will be completed by employees and Heads of Departments or Authorising Officers and will require no further processing by the Finance Department. It is appreciated that this will result in Head of Departments in some hospitals doing more than is now required but in other hospitals, it means a reduction of their present duties. It can not be stressed too strongly that Heads of Departments or Authorising Officers are the only persons who are qualified to complete these forms.

Similarly all the other input documents for Ancillary Staff are to be completed and submitted to the Computer by the Heads of Departments or Authorising Officers.

The original intention was to feed the Computer with standard hours of duty, weekly shifts and shift rotas in respect of each employee or grades of employees. Unfortunately this proved to be an impossible task because hospitals cannot provide this information and standard duties are frequently changed due to staff sickness and vacancies. This resulted in the need to include spaces on the clock card for Times Adjustment and Absence Hours and Normal Hours on Saturday p.m. and Sunday to enable the Computer to calculate wages accurately.

The Computer will print the heading information on the clock cards and time sheets which will be sent to the hospitals some time, probably several days, before the week for which they are required. These can only be used for the employees indicated by the heading but a number of clock cards and time sheets with emergency reference numbers will be included for new starters and as replacements for spoiled or lost documents. Reference to the employee concerned will be made by submitting a control form with the emergency cards and sheets.

Results of the Study (Continued)

Holiday pay will be paid to employees immediately before periods of annual leave which cover complete pay weeks. It will be necessary for Heads of Departments or Authorising Officers to report the leave on a Notification of Absence form not later than the beginning of the week during which the payment is required. When preprinting the clock cards or time sheets for the weeks of absence, the Computer will indicate on them that an annual leave notification has been received. Wages in respect of the week worked prior to the period of leave will be processed and included on the payroll for the week on which the employee returns to work.

Initially it will be necessary for the Finance Department to calculate the payment due to an employee on leaving. The final clock card or time sheet together with notification of the actual net amount paid will then be submitted to the Centre for inclusion in the following week's payroll. The Computer will recalculate the wages treating the amount paid as an advance of pay to be recovered through 'other deductions'. Any adjustment necessary, due to an over or under payment, will be revealed in the net pay with a suitable identification signal. Over payments will, in fact, be immediately reported to the Finance Department and excluded from the coinage analysis.

For the adjustment of incorrect wage payments made due to the lack of or wrong data being supplied, it will be necessary to re-submit the original clock cards or time sheets with the amendments either marked on them or on supplementary claim forms. Clock cards and time sheets will be automatically cancelled when processed through the Computer Centre and can only be re-accepted when stamped by a special coding mark (which will be kept by the Finance Department) and accompanied by a certified control sheet. The incorrect payment will be recalculated and a separate payroll entry made in respect of the adjustment. Correcting payments made by the Finance Department will be notified to the Centre and treated as a recoverable advance of pay.

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Results of the Study (Continued)

C. Nurses and Midwives

Documents:

Application for Night Duty Payment	Page 19	Appendix C
Application for Sunday Duty Payment	Page 20	"
Application for Rebate of Board and Lodging for Off-Duty Absences	Page 21	"

The number of input documents for salaried staff is, of course, much less than those required for Ancillary Staff. The standard information contained within the Personal Record file to-gether with the variation information e.g. Absences, Special Duty Payments etc., reported to the Computer, will provide the basis for the calculation of the salary.

It is felt that the three documents mentioned at the beginning of this subsection can be completed by all grades of Nurses and Midwives and certified by a Ward Sister or Matron, without the need of any processing by the Finance Department. Part-time Nurses and Midwives who are allowed to be paid weekly will be required to complete a time sheet each week. The time sheet designed for Ancillary Staff (See Appendix C Page 10) will be used and the spaces for Irregular Allowances will be ignored.

The Conditions of Service for Nurses and Midwives present no unsurmountable programming difficulties with the exception of the regulations concerning the Points of Entry to Salary Scales (See Appendix B Page 14). So much is left to the discretion of the Employing Authority that it will be necessary for the Finance Department to notify the Computer of the commencing salary for each new employee. The Computer will check that this falls within the salary scale for the grade and that in the case of unbroken service or promotion the conditions have been applied.

Early payments of salary for employees on annual leave before the normal pay day and over the end of the month will be made, on request, on the weekly pay day immediately preceding the period of leave. However, it is not the intention to allow this concession for a Nurse or Midwife who has requested the payment of his/her salary into a bank account. An interim payment adjusting an incorrect calculation of salary due to the lack of or wrong information being fed to the Computer, can either be made immediately by the Finance Department or in the follwoing week by the Computer. Details of the net amount paid by the Finance Department to-gether with the corrected information, showing effective dates, will be sent to the Centre for inclusion in the next payroll. The salary will be recalculated by the Computer treating the amount paid to the employee as an advance of pay recoverable through 'other deductions'. Theoretically this payroll entry should result in a 'nil' net pay. However over or under payments made by the Finance Department will be revealed in the 'Net Pay' box and indentified by a suitable signal.

The salaries of staff leaving the hospital will be calculated by the Computer providing notice is given to the Centre. Adjustments in respect of annual leave taken over or under the employee's entitlement will not be made unless requested.

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D. Computer Output

Documents:

Payroll and Pay Slip	Page 22	Appendix C
Acquittance Roll	Page 23	"

The Payroll and Pay Slip have been designed to meet the following requirements.

(a) Settlement of Pay Queries

Full details of the calculation of pay and supplementary information, are given in narrative form in order that employees can agree the payment or ascertain other pertinent personal facts without contacting the Finance Department.

(b) Urgent Payments

Sufficient information has been included to enable the Finance Department, when necessary, to calculate interim or final payments.

(c) Pay Envelope

The pay slip can be printed on the pay envelope thus saving the considerable time now spent in folding, stripping and inserting pay slips into separate envelopes.

An Acquittance Roll has been designed to help in the actual paying out of salaries and wages and the receipt of employee's signatures. It will, of course, be equally convenient for witnessed pay parades.

Payroll control will be effected by:-

(i) recording number by grades and hospital for reconciliation with a record of leavers, joiners and voids.

(ii) rejecting variations of a certain percentage over or under a norm for a grade.

(iii) reconciling the cumulative gross pay and income tax with the previous payroll, taking into account leavers and joiners etc.

The following important by-products from the processing of the payrolls and from the information contained within the personal records, will be of great benefit to hospitals.

1. Ledger Postings

(a) The relevant payroll totals will be automatically posted to the respective ledger accounts.

(b) Each employee will be coded to the correct allocation and, if necessary, apportioned over a number of cost heads.

Results of the Study (Continued)

(c) Retrospective coding adjustments can be evaluated and the appropriate financial transfers made by the Computer.

2. Net Payment to Staff

(a) In addition to the payroll and acquittance roll the undermentioned schedules will be produced.

(i) Triplicate schedules of Bank Transfers for each payroll in a form acceptable to the banks. The possibility of making credit transfer payments by 80 column punched cards is being investigated.

(ii) Schedules of cheques per payroll.

(iii) Coinage analysis per unit and pay point or section.

(b) The Computer can, if required, prepare the cheques.

3. National Insurance

(a) The totals of Employer and Employee contributions will be given for each payroll showing the amount due to the Ministry.

(b) Immediately after the end of each quarter schedules will be prepared of the National Insurance Cards due for exchange, in a form suitable for submission to the Ministry. This will be negotiated; as it is standard practice it will not present any problems.

(c) Each payroll entry will indicate the cumulative number and denomination of Insurance Stamps contributed by the employee for his or her current card. This will assist the Finance Department in the completion of form CF 187 in respect of leavers.

4. Superannuation

(a) The major schemes approved by the Superannuation Division will be programmed and the Computer will calculate the contributions in accordance with the regulations. Other schemes which affect only a small percentage of the total payroll will not be included. A standard deduction for each employee will be applied and adjustments will require notification.

(b) The Computer will provide and store information for Forms AW and SD. 55

(c) Quarterly and annual summaries per individual and Insurance Companies will be given for F.S.S.N. premiums. These will be related as far as possible to the employee's contributions during the appropriate period.

Following discussion with the Ministry of Health it has been agreed that data required by the Superannuation Division will ultimately be sent to them direct from the Computer Centre, in a form acceptable as input for their intended computer installation.

Results of the Study (Continued)

5. Income Tax

(a) Totals of the tax deducted on each payroll will be given, showing the amount due to the Collector of Taxes.

(b) End of Year, tax balancing will be an automatic and fast process.

(c) Income Tax forms P.45, P.47, P.35 and end of year P.9 or 11 and P.60 will be automatically produced.

6. Graduated Pension

(a) The Computer will be programmed to calculate the appropriate deductions. Employees will be automatically contracted in or out in accordance with the regulations and notification given to the Finance Department.

(b) Totals will be given for each payroll showing the amount due to the Collectors of Taxes.

7. Statistical and Management Information

(a) The Computer will either provide information for the completion of the following returns or, if amended layouts can be agreed, print the information in a suitable form.

(i) Ministry of Health statistical returns on staff.

(ii) Ministry of Labour return of Wage-earners.

(iii) Schedule of Registered Disabled Employees.

(b) The management information which can and should be produced depends, to a large extent, on the requirements of individual hospitals. The Committee is, at present, considering this aspect which will, without a doubt, be subject to rapid development when the capabilities of third generation Computers are more generally realised and appreciated. A number of suggested aids to management are listed below.

(i) A schedule of staff affected by wage and salary awards under grade, department, hospital, showing the current and future costs of such awards.

(ii) Estimated annual salary and wage costs by grade, department, hospital.

(iii) Budgetary control statements.

(iv) Staff turnover by grades/hospital showing reasons for wastage.

(v) Absences and sickness in days by grade/hospital.

(vi) Comparison of staff in post with establishment.

(vii) Ancillary Staff - an analysis by grades/departments/hospitals of gross pay showing hours worked and hours paid under normal, overtime, weekend enhancements, Bank Holidays, split duties etc.

(viii) Overtime payments converted by grades into full-time staff equivalents.

A1.

22 JAN 1965

THE HOSPITAL CENTRE