King Edward's Hospital Fund for London
An Evaluation of New Guy's House

carried out at the request of
the Board of Governors of Guy's Hospital

London 1963 15s.

Contents

Foreword

The decision to arrange for an evaluation of New Guy's House was taken by the Governors for two reasons. The first was to establish as accurately as possible the extent to which the building is fulfilling the intentions of those who planned it and is meeting the needs of patients and staff as a surgical block. The second was to provide guidance to other authorities who may now be planning, so that they might avoid Guy's mistakes or perhaps benefit from our successful innovations. As will be seen from the report, the aims of the evaluating committee have varied slightly from those which the Hospital first had in mind.

Our experience in planning was that most important decisions involved compromise between the ideal and the practicable and many decisions are finely balanced. This is particularly the case when finance available is arbitrarily limited. Inevitably in an evaluation the weaknesses which follow a compromise in design can be pointed out, not always with full appreciation of the advantages which were thought to outweigh them.

The decision to have the evaluation carried out independently was deliberate and in inspiring the composition of the evaluation committee the aim was to secure balanced representation.

One of the biggest difficulties which the Hospital feels has been shown up is that of achieving complete objectivity in an evaluation. It would be unrealistic not to admit that all of us over the years have developed ideas on crucial points in hospital planning from which we find it difficult to depart. It was to avoid bias in the Hospital's own favour that the Governors wished for an independent evaluation, but it is probably true that even on a "balanced" team such as that which undertook the survey it is hard for an individual to be objective about a design which is the opposite to that which he may have advocated over the years.

If the Hospital were asked to sum up, it would probably say that most of the faults in the building had been enumerated, but that the team had failed on some occasions to express itself as strongly about these as the Hospital would have done. Not all the criticisms in the report are felt to be justified. In particular, bare justice is done to some of the more controversial features in the new building and especially is this true of the ward layout. This was publicly criticised in "The Times" correspondence columns in 1960 and the Hospital in reply wrote:-

"------ whether our ward layout sets a pattern for the future must be dependent upon a factual assessment of its merits and demerits after a fair working period, and in comparison with a layout conceived on a single room or small unit principle".

It was not in the terms of reference of the evaluation committee to make this comparison and it is quite certain that a further impartial study comparing the wards in New Guy's House with wards of alternative type in other teaching hospitals of comparable standard is needed. The general opinion of the medical and nursing staff at Guy's remains that the open ward as planned in New Guy's House is preferable for most categories of patients and that the majority of patients find its advantages to be very real.

The report does not perhaps emphasise sufficiently that when overriding limitations on space or money involve reasonable compromises in planning these need not materially affect the efficiency of the work performed in the buildings which result. The shape of the theatre floor is largely dictated by that of the ward block above. With good discipline and organisation there has been no significant difficulty in operating the single corridor system which it has made necessary. Similarly, the Central Sterile Supply Department which was planned when little was known in this country about central sterile supply, and is probably far from the ideal shape, is providing a service of the highest quality and efficiency.

The Governors are deeply indebted to the evaluation committee and particularly to Mr. Constable and Mr. Hall for all the time they have

unsparingly given to a task which must, in its complexity, have become on occasion almost overwhelming. They are also most indebted to the King Edward's Hospital Fund for London for its generous assistance in making it possible to present the report in its present form. They hope that the publication of this evaluation will be of real assistance to other authorities in finding solutions to their problems. Already action has been taken at Guy's to put right some of the defects that have been found.

So far as it is possible to generalise, there is no doubt that New Guy's House as a building is popular with patients and staff. Guy's would venture to say that it has overall successfully achieved the aims of those who planned it, both in its facilities for patients and for the staff who care for them.

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A H Burfoot
Clerk to the Governors

30th April, 1963.

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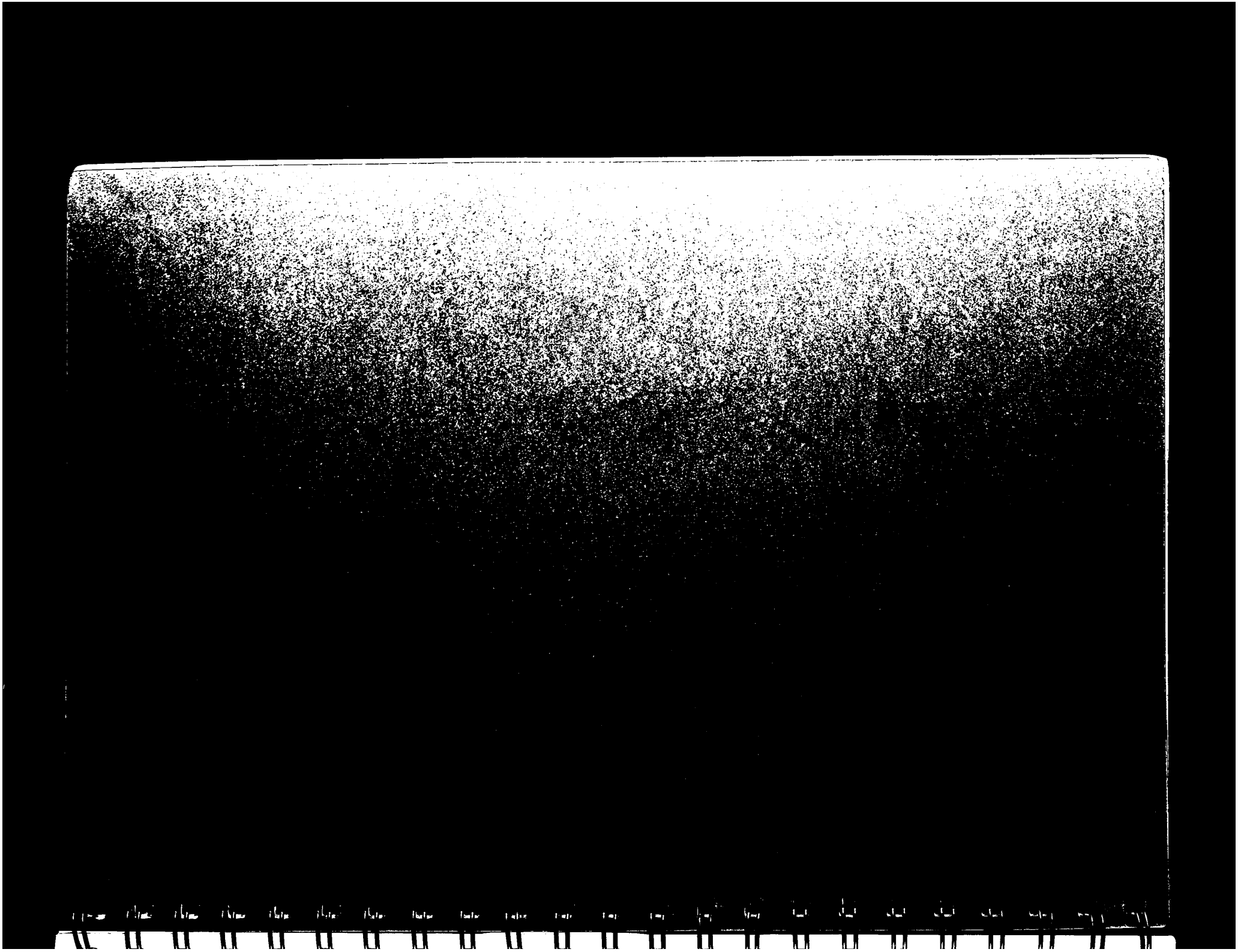
An Evaluation of New Guy's House



1 Introduction

The rebuilding of Guy's Hospital had been under discussion since 1943, and it is estimated that some 18 - 24 months were spent in preparing the schedules of requirements before the planning of New Guy's House in its final form began in 1954. The first of its 378 beds was opened for use in March, 1961. It marked the beginning of a new era in hospital development in this country after a long period of little activity, due mainly to the war. It represented in practical terms a considerable step forward in hospital design and practice.

Much time had been spent on planning New Guy's House and selecting its equipment, and all concerned wished to know the opinion of others on the advantages and disadvantages of the new building as compared with other hospitals, so that useful information could be passed on to all engaged in the planning of similar projects. The Board of Governors accordingly decided to seek an evaluation or assessment of New Guy's House, and a meeting was held at Guy's Hospital on the 3rd July, 1962, to discuss this subject. At this meeting representatives of King Edward's Hospital Fund for London and the Ministry of Health, together with a number of other persons engaged in hospital work and known to have a special interest in the proposed study, were invited to meet members of the hospital's medical, nursing, administrative and other staff who had been closely associated with the project, together with Mr. A.S. Gray, the architect of the building. Altogether, 32 people attended the meeting. They were welcomed by Lord Cunliffe, Chairman of the Board of Governors, who said that the Board, members of the staff and all associated with the new building would give every possible assistance to the evaluation team. Mr. P.H. Constable then took the chair, and it was resolved that the meeting be constituted the Evaluation Committee.

The Evaluation Committee in this report wishes first to express its thanks to the Board of Governors for the opportunity to conduct the study and for the unrestricted facilities which were granted. The task was made easier, and its completion has only been made possible, by the help received from so many people, particularly the Medical Superintendent and the Matron. Special mention must be made of the assistance given by the Clerk to the Governors, Mr. A.H. Burfoot and by Dr. P.J. Helliwell who gave up a great deal of his time so that the Evaluation Committee could have the benefit of his intimate knowledge of the planning and operation of the building.

At the first meeting of the Evaluation Committee Guy's Hospital representatives described the objectives, problems and experience of building and running New Guy's House, and answered many questions. A general discussion followed and it was agreed that the main purposes of the evaluation study were: first, to see how effectively New Guy's House provided for the medical and nursing care of the patients, and their comfort, and for the teaching of medical students; and, secondly, to test evaluating methods so as to provide experience for the subsequent evaluation of new hospital buildings.

The Evaluation Committee decided that a Working Party should be set up to undertake the detailed studies required to assess the building both as a functional unit in relation to the original brief and current concepts, and as a guide to future planning. The assessment was to have reference to the wards, theatres, and central sterile supply department; the casualty department was excluded because the planning of this had been governed very largely by special circumstances which no longer applied.

2 Evaluation procedure

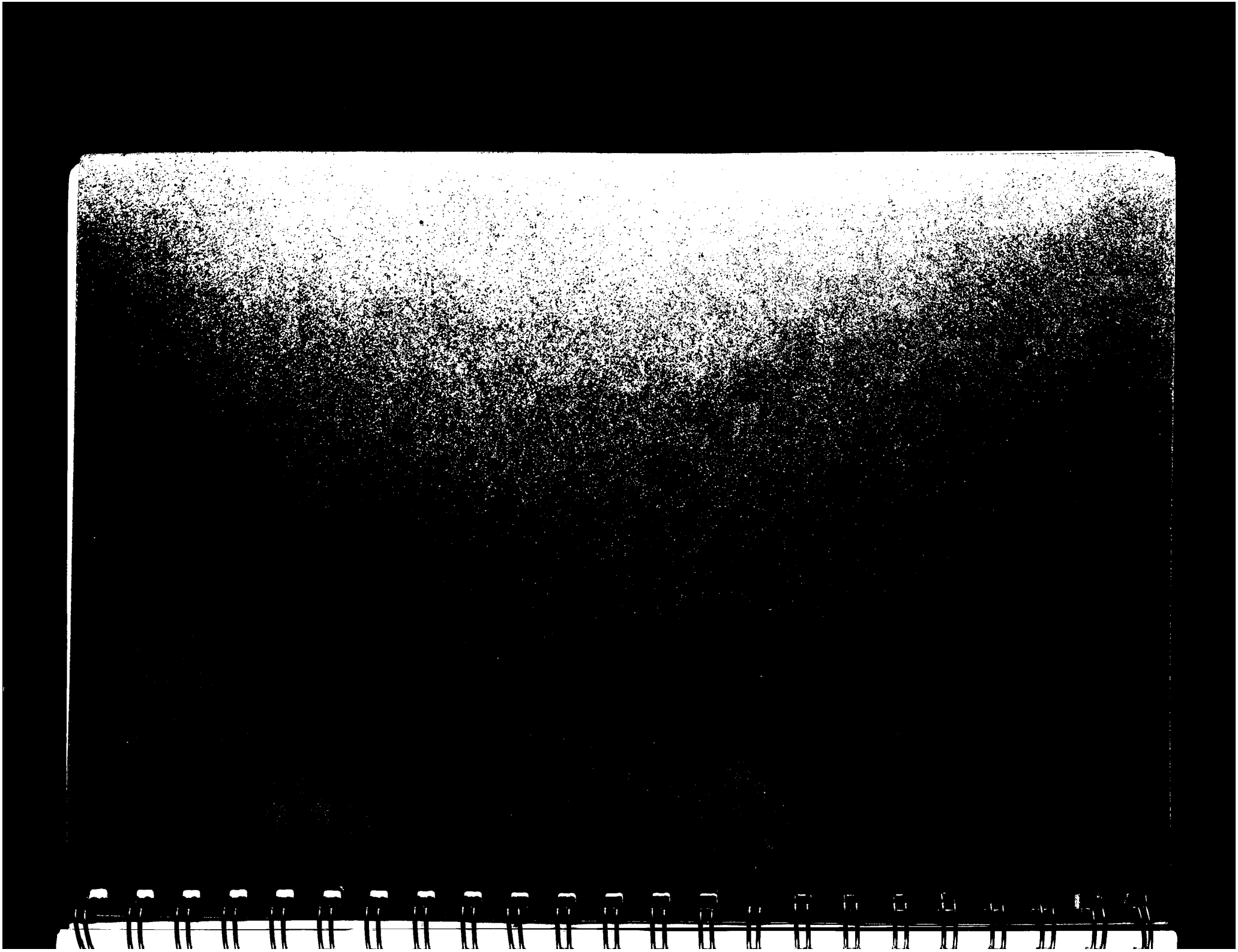
To some extent the study has been limited by reason of the short time the building has been in use. The commissioning period dated from the 2nd January, 1961, when the building was formally taken over from the contractors, until the 10th August, 1961, although all the wards were occupied by the 15th June, 1961. It was not until April, 1962, that the medical patients temporarily accommodated in New Guy's House were moved to other parts of the hospital and the wards used solely for surgical patients. These changes in use have prevented a stable period of normal running, and this has affected the statistics relating to operating sessions and bed occupancy. Furthermore, there has not been time to form an effective judgment on wear and tear, or for the hospital to gain full experience of the problem of re-decoration in the new block.

The Working Party consisted of 14 members, who were chosen to provide a balanced representation of medical, nursing, administrative, architectural and engineering interests. All the members served on a part-time basis, which meant that they had to find time for the evaluation work in addition to their normal duties. Mr. W.E. Hall kindly agreed to act as Secretary of the Evaluation Committee and of the Working Party, and the King's Fund agreed to provide additional clerical and other help.

The Working Party had a larger membership than might otherwise be thought necessary for a study of this kind. It was difficult to arrange meeting dates that were convenient to all concerned, and it was an uncomfortably large number of people to visit wards or other departments at one time. On the other hand, for the purposes of this particular evaluation, it was decided to make the Working Party a large one, so that more people could gain practical experience of evaluation procedures and so that by dividing up the work between the members the evaluation as a whole might be more quickly completed. In practice this meant that for part of the time the Working Party was divided into two teams: one team consisting of seven members, under the leadership of Dr. Davies & Dr. Shaw, to study the theatres, and the other consisting of six members under the leadership of Dr. Gleeson-White to study the central sterile supply department. A further sub-division of work was arranged for the study of the wards.

With the help of suggestions and draft material submitted by the individual members, an outline programme was prepared which also served as an aide-memoire on the many points to be taken into account. To accomplish the task within a reasonable time the Working Party set itself a time limit of four months for the collection and sorting of facts and opinions, and this part of the timetable was adhered to. It now seems unlikely that this section of the work could have been done more quickly, partly because it was found necessary to call for additional information during the course of the study. On the other hand, the overall timetable, as well as the limited amount of time individual members could devote to the task, had some bearing on the depth of the enquiry, i.e. the extent to which it was possible to examine in detail all the features of the planning and functioning of the new building. The procedures followed by the Working Party and its individual members and teams are described in detail in chapter 11, together with some observations on the lessons learned from the experience of this evaluation study.

In general, the study has clearly shown the extent to which an evaluation is dependent upon the co-operation and experience of the staff and patients using the building. Factual evidence of value to the Working Party was often already in being in the hospital's current records and files, but even so the information had to be extracted and analysed. On other occasions, the factual information required had to be specially compiled for the Working Party. The brochure prepared by the hospital for issue at the time of the opening ceremony contained much useful information.*



The amount of time that individual members were able to spend in the hospital was necessarily limited, and they were therefore to a large extent dependent upon the staff telling them whether or not the activities noted during the periods of observation were typical. To this extent, the frankly expressed views of the staff and patients frequently gave clues to further lines of enquiry. This ready co-operation made the task of the Working Party easier.

This study has also shown that the interpretation of such a mass of information is not easy. On many matters a complete assessment would have required a much larger volume of factual evidence than could have been gathered in the time available. In this study the Working Party was not called upon to look at all things in such a searching manner and felt justified in weighing up what information could reasonably be obtained and in expressing opinions in the light of the members' own hospital experience.

The Working Party's report, which follows, is not a case study of New Guy's House. It is an attempt to assess a building at work as part of an undergraduate teaching hospital providing service to the public. The material upon which the assessment is based was obtained from many sources; from factual information provided by the hospital, from the opinions and statements of those using the new building, from visits made to wards and departments by the members of the Working Party, and from specialist studies.

* Other hospitals have prepared similar brochures but no two examples are comparable, and the King's Fund is examining the possibility of reaching some degree of standardization in the mode of presentation of basic information about new hospital buildings.

3 Design and function of the building: influencing factors

We began our study by noting a number of factors which have exercised a constraining influence on the design and function of the new building, and this section of our report is concerned with some of the main difficulties and limitations which faced the Board of Governors and the Architect in planning and building New Guy's House; other matters are dealt with more conveniently in the later sections of the report devoted to particular departments.

This project was primarily conceived for the purpose of bringing together improved accommodation for surgical wards, operating theatres and central sterile supply department, and incorporating a teaching floor; the inclusion of the radiotherapy department and casualty department was largely a matter of expediency arising from an urgent need to find improved accommodation for those departments.

The architect was instructed to provide for 378 surgical beds in 14 wards of 27 beds each, a new radiotherapy department, a new casualty department, a complete floor of operating theatres, as well as a complete floor for the teaching department of surgery, gynaecology and obstetrics and anaesthetics, and laboratories for the department of clinical microscopy. At that time there was very limited guide material available to help those engaged in planning the new project which had to meet rapidly advancing techniques and procedures, and in very many respects this new building was pioneering new ideas.

The building had to be planned from the architectural view-point as one that would stand alone for an indefinite number of years, but so arranged as to connect easily with later extensions. The southern end of the re-building area was chosen to avoid existing buildings and to

ensure that the new building would neither hinder nor be hindered by subsequent building developments. One of the restrictions on the site was the road on either side of the medical block; to have attempted to build over the road would have led to long delays. Finally, the design of the building had to conform to town planning & L.C.C. regulations, etc., including the maximum height and fire precautions.

Functionally, the building cannot exist in isolation. Thus, for the present time, its geographical relationship with the rest of the hospital is far from ideal, but this will be corrected as the full re-building scheme comes into effect.

Very little capital money was available for hospital development in 1955, and the whole project was necessarily approached in a spirit of strict economy. We were told that one result of the restriction in capital expenditure is that the maintenance cost of the new building will be far larger than originally estimated. Not only was the structural work completed in 3¼ years, but it is a matter of congratulation to Guy's Hospital that the carefully designed control system instituted by the late Mr. B. Lees Read enabled the Board to contain the final cost within the estimate (£1¾m.).

Nevertheless, the Working Party was soon confirmed in its view that New Guy's House is performing its task satisfactorily and efficiently with the help of a full establishment of competent and enthusiastic staff. The colour schemes and finishes, and the atmosphere of the building as a whole succeed in creating a feeling of graciousness and warmth of welcome. The standard of service provided for the patients is probably as high as that of any hospital in the country, and this fact should be borne in mind when considering the comments about the wards and departments.

4 The wards

Entrances to ward sanitary accommodation. Note silhouettes over doors when ward used for different sexes

Siting and planning

The seven ward floors occupy the third to ninth floors of New Guy's House and each floor contains two ward units linked by a central concourse giving access to the main staircase and lifts and to a number of service rooms. Each ward unit consists of an L-shaped open ward with twelve beds in each wing and three single rooms. The sanitary accommodation in each ward is divided into two separate adjacent sections so that the two wings of the ward can be used for different

sexes. A plan of a typical ward is given in Appendix 27.

Choice of Ward plan

It was explained to us that the Board of Governors had three main reasons for deciding on the open ward design adopted in New Guy's House, viz:

a) Patients liked it;

b) Ease of nursing and economy of staffing;

c) Ease of medical teaching.

One of the first tasks of the Working Party has been to assess the extent to which these objectives have been achieved.

Patients' views on the open ward

Five hundred ex-patients were asked to complete a questionnaire giving their views on noise, privacy, communications, toilet and washing facilities, equipment, ward comfort, day room and balcony. 334 replies were received. About 75 percent of the patients had been in hospital before but it is not known if any had experience of a ward divided into smaller divisions with which to compare the ward in New Guy's House. Another and simpler form of questionnaire was issued to 150 patients on discharge, of which 84 were completed.

The answers to the questionnaires showed that most of the patients were content to be in an open ward with fitted curtains. It has to be remembered, however, that the bed spacing is more generous in New Guy's House than would be the case in most hospitals. Suggestions were made that noisy patients, patients seriously ill, or emergencies, might be treated elsewhere as they upset the ward, which suggests that patients in New Guy's House could be grouped to greater advantage, and a larger number of single rooms provided. It is known that the hospital is contemplating the establishment of a separate short-stay emergency ward where all emergency admissions would first be received.

The overall impression from the analysis of the questionnaires is that the patients, as was to be expected, hold New Guy's House in very high esteem and many of them went out of their way to say so. A summary of the replies to the questionnaires is given in Appendix 17, together with copies of the questionnaires (Appendix 16).

Ease of Nursing and Economy of Staffing

The evaluation of these wards has not been an easy task. We were to see nursing in the traditional manner and of a very high order. This no doubt has overcome many of the snags which might otherwise have arisen in this particular design of ward. Staff discipline and the efficient administration of the wards appeared to us to be largely responsible for the smooth running of the ward and the general contentment of the patients.

Almost without exception the nursing staff expressed themselves in favour of the L-shaped ward. It is simple in design and the nurses consider they can observe their patients easily which gives both them and their patients greater confidence. To these observations, however, we feel that some further comments are necessary.

a) Few of the nurses have had experience of nursing in general wards of a different design except the old medical wards at Guy's, compared with which New Guy's House must seem a great improvement indeed.

b) The nurses' station is well sited to act as a focal point in the ward. If the principle object of an open ward is to obtain ease of observation, the L-shaped ward design would seem to detract from that principle because its shape creates two separate areas and a nurse in one arm of the L cannot observe patients in the other.

c) In the type of appraisal undertaken it was not possible to assess the influence of the ward design on infection risks as a whole. However,

it is true that generous space between beds (9'4½" bed-centre to bed-centre) inevitably reduces the risks of cross-infection.

d) It is, of course, obvious that the practice of nursing seriously ill patients in the open ward and admitting some emergencies into it is disturbing to other patients; it is also more difficult for nurses and doctors to treat patients under such conditions. This was borne out by the night observations.

e) The open ward design is thought by the hospital to be the most suitable one in which to continue the Guy's pattern of nursing care which is based on "case assignment", each student nurse being given a certain number of patients to care for.

f) Although the wards are much larger in area and there has since been a reduction in the nursing-hour-week, the number of nurses employed on the new wards is no greater than on the old. It is not possible, however, to conclude from this that the new wards are necessarily economical in the use of nurses' time because other factors have to be taken into account. For example, there has been the introduction of central sterile supply services; working space is better; and the greatly improved toilet accommodation enables more patients to look after their own needs. Indeed, it seems doubtful whether it is possible to measure the effect of new buildings on staff needs by comparison with previous experience alone because the attending circumstances are inevitably so completely different.

Patients' WC 3ft 6ins wide

Patients' washing cubicle ready for use

There appeared to us to be two other features of this particular ward design which must, we feel, add to the work of the nurse and reduce her supervision of the patients:

a) The overall size of the new wards is larger than the commonly accepted standard and many of the staff said they noticed the increased walking distance when working in the new block. The long corridor linking the L-shaped ward with the central concourse results in an elongated plan and the nurses being taken away from the patient area for an unnecessarily long time. It makes supervision of patients and communications between staff more difficult.

b) The side wards give patients privacy but because of the location of the rooms there is some difficulty in maintaining observation, a view which the hospital shares. These rooms are not so suitable as they might have been for the nursing of really sick patients. Perhaps the use of the single rooms for this purpose would have increased had they been sited so that proper observation was possible. In our opinion, in any future planning, at least four single rooms should be included in a ward unit of this size.

c) Although the wards have ample daylight and are spacious, and are quiet (and more so because of good staff discipline), it is noticeable how easily noise travels from one end of the ward to the other.

Ease of Medical Teaching

The beds are spaced unusually far apart (9'4½" bed-centre) to accommodate the traditional clinical teaching rounds; many rounds at Guy's are attended by over 20 students.

So long as this approach to ward teaching continues, a generous bed spacing would seem to be necessary. It was noted, however, that at the time of our ward visits about half the patients taught on did not need to be in bed for this purpose.

This reinforced our view that every ward unit should have a room apart from the teaching theatre in which clinical teaching could be given supplementary to that now given on the ward round, where consultants must of necessity be inhibited by the presence of the patient from a full discussion of each case, and patients may be unduly embarrassed. Such a room could be used for demonstrations of individual patients brought in from outside the ward as well as for patients brought in from the ward itself.

In this connection it was interesting to note that the housemen and students interviewed said that they would welcome the provision of a

small laboratory in each ward in which to carry out simple laboratory procedures, including the testing of urine. The decision to omit this on grounds of cost and the difficulty of keeping scattered laboratory accommodation properly maintained might usefully be reviewed together with the present usage of the ward urine testing room.

We feel that the X-ray viewing boxes are well placed for use during teaching rounds in that they provide the consultant with a good excuse to take the students out of earshot of the patients. On the other hand, a large group of students at this point tends to block the entrance to the ward. We also noted that the use of viewing boxes in this position at night disturbs patients in the vicinity.

Grouping of patients

Although the wards have been designed so that they can be used for both sexes, the division by means of a rigid screen is not altogether satisfactory as there is only one entrance to the ward itself. Although it may not arise in Guy's, it is frequently necessary to make provision on wards for small groups of patients (e.g. adolescents, or particular specialities), and units of twelve beds may be too large for this purpose. The ward design in New Guy's House does not therefore provide the degree of flexibility which would be desirable at times in order to make the best use of beds.

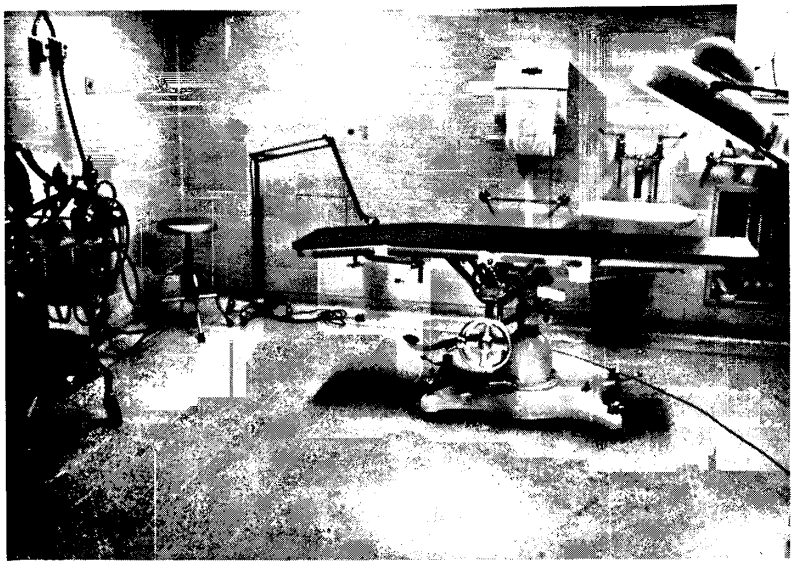
Seriously ill patients and sometimes emergencies are placed near the nurses' station for ease of supervision and in this kind of ward it means that all ward traffic passes these patients, as well as the ambulant patients, who must pass them on their way to the sanitary annexe.

The ward medicine room is situated in the ward corridor

The photograph shows the generous bed spacing; also bedside locker and other equipment

Special studies undertaken by the Working Party

The design and space allocations of the ward unit were the subject of three special studies. The first of these was concerned with the total amount of ward floor area per bed and the allocation of this floor space to bed areas, day space, bathrooms and toilets, utilities, treatment room, nurses' station, and to corridor and circulation space. Details of these figures and their comparison with four representative ward units of other hospitals are listed in Appendix 22. As a result of this study, we are of the opinion that the sub-division of space, and the amount allocated in the New Guy's House ward unit, would seem to be consistent with modern requirements for a teaching hospital where it had been decided, as a matter of major medical and nursing policy, to maintain the ward unit of 27 beds under one sister and to provide adequate facilities in the wards for teaching purposes.



The ward treatment room

The plan also reflects, as far as the sub-division of space is concerned, the recent trends to improve amenities for the patients.

In Appendix 21 the ward space allocations are shown alongside the recommendations for a district general hospital (excluding teaching requirements) contained in the Ministry of Health Building Note No. 4.

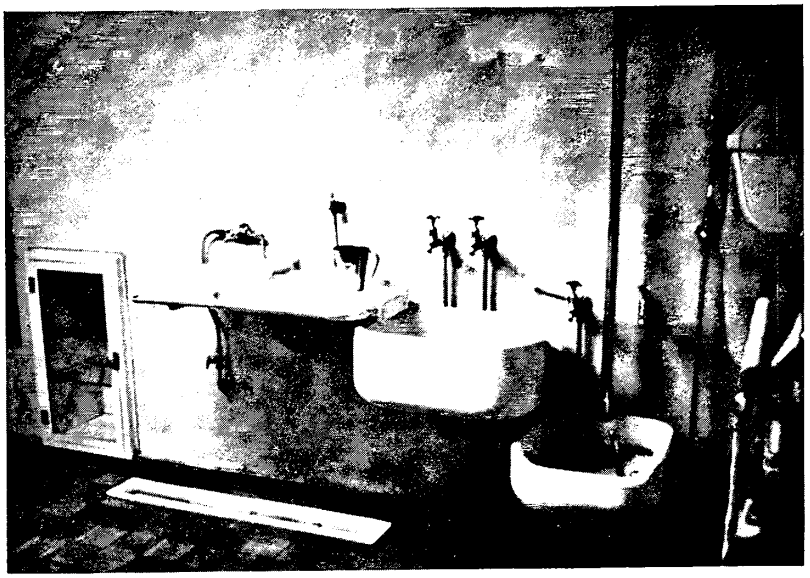
A third study (Appendix 20) is based on a method of assessment evolved by the Scottish Hospitals Work Study Group. Under this method a "notional nursing day" is adopted and the walking distances involved in carrying out daily basic nursing work throughout a day period of 12 hours are measured by means of a string diagram and converted into an "efficiency factor". Accepting the limitations of this study as means of comparison the following comments have arisen from an examination of the diagram, viz:

The ambulant patient has a long walk to the toilet from the day room

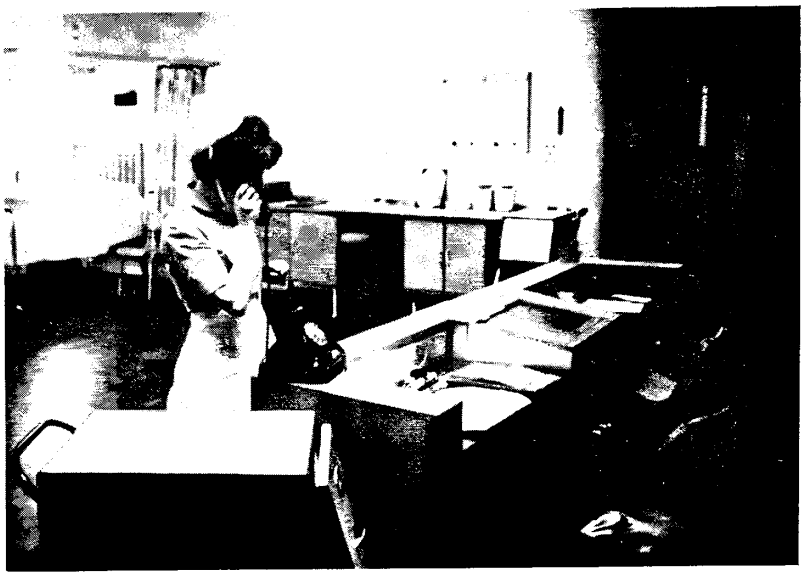
a) The ambulant patient has a long walk to the toilet from the day room.

b) The ambulant patient, in order to reach the toilet or bathroom, must compete with the traffic to and from the sluice room which is heavy and not particularly agreeable.

c) The very sick patients adjacent to the nurses' station are in the densest part of the ward from the traffic point of view, and most nursing routines take the nurses past these beds. This latter point can



The sluice room. Patients have to pass the sluice room to reach their sanitary facilities



The nurses' station, with the most easily observed bed reserved for a really sick patient

be interpreted in two ways - as being necessary from a nursing point of view in order to keep sick people under observation for most of the time or, alternatively, creating disturbance for the individual sick patient.

d) The results of this study come rather as a surprise, for it might be imagined that the concentration of nurses' accommodation at the re-entrant angle of the two parts of the open ward would have produced a good "efficiency" figure. It also illustrates the amount of traffic to the ward kitchen and perhaps it is in the organization of catering routines that improvements in the distances travelled by the nursing staff could be achieved.

Observations on a number of more detailed matters are given in Chapter 12, and a schedule of areas and finishes in Appendix 41.

5 Operating theatres

Siting of operating theatres

The decision to place the theatres and ancillary accommodation on the first floor is regarded as sound. The theatres are well sited in relation to the surgical wards, and the central sterile supply department well sited in relation to both.

Number of theatres

The building had been planned with operating theatre space to meet the needs of some 378 surgical beds, excepting neuro-surgery and ophthalmic surgery.

Eight theatres were provided on the assumption that they would be occupied 4½ days a week with one day available for cleaning and servicing. Plaster and cystoscopy rooms are used as alternative (not as additional) theatres. The view was expressed to us that there is a need for two more major theatres and for a 'septic' theatre to serve an isolation ward, but we did not make a study of this suggestion and think that it is, perhaps, too early to judge the situation.

Circulation

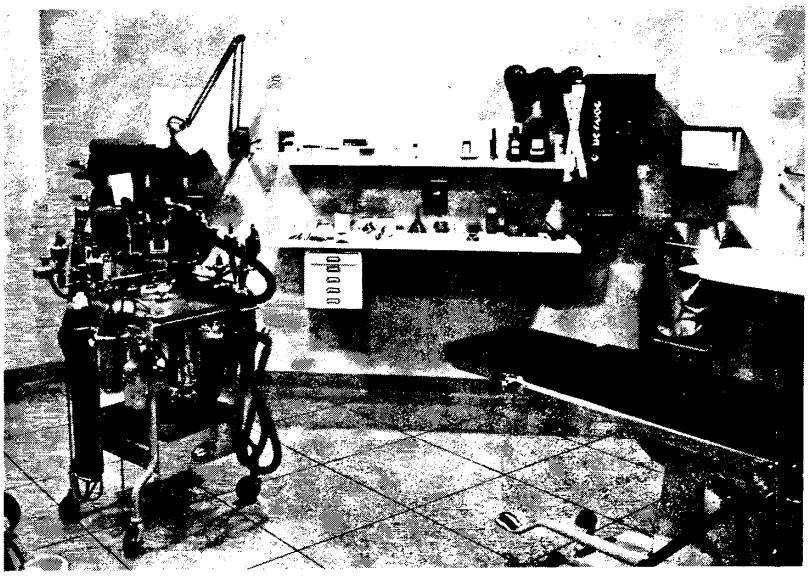
It was represented to us that the bed lifts serving the theatre are wrongly placed on the theatre floor and too few in number, and that this leads to much congestion at the points of entry to and departure from the theatre suite. A further point was made that, now that the recovery room had been turned over to use as an intensive therapy unit, there was no holding space which might have overcome the congestion. We understand that other arrangements are to be made for the intensive therapy unit. A report which we have received on lifts (see chapter 8) suggests that they are not being used to best advantage. We think that a closer study might be made of this part of the organization.

A laying-up room

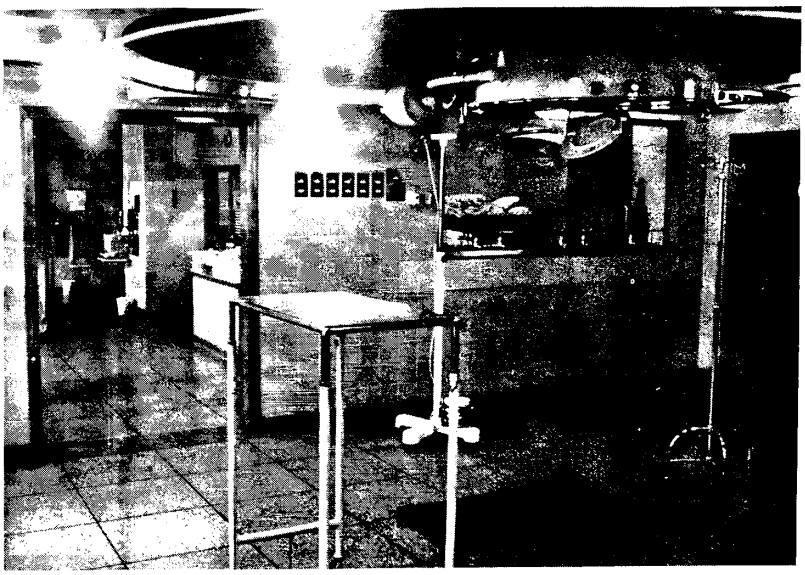
Planning and Layout

A plan of the theatre floor is given in Appendix 26 and diagrammatic drawings of an operating theatre, anaesthetic room, scrub-up and clean preparation rooms, and dirty wash-up room are in Appendices 28, 29, 30. A schedule of areas and finishes is given in Appendix 41.

Having chosen a single corridor system with a central entry, there are inescapable problems concerning circulation of staff, supplies and patients within the theatre suite.



An anaesthetic room



An operating theatre

So far as individual rooms in the theatre suite are concerned, it was represented to us that the scrub-up is too small. Our view is that it is not well sited and is part of a thoroughfare to the clean preparation room. The siting of two groups of changing rooms to serve eight theatres inevitably means that some people walk considerable distances to the theatre. Some members of the Working Party think the anaesthetic rooms are generous in size, others think them no more than adequate. The theatres themselves are in every way satisfactory.

Intensive Care and Recovery Rooms

The concept of these rooms was not elaborated in detail when the theatres were planned, and the need for them is now more clearly established. The recovery ward is at present used as an intensive therapy unit for patients requiring massive mechanical aid to treatment. It was not designed for the purpose and deals with relatively few patients, mainly from the cardiac theatres, in accommodation which is inadequate.*

* It is understood that a new intensive therapy unit is to be made available on the floor above the theatre.

Equipment Store and Workshop

It was agreed that there is a need for a room for storing equipment, particularly of the larger size. Such a store room should be so planned that it can also be used for carrying out any repairs to the equipment which can be done on the spot.

Supplies

We were encouraged to see the arrangements for the central sterilization of instruments on this theatre floor. Little reduction of variety of individual sets of instruments (which makes the work of the nurses easier) has so far been achieved. We were told of the shortage of storage space for sterile packs. We thought this might be overcome by additional deliveries from the central sterile supply department and although this was said to be too time-consuming to be effective we think it worth a further trial. Some reduction in the checking and handling of supplies might be possible.†

* We understand that for a trial period the CSSD supplies are now being delivered direct to individual theatres and that the system is working satisfactorily; during the trial the central store is being used only for emergency supplies.

Ventilation and Heating

These seemed on the whole to be very satisfactory. The air in the theatres is slightly pressurized above that of the corridors. In the domed theatres there is a tendency for heat gains from staff and the lights to be trapped within the dome and so set up re-circulation of warm air.

Lighting

The lighting in the corridors is of poor intensity and somewhat depressing, contrasting sharply with adjacent areas of high intensity tungsten lighting.

Domes

Conflicting views were expressed on the value of domes for undergraduate teaching, the general opinion being there is no substitute for the theatre floor. Where a surgeon was prepared to position his table and light suitably, and to speak into an appropriately toned microphone, domes might be used effectively for postgraduates, if not for undergraduates.

Autoclaves

The system of central sterilization of instruments on the theatre floor is working well.

Bed Lifts

The cages measure 84" high, 87" deep and 62" wide, with a gate-opening of 46" wide. This size has worked out very well in practice with the size and pattern of bed in current use at Guy's and no difficulties or complaints in this respect have been brought to our notice. This might not hold good with other types of beds.

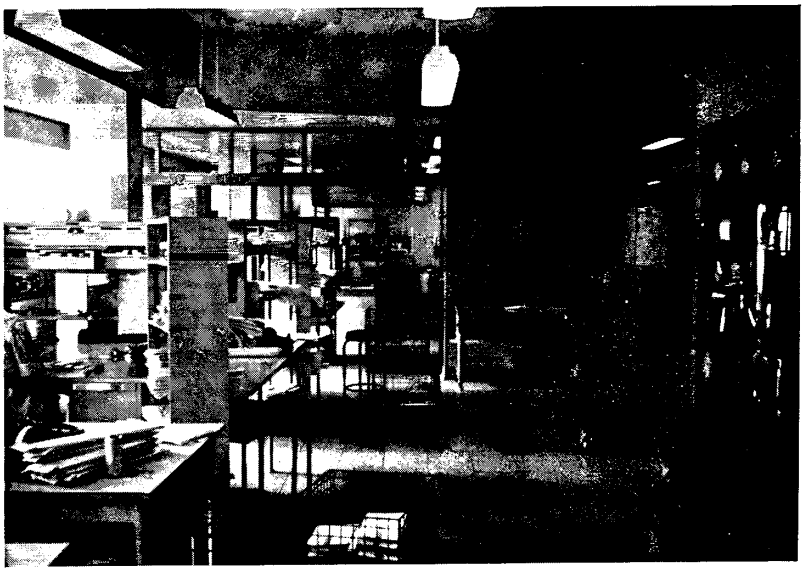
Bed-lift recordings over a complete day (see Appendix 34) showed 5 delays in excess of 1 minute at the first floor (Theatres) and 1 delay in excess of 1 minute at the ground floor (Casualty). There was no evidence during this period that the lift requirements of these major uses conflicted. The recordings showed several instances of the bed-lifts being used for purposes other than those intended by the

Board. These would tend to increase waiting times for permitted users. Further study of the methods of using bed-lifts and the co-ordination of demands made on them is likely to be rewarding.

Other comments

Some further comments on the operating theatres are contained in chapter 13

6 Central sterile supply department



Sterilizing area, showing autoclaves

Acceptance of principle of centralization

The central sterile supply department has been designed to supply the whole hospital, new and old buildings alike, with all sterile equipment, dressings, instruments and syringes, apart from the instruments used in the main operating theatres. With the exception of syringes, which are rinsed in water immediately after use, all used equipment is returned to the department unwashed. Sterile distilled water, but not for intravenous use, is also produced and is distributed in screw-capped bottles.

The decision to establish the central sterile supply department was wise. At that time the need to organize the sterile supplies in a central department was not a generally accepted idea, and much remained to be done to convince the staff of the hospital of the necessity of doing so.

The organization and planning of a central sterile supply department is still a novelty and a subject for further experiment, and for these reasons it has not been possible for us to devise either a completely suitable method of evaluation or a basis on which to make fundamental comparisons. As in all pioneer work, what has been done in New Guy's House had to be founded on notions current at the time of decision, and such criticisms as have been made by members of the Working Party are in the light of more recent experiments and experience elsewhere. Even so, we are satisfied that supplies of the highest standard are efficiently

distributed to the wards, the operating theatres and other parts of the hospital, and in our opinion the department is a notable success. Any inherent faults in the service have already been overcome by the initiative of the staff, and their enthusiasm.

Siting

The department is planned in part of the area of the lower ground floor. We believe that the Board of Governors was right in including this department in the new surgical block, and in accepting all that was implied by this decision in the planning of the operating theatres and the ward units. A plan of the department is shown in Appendix 25.

Sterile packs containers and trolley

Distribution

The use of hoists to deliver clean supplies to the wards and operating theatres in New Guy's House direct from the central sterile supply department, and of separate hoists in each unit for the recovery of the returned articles from the disposal rooms, has worked well in respect of these units, but the decision to do this has made the planning of the department itself complicated and it has not been possible to arrange the work flow within the department on simple lines without cross-circulation. We are in some doubt as to the efficiency of the hoists as a means of distribution because of the need for two persons to operate them. We feel that this particular point is worthy of more detailed analysis.

Some improvement in the working organization has resulted from the decision to sub-divide the sterilized goods stores and issuing bays as between the operating theatres and the wards. The extension of the work of the department to serve the whole hospital and the Evelina Hospital has complicated the task of issuing and distributing supplies.

Sterile store

"Complete pack" system

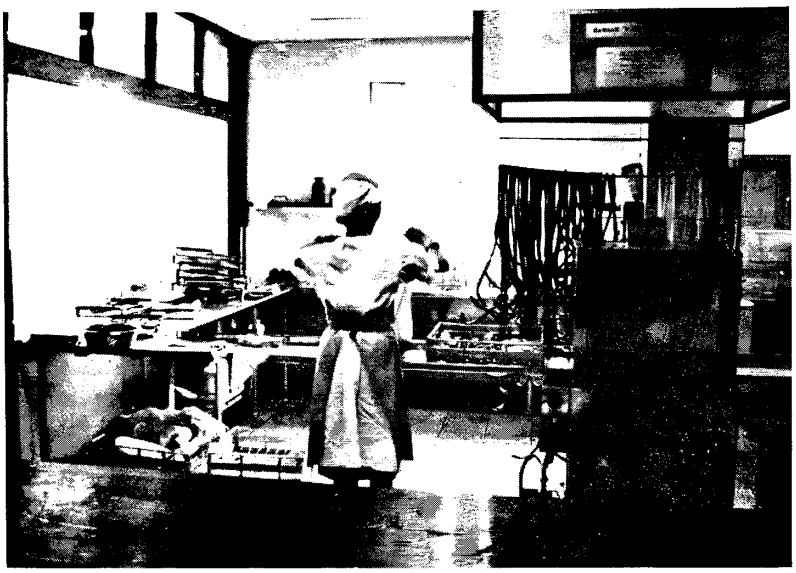
The hospital has adopted the "Complete pack" system as the basis for the distribution of supplies and we believe that a comparative study of this system and the "combination pack" system, and of the relative costs, would be of great value to the hospital service. We noted with interest that the number of unused sterilized items left over from the complete packs, and returned to the central sterile supply department as surplus to requirements, was not excessive; neither was the total amount intractable to handle because of bulk. There was no discernible excess of supplies in the "pipeline".

Solution Room

This has proved to be over-generous in size largely because the output of sterile topical fluids so far amounted to only one quarter of that originally estimated. Until recently the preparation of sterile fluids for topical use in a central sterile supply department was generally considered to be a doubtful proposition, but we note with satisfaction that this problem of procedure has been successfully overcome in New Guy's House.

Bottled sterile water for topical use is supplied direct to the theatres from the central sterile supply department and kept in heated trolleys in the clean preparation room. This seemed to us to be a most satisfactory way of dealing with this problem.

Special work desks for assembling packs



Dirty wash-up area

General Design

The amount of space, the standard of finishes and the heating, lighting and ventilation of the department are considered to be satisfactory and good, but there are two particular points which may be mentioned here, both of which are already known to the Board of Governors. First, there is the need to increase the space of the make-up area and to provide further ventilation for it; and, secondly, the desirability of reducing as much as possible the noise in the dirty wash-up area. A schedule of areas and finishes is given in Appendix 41.

In Appendix 33 the space allocations in the central sterile supply department are listed with the similar and more up-to-date figures published in the Ministry of Health "Hospital Building Note No.13. Central Sterile Supply Department". Beyond saying that the accommodation in New Guy's House does not appear to be extravagant, we felt unable to draw any useful conclusions from a comparison of the figures, because much depends on the procedures undertaken and the extent to which the department is used as a central storage and distributing agency apart from the processing of supplies.

Standard of service

The hospital already maintains a constant review of the organization of the department, but is proposing to conduct a cost analysis in order to seek further ways of improving its efficiency. The results of the cost analysis of the work of the department should prove to be of considerable help to all interested in central sterile supplies. We are greatly impressed by the high standard of service provided and by the way in which the experience so far gained in planning and operating the department is being used for its further development, thus making a considerable contribution to the evolution of an economical, safe and useful ancillary service for the medical and nursing staff.

Other comments

In the above paragraphs only the broad conclusions and matters of special importance have been included. A number of detailed comments on other items are given in chapter 14.

7 Engineering services

This section of the Report is confined to general observations on the engineering services, particularly on the users' reactions to the various services and the facilities for maintenance.

Much of what is said in the following paragraphs reflects the increasing complexity and importance of the engineering requirements in a modern hospital building, and of the problem of co-ordinating the installation of these services so as to avoid over-crowding and over-lapping of the service runs where possible. This emphasizes the importance of attention to detail in the early stages if many of the difficulties are to be avoided.

Pipe ducts

The two main vertical pipe ducts in the ward sanitary suites are generally too small for the services they contain, and the consulting engineers have explained that to have increased the area of the ducts would have necessitated major replanning of the sanitary wings of the ward floors with consequent increase in cost. Only catwalks are provided and these do not constitute fire barriers between floors. In the main duct, the layout was not apparently designed to accommodate the main drainage services and their installation has resulted in a rather haphazard and unsatisfactory arrangement of service piping, making access very difficult.

The continuous service duct formed by the cavity wall construction has the disadvantage that the inner skin often has to be cut to gain access to services or install additional services in the cavity. In practice it has been found easier to run small pipes on the surface and box them in. In the majority of cases where removeable panels have been provided in the inner skin for access to service connections they are not well sited. Access would have been greatly facilitated by using a demountable inner skin, but we understand this was turned down on the question of cost.

Plant rooms

The sizes of the plant rooms are generally satisfactory and the layout of plant and pipework is good. An exception is the ventilation plant rooms for the operating theatres, these rooms being too small to give proper access to the plant and equipment in them and for filter changing. It was also noted that the working space behind the autoclaves in the central sterile supply department is restricted, apparently as a result of enlarging the make-up area at the expense of the autoclave area.

Heating

The heating system is in operation throughout the year and generally is said to be very good. One criticism that has been made is that the solar control on the south side indiscriminately shuts off all radiators on that side. This is satisfactory in the wards which have radiators on other aspects to give the level of heating required, but, in the small rooms with only radiators on the south side, complaints of cold have been made.

The infra-red heaters (30 kw load) in the ambulance bay are expensive to operate. If they are run continuously the ambulances waiting for patients tend to get overheated, but if they are run intermittently it is difficult to ensure that they are switched on when an ambulance brings in a patient who could benefit from them. The design of the bay tends to create a 'wind tunnel' which prevents full benefit being obtained from the heaters. The floor heating in the concourse tends to cause overheating in warm weather.

The piping and valves of the skirting heating system are buried in the walls; floor ducts to accommodate them would have made it easier to gain access to tighten joints and repack glands when leaks occur.

Copper Waste Pipes

The vertical down pipes were originally held rigidly at each floor by the waste pipes from baths, sinks and basins and there was no provision for expansion. Hot water discharged into these pipes caused them to expand rapidly and they fractured in a number of instances. The brazed joints did not break. Repairs were necessary and the pipes have had to be freed to allow movement. Location of leaks in these down pipes has proved very difficult since the only visible sign of failure is the appearance of damp patches at the bottom of the ducts.

Operating Theatres - air-conditioning

It was a planning decision to have the control panels for the operating theatre plants in the theatre suites in order that the temperature of each theatre should be under local control. But with the control panels in this position it has been found difficult to check the operation of the plant because access to a panel is possible only when the engineer has gone through the "clean" procedure, and he then has no way of checking what is actually happening in the plant room. We think it would have been better to have had a main control panel in the plant room with appropriate local theatre control panels for the theatre staff.

The ventilation plants are working satisfactorily and the theatre staff have confidence in the engineers maintaining them. There is some transmission of vibration and noise from the plants throughout the building.

Central Sterile Supply Department

There has been an abnormal number of "teething" troubles with the autoclaves and the manufacturers have not yet overcome all the difficulties.

The infra-red sterilizers used in this department were largely responsible for the uncomfortably high temperature during the first summer, and we noted that successful measures had now been taken to reduce the temperatures to acceptable levels.

Electrical Services

We have not included a detailed study of the lighting system. As far as can be ascertained the installations generally are quite satisfactory, but it was noticed that in some areas, particularly the corridors, the wide spacing of the fittings caused large variations in lighting levels.

Having regard to the ever-increasing use of electric current we do not think that the provision of small socket outlets is as generous as it might be. Instances have already arisen where extra outlets have been found necessary, and although there is ample spare capacity at the main distribution position for these additional services, it is difficult to wire out neatly from these positions. The miniature circuit breaker distribution boards have proved satisfactory in use but it is reported that some breakers have tripped spontaneously in those plant rooms which have high ambient temperatures. We feel that more protection should have been afforded to the electrical switch and control gear in some of the plant rooms; gear exposed to humid conditions should have been painted and where necessary shielded from any water dripping from valves, etc., installed above the equipment.

In the event of failure of the public electricity supplies, the emergency battery systems provide immediate supplies to the operating theatre lamps. In addition, the hospital is served by a main standby

generating plant in the boiler house, but without prior warning a period of approximately twenty minutes is required to carry out the necessary manual switching operations and to complete the essential procedures in the boiler house in order to bring it into use. This standby supply system was in being before the erection of New Guy's House and it has merely been extended to serve this new building. The maximum demand for the complete hospital is just under 1000 K.V.A. and the standby generating capacity 550 K.V.A.; it is therefore necessary to select the priority services to reduce the load on the system before switching-in the standby generating plant.

In the event of failure the most essential requirement is to protect the hospital boiler plant and to maintain sufficient head of steam to run the standby generating plant, and this may mean denying steam to other parts of the hospital. We are informed that automatic switching was considered for the change-over of supplies, but that this would be complicated and expensive, and it was therefore decided to rely on manual selection and switching. We feel, however, that this is a matter to which the hospital should give further consideration; a review of the services classified as essential would appear to be necessary. Considered as a whole, these emergency and standby services provide a good defence against failure of public supplies.

Lift Motor Rooms

We noted that the components in the lift control cubicles were covered with dust. The floors are now being sealed to prevent dusting, but we consider that all surfaces in the lift motor rooms should have been sealed at the time of construction.

Other observations

A number of other points are referred to in chapter 15 .

8 Lift services

One of the two forms of communication about which we agreed it would be of advantage to collect data, was the use being made of the lift services. There was no record of any complaints from visitors about the service provided and it was stated that the number of complaints from staff had decreased considerably in recent months. The Hospital Organization and Methods Service of the Ministry of Health kindly offered to make a short study of the lift services and the full report by Mr. G.L. Hughes is contained in Appendix 34.

The basis of the study was the recording, during an aggregate of about 90 hours continuous observation, of passenger waiting times for passenger and bed lifts. Three observers were employed and recordings were made from the 27th August to the 9th September, 1962.

For the passenger lifts, the coverage was designed to show a complete weekday (7.45 a.m. to 8.30 p.m.) of actual passenger experience at each of three floors - the ground, the third and the ninth floors and to include a record of the peak load of the week on a Sunday afternoon. In addition, recordings at the lower ground floor were made to help in assessing the impact of goods traffic on the passenger service as a whole.

Coincidental recordings of bed-lift traffic from the ground floor (Casualty) and the first floor (Theatres) were made to observe how the lift activities of two major users were integrated.

Information about the use of the stairs and the behaviour of intending lift passengers where this influenced waiting times, was also collected.

No recordings were made of the special purpose 'dirty' goods lifts and the central sterile supply department electric hoists as there appeared to be no problems of load and integration as far as they were concerned.

In order to interpret the data it was necessary to use a standard of lift service related to waiting times. Apart from lift performance and load criteria, no such standard was available for the hospital field or in other spheres where enquiries were made. The standard adopted for the purpose of this study was that of the provision of ground floor lift service within a maximum of 30 seconds for about 90% of the passengers at any time of the day. For purpose of comparison, similar analyses of lift recordings made in post-war government offices and department stores were used.

Passenger Lifts

The original planning intention was to use the goods lifts for both 'clean' and 'dirty' traffic with the wards; in practice this conception has been revised and the 'clean' goods traffic transferred to the passenger lifts.

The concurrence of hospital activities with the varying ground-floor passenger loads throughout the day was expressed diagrammatically on the same time scale. From this it could be seen that apart from minor peaks, only one relatively extremely high peak occurs and this is during the half-hour immediately preceding the visiting half-hour (7.00 p.m. - 7.30 p.m.). The activities concurrent with the peak are the reception of visitors (the main component), the collection of used food trolleys and the movement at the same time of nurses going to or returning from supper. Each of these co-incidental activities imposes a load on the lifts and must contribute to the lengthening of waiting-times between 6.30 and 7.00 p.m. Of the possible adjustments which could be made to ease the pressure at this point, the spreading of the main constituent of the peak by expanding, staggering or splitting the visiting period would certainly have the greatest effect.

The analyses indicate that the lifts maintain a high standard by providing ground-floor service in a maximum of 30 seconds for 92.1% of passengers, as well as carrying goods. That this is achieved, is in part due to the careful spreading of the goods traffic over the day. During the visiting peak, when the ground-floor passenger rate is over 13 times that at off-peak periods, this standard falls consistently to around 80%. On ward floors, about 85% - 90% of passengers obtain service within 40 seconds, but, again there is some delay when visitors leave. This suggests that the installation of additional goods lifts is less likely to contribute to the standard of service provided than a continuation of the policy of dissipating peak loads, in particular the one outstanding peak created by the present arrangements for visitors.

The Hospital Organization and Methods Service has expressed its willingness to make test recordings should the Board wish to measure the effectiveness of any changes in the lift services they might make in the future.

Bed Lifts

The bed lifts are discussed in chapter 5.

9 Pneumatic tube communication system

To provide the Working Party with more information about the pneumatic tube communication system, the Hospital Organization and Methods Service of the Ministry of Health kindly agreed to make a short study of the system, and the full report by Mr. R.W. Hornsby is contained in Appendix 35.

The pneumatic tube communication system was installed to reduce the time spent, principally by ward staff, in running errands. No reduction of portering staff was expected or sought, or has proved possible.

Up to September, 1962, the system had cost about £21,800. The equivalent revenue cost of providing and operating the system is £2,980 per annum made up as follows:-

a)	Capital cost amortised over 20 years	£1,090 p.a.
b)	Interest at 5½% on 50% of capital cost	£600 p.a.
c)	Electricity costs (148,920 units at 1.6d. per unit)	£990 p.a.
d)	Maintenance costs (normal)	£300 p.a.
	Total	£2,980 p.a.

Preliminary investigation revealed widely differing opinions about the worth of the system and disclosed that very little use was being made of it. To an unknown extent, however, these factors could be attributed to the general mistrust of the system due to breakdowns caused by misuse in the first few months of its operation. In the circumstances it was considered that objective assessment of the effect of the system was essential.

The traffic handled by the tube system in relation to the total errands arising on wards was measured by recording the time, destination and purpose of errands and despatches by tube arising from all wards throughout the hospital for seven consecutive days. After making adjustment for differences in the number of beds, etc., and in the distances involved, comparison between New Guy's House and Hunt's House showed the reduction in the number of errands, and in the staff time absorbed by them, due to use of the tube system.

Analysis of the errands and despatches by tube measured in this way has led to the following conclusions:-

a) the savings in ward staff time resulting from use of the tube approximate to half the time of one nurse (average 1½ hours per ward per week) and one third the time of one orderly (average one hour per ward per week) spread over the fourteen wards served by the system;

b) there is little, if any, saving of staff time in departments other than wards;

c) The total savings of staff time are equivalent to a notional financial saving in the region of £450 per annum which it is costing about £2,980 per annum to achieve;

d) only about 44% of the total errands from wards in New Guy's House are eliminated by the tube and a more comprehensive tube system would not increase the proportion much above 60%, the remainder of the errands being mainly concerned with carrying items which cannot be transported by tube, e.g., laundry, stores, equipment, flowers, patients' effects, etc.;

e) there is insufficient traffic to any of the service departments or offices not at present connected to the system to justify economically the addition of a sending/receiving station at any particular point;

f) a fully comprehensive pneumatic tube system covering all wards and departments in the hospital would entail equivalent revenue costs in the region of £6,000 to £9,000 per annum to achieve maximum possible notional savings of about £1,500 per annum.

g) five of the existing stations (one each of the Central Sterile Supply Department, Casualty, Theatre and Departmental Floors and the Medical Records Station) are at present serving no useful purpose;

h) the system as at present used has only limited use for the transporting of items other than paper. The occasional leakages of urine and faeces from the special carrier inserts have tended to limit pathological specimens sent by tube to small blood samples. Some concern is even felt about sending blood samples because haemolysis has on occasion occurred in transit. Dangerous drugs and scheduled poisons are still collected by hand from the dispensary despite the availability of a special lockable container to send them by tube. The greater security of hand-to-hand transfer with signed receipts at all stages is preferred. Increasing the proportion of pathological specimens and drugs sent by tube will not, however, materially effect the economic relativities set out at sub-paragraph (c);

i) the speed with which a tube system completes errands is sometimes over-rated, e.g., carriers despatched by tube from New Guy's House to the Pathological Laboratory follow a circuitous route and take two to three minutes to complete a journey which takes about four minutes on foot at a walking pace using the "long outdoor" route;

j) few objections were raised to the noise of the system and then only by staff in particular locations;

k) present operating costs can be reduced by about £700 per annum by switching off the system at night and over weekends when it is hardly ever used because service departments are closed;

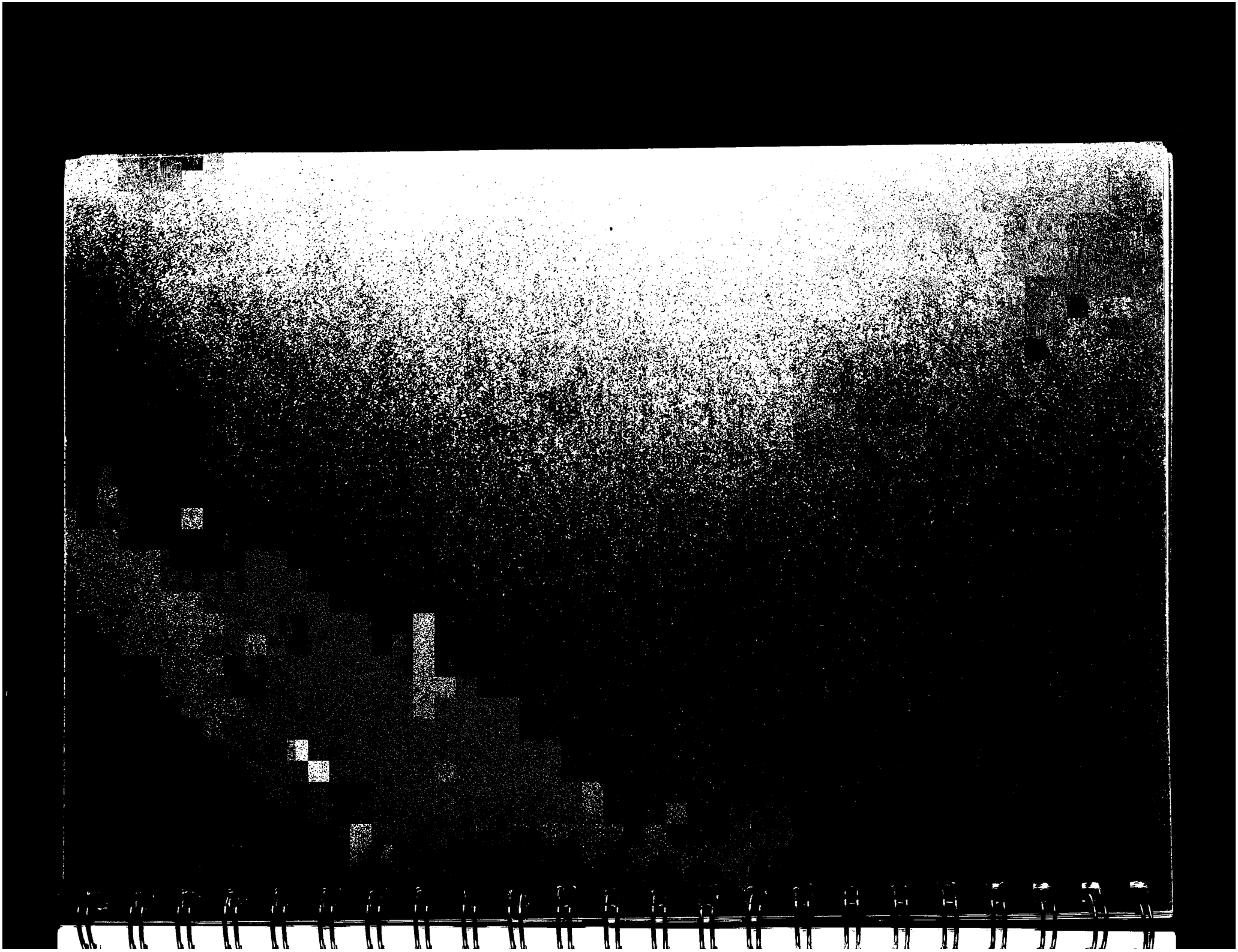
l) it seems probable that for a cost approximating to the present electricity and maintenance charges an efficient messenger service could be organized to eliminate near 100% of the errands throughout the hospital compared with about 44% elimination in one third of the hospital achieved by the tube system.

We are doubtful whether the system as installed and used in this building is as economical as other forms of communication service, e.g., messengers, although it may have certain advantages. The demands on the system in New Guy's House are not great enough to show the system in true perspective and we feel the subject needs further study before any general conclusions can be reached. We understand that the Hospital Organization and Methods Service of the Ministry of Health will shortly be publishing a general report based on the study of pneumatic tube communication systems in a number of hospitals.

10 Studies of air movement

As it has not been found possible for these studies to be completed in time for consideration by the Working Party and for inclusion in this report, arrangements are being made to distribute the results as an additional appendix as soon as they are available.

Further comments and amplifications of the main report



11 Further comments on the evaluation procedure

This appendix discusses in more detail the procedure adopted by the Working Party and concludes with some observations which might be helpful to those undertaking similar studies in the future.

Visits to departments

For the theatre study, one of the Working Party's two teams visited the theatre suite on one occasion, in the course of which they observed the theatres in preparation, use and cleaning-up, questioned members of the staff and discussed various architectural and engineering problems. In addition, over a period of two complete weeks the theatre staff kept detailed records of the work performed in each theatre (see Appendix 31). A preliminary evaluation report was prepared, discussed by the team and revised before being submitted to the Working Party.

The same method was followed by the other study team. The team visited the central sterile supply department on two occasions, in the course of which they observed it in use over a period of two hours or so, questioned members of the staff and discussed architectural and engineering problems. A preliminary evaluation report was prepared by the team and revised before being submitted to the Working Party.

For the wards, the evaluation arrangements were rather different. Ward observations covering the whole 24-hour cycle were undertaken by the nursing members of the Working Party and spread over several visits. They were joined by two administrative members to observe the in-taking wards throughout the night on two occasions. Each member concerned prepared an independent account of his or her observations and these were subsequently merged and submitted to the Working Party. Other visits to wards were made by the medical and nursing members, particular attention being given to the teaching rounds.

The engineering members reported on matters of technical interest to them, and Mr. Cusdin made some special studies of the ward design. A report of a study of the lifts was submitted by Mr. Hughes, and of the pneumatic tube communication system by Mr. Hornsby. Dr. Lidwell of the Medical Research Council very kindly undertook to carry out some studies of air penetration and circulation but it was not found possible to complete the studies in time for inclusion in this report.

To obtain a wider understanding of the views of patients, two types of questionnaire (see Appendix 17) were circulated, although it was realised that this method of enquiry had limitations and that the information obtained might be influenced by the patients' gratitude, or lack of experience of other hospitals, and to this extent might need to be treated with reserve. The questionnaires, together with business reply-paid envelopes addressed to the Clerk to the Governors, were sent by post to over 500 patients who had been discharged from New Guy's House between May and August, 1962. Well over 300 questionnaires were completed and returned; these were analysed by the staff of the King's Fund and a report prepared for the Working Party (see Appendices 17 & 18).

Collation of evidence and preparation of report

The reports prepared by the teams and individual members of the Working Party were all sent in to the Secretary, who was responsible for the collation and subsequent presentation to the full Working Party.

The full Working Party met on six occasions to discuss these reports, and these meetings were attended by representatives of the different grades of medical, nursing and other staff of Guy's Hospital, who kindly agreed to answer questions arising from the reports. In this

way the evidence was sorted and sifted, gaps filled in and anomalies resolved. The points discussed at these meetings were carefully recorded and proved extremely valuable in the final review of the evaluation work and preparation of this report.

By the time of the fifth meeting of the Working Party held on 2nd October, 1962, nearly all the individual reports had been received. It was decided then that the time had come for an attempt to be made to correlate all the evidence and to draft the final report for submission to the main Evaluation Committee. It was agreed that in order to preserve continuity of theme and style, the draft should be prepared initially by one person only. It was further agreed that the main body of the report should be kept fairly short, but that considerable detail should be included in Appendices to the report, to serve as a guide or check-list for anybody undertaking similar evaluation studies elsewhere in the future. The Secretary agreed to undertake the work of drafting the report.

Lessons for the Future

For reasons already explained, the size of the Evaluation Committee and its Working Party was larger than would perhaps usually be required. In normal circumstances a small working party would probably be appointed by, and be responsible directly to, the Board of Governors concerned (in the case of a teaching hospital) or perhaps to a joint Evaluation Committee representing the Regional Hospital Board and Hospital Management Committee (in the case of non-teaching hospitals). If the members of such a working party are to give their services on a part-time basis, then a membership of about ten is perhaps reasonable, comprising not more than two representatives of each of the medical, nursing, administrative, architectural and engineering professions, together with one or two specialists in certain fields if desired (e.g., X-ray, pharmacy, laboratory, etc.). None of these members should be on the staff of the hospital that is being studied, or of the Regional Hospital Board or any other body which was largely responsible for designing that hospital. If, on the other hand, the members of the working party are to be appointed on a full-time basis, then the membership could probably be halved. On balance, however, part-time membership is perhaps to be preferred, if only because of the wider range of experienced people who might be able to offer their services on a part-time basis; but it is desirable that the Secretary of the working party should be able to devote several weeks full-time to the task of collecting and collating the information received, and, again, to the preparation of the draft report.

Whatever the membership of the working party, it needs to be supported by adequate secretarial and clerical services, because there will be a great deal of typing and duplicating work to be done, as well as the compilation and presentation of statistics, graphs and similar material.

The procedure adopted for studying the theatre and central sterile supply department in small teams worked well. General observation, accompanied by discussion and questioning of staff, provided a useful basis for preparing the draft report. On the wards, the process of continuous observation over periods of 24 hours, likewise provided a useful basis for the preparation of the report. It is important that the observers should record their findings in detail during or as soon as possible after each period of observation. These detailed records are essential to a successful evaluation.

It seems that general observation of this nature can provide most of the information, as regards both fact and opinion, that is needed to enable a reasonable assessment to be made of the wards or departments concerned. At the same time, such observation helps to decide which aspects of the work are worthy of more detailed investigation by work study or similar methods, which can in turn lead to useful improvements in the running of the hospital.

For particular services, such as lifts or pneumatic tube communication systems, concentrated studies over a short period of time - as distinct

from general observation - will be necessary. Such services lend themselves to detailed analysis in a way that is not practicable for complex units like a ward or central sterile supply department, except at considerable expense of time and manpower.

It goes without saying that in a study of this kind the final report is an evaluation based upon the broad views of the members of the Working Party as a whole. During the course of such a study there will be occasions when there is unanimous agreement, and sometimes a minority opinion must give way to majority opinion. But in most instances it is a question of drawing a useful conclusion from a general expression of views which may differ widely; and to do this may be more helpful to readers than attempting a clear-cut decision on each issue.

The members of the Working Party felt that they were free to offer adverse criticism without necessarily giving alternative solutions. In many places throughout the report it has been possible to make constructive suggestions; but to have attempted to do this on a larger scale could have involved much time and work; even when an adverse comment is made unanimously it does not follow that members would have found ready agreement on what else the hospital might have done.

All members of the Working Party are agreed that taking part in this investigation has been a most useful and interesting experience, and it is hoped that the publication of this report will encourage similar exercises because of their benefit to the evaluators, quite apart from other reasons.

The evaluation was in itself a valuable experience. Much has been learned on how to conduct a study of this kind and this report may therefore prove helpful in enabling similar enquiries to be planned more effectively. As a study of a new hospital building it should perhaps be regarded as no more than a first stage in learning how to evaluate such a complex subject, pointing the way to a more scientific approach in future studies. For example, no formula has been found for judging standards of comfort. But it was never expected that this particular study would serve as a model for future investigations, partly because opinions differed, and will differ, as to what an evaluation study might be expected to contain or achieve. There is a limit to what may be accomplished in a given time; it had to be kept in mind that our purpose in this instance was to form a fair assessment of the building and organization as a whole and as a part of an active teaching hospital.

12 Further comments on the wards

The following comments are additional to those contained in chapter IV.

There is a great deal to be commended in the equipping and layout of the wards and ancillary rooms but certain points were noticed which are listed below in the hope that they will be of help to the hospital.

Visitors waiting space in a central concourse between two wards

Waiting accommodation

An attractive concourse provides ample waiting space. The provision for relatives to stay overnight is good (it is important that it should not be reduced).

Medicine Room

It is necessary for the nurse to have a peaceful place where she can prepare medicines, but because of the Guy's system, whereby the nurse measures out the drugs into individual metal trays, she is away from the patient area for some time. The medicine room might profitably be in a more central position. The metal trays into which the drugs are dispensed are a source of unnecessary noise, especially at night.

Single Rooms

The noise from the kitchen is distracting. We understand that the doors of the single rooms are left open for ventilation and observation, which makes the rooms unsuitable for isolation. These rooms have no toilet facilities. All visitors to the ward pass these rooms.

Bowl Room

We are very favourably impressed by this amenity and the separation of the storage of wash bowls, tooth mugs, etc., from the bed-pan area.

Test Room

It would be practical to have an adjoining W.C. with hatch.

Bathrooms

The bathroom with "free standing" bath, designed for patients requiring nursing assistance, is too small. We think it would be an advantage to have doors wide enough to take a bed, trolley, or a hoist.

No showers have been provided, and some of the patients said they would like to see them installed.

The radiators are so placed that there is a risk that patients may burn themselves.

W.C's

It would be more convenient for patients if the toilets were spaced more evenly over the ward area. We would suggest the need for a lavatory basin in each W.C., as in the nurses' cloakroom, to provide greater privacy for the patients.

Washing facilities

The wash-hand basins on the wards are not intended for the use of patients and are in fact little used by them, but the basins have been found to be very convenient for the use of the staff. The basins are rather shallow in design. As soon as the patients are ambulant they prefer to use the annexe, even if it means queuing. We suggest that there should be more washing cubicles for female patients and that they should be made more private.

Treatment Room

This room does not seem to be used as fully as it might be; the reasons are chiefly that it is difficult of access, the doorway is too narrow, there is no piped oxygen or suction, and it takes the nurses away from the ward. (We understand that oxygen and suction are now being installed in each treatment room). The extent to which the room is used is also related to case assignment procedure; when patients are blanket bathed, dressings are done at the same time to avoid disturbing the patient too often, a method which ensures that the patients are as comfortable as possible.

Preparation Room

This room is too large for the present purpose as it was not planned with a central sterile supply department in mind. The shelves are well-designed for cleaning but are small, and packs can fall down the back of the shelves.

Linen Room

This room is visited frequently by the nursing staff and we consider that it would be preferable for the linen to be kept nearer to the bed areas.

The arrangements for disposing of soiled linen have been well thought out, the bags being collected by means of a separate rear access to the ward. It adds, however, to the demand on space and labour, the bags often have to remain on the ward for some hours.

Flower Room

This room is used for several purposes - for flowers which are returned to the wards, for dirty equipment (possibly infected) for return to the central sterile supply department, and for domestic cleaning utensils. Domestic staff have their morning coffee in here.

Balconies and Day Rooms

The balconies are apparently liked and were the subject of little criticism. Most patients found the balconies useful when the weather was not too cold or windy. As far as the two day rooms in each ward are concerned, it has been general practice to use one exclusively as a sitting room and one as a dining room; but this practice leads to overcrowding in wards where most patients are ambulant (e.g., E.N.T. Ward), and to embarrassment where one wing of the ward is used for men and the other for women. We thought the day room with open sides was too cold for general use, but this may be a matter related to height and aspect.

Cubicle Curtaining

The design of the curtain track between the beds is excellent since this permits the full space between the beds to be used for treatment for an individual patient. At the foot of the bed the space is restricted; here there seemed no reason why there should not have been four, or even six, inches more space between the bed and the curtain.

Nurses' Station

Further consideration should be given to its shape and size in any future plan.

Kitchen

There appears to be wasted central space in this room and we think it could be a little smaller. The domestic-type crockery washing machine was said not to be entirely satisfactory for the heavier hospital work, mainly because the capacity is too small. Crockery from lunch constitutes three separate loads for a machine; on the other hand, a machine capable of dealing with this work in one load would be quite large and more expensive to purchase.

Nurses' Cloakroom

This room is used also for morning coffee, and could be better designed by separating these two functions within the same space.

Incineration

An incinerator on each ward is provided to ensure immediate disposal of dirty dressings, etc., but in practice a wardsman sees to the lighting and operating of the incinerators twice daily. In the circumstances, it is perhaps doubtful whether the installation of an incinerator on each ward is justified.

Artificial Lighting

The main ward lights appear difficult to clean. The locker lights have to be draped to prevent disturbance to other patients. The floor level recessed night lighting fittings in the ward are badly placed and the reflection off the polished floors causes disability glare. At the nurses' station the source of light over the nurses' desk is in the wrong position; because of the glare the staff have difficulty in adjusting their vision between writing notes and looking into the ward.

It would be an advantage to have a light over the students' desk; at present the X-ray viewing box is switched on as a source of light and this is disturbing for the patients. The telephone indicating light on the nurses' station can be very easily masked by papers, etc.

Telephones

The telephone at the nurses' desk could with advantage be in an acoustic booth; in an open ward the ringing of the bell is disturbing to the patients.

The patients' telephone trolleys are of excellent design. It would be appreciated if these could be used in the day room. Telephones on the concourse are extremely useful for staff, visitors and fully ambulant patients.

When a nurse is in a ward alone at night it may not always be possible for her to leave the patient to reach the telephone to call another nurse in an emergency. An alternative means of calling for assistance is essential and is as necessary in an open ward as in a single room.

Oxygen and Suction - piped services

Oxygen provision is adequate between beds, but because it is not centrally placed some difficulty is experienced with leads becoming entangled round the wash-hand basins. No immediate emergency supply is available.

Suction is provided at the first four beds in each bay, leading to inflexibility in the use of beds. Neither oxygen nor suction are provided in the treatment room, which restricts the use of the room considerably. No emergency suction supply is immediately available, but we were told that portable equipment is sometimes used to avoid moving a patient occupying a bed without a suction outlet.

Noise

The wards are comparatively quiet, particularly so at night, and staff discipline is good. Trolleys of all kinds are a main source of noise; so are floor-polishing machines and it may be that their use could be restricted without detriment (see below). The ticking of the ward clock (over the nurses' station) was noticeable at night, and so was the opening and closing of doors.

Noise from outside the building is surprisingly little, particularly at night, but we are told that sometimes there are grounds for complaint.

Heating and Ventilation

The patients thought that the wards were kept at a comfortable temperature.

The biggest single source of unfavourable comment from the patient enquiry was that the wards are draughty. We are told that the windows are very difficult to clean, the process taking far too long; also the nurses have difficulty in reaching to open them.

The door closers in many cases are not strong enough to keep doors shut. Some door frames have been forced out of the partitions by wind pressure when windows have been left open, and this has been particularly prevalent in the ward kitchens, as these are opposite single rooms whose doors are frequently left open.

It is frequently difficult to provide an acceptable rate of air change in hospital wards without draughts on windy days, and there would seem to be a need for further study into the design of windows for hospital wards.

Doors

The doors to the single rooms and treatment rooms are too narrow (3' 6") to take a bed with attachments and damage to the door frames is already evident; it may be that rooms do not get their full use because of this difficulty. Damage to the door frames was also noticed in the kitchen and linen room, where trolleys bump against them.

Floors

The floor surfaces are generally of black (with grey marbling) thermoplastic tiles. They are wearing well, and have the advantage that they are little harmed by stiletto heels.

We are informed that the routine to be followed in the maintenance of these floors is that the floor is sealed when new and re-sealed every twelve weeks. Daily mopping should be sufficient but in fact the floors are burnished with a noisy suction-polisher for several hours each day, disturbing patients and staff. The need for this polishing requires investigation, and we understand that the hospital now considers that burnishing twice a week may be found sufficient.

Furnishing and Equipment

a) Bedside Lockers. The lighting and all other electrical services are connected to the locker which, being moveable, makes it possible to re-position the beds within certain limits (e.g., curtains). The control panel is sometimes difficult for patients to reach; a hand control set would be a convenience.

b) Patients' Clothing Lockers. Although these are provided, because it is considered best for patients to have their own clothing by them, they are not being used in this way.

c) Chairs. The ward stacking chairs are fairly comfortable, are pleasant in appearance but are noisy to handle. There is a need for easily mobile armchairs, which are safe in operation, for patients who are up for a very short time and unable to go to the day room.

d) Overbed Tables. When a patient has a bed cradle the present practice is to lift the overbed table over the cradle. It might be more convenient to the staff to have a few overbed tables of a different type, e.g., one which goes over only half the bed.

e) Bedsteads. The wards are equipped with Guy's prototype bed, which is very mobile. There is no easy means of adjusting the bed to different positions or heights. Because of the much greater cost, a fully adjustable bedstead was not bought, but an excellent "bed elevator" is used instead. This is quite satisfactory but adds another piece of equipment to be kept in the ward.

f) Patients had little criticism to make of other bedside equipment.

Facilities Lacking

There are some facilities which the committee thought could be provided with great advantage, viz:-

a) A room for an administrative sister, to be used at night by the night sister, would be a convenience and perhaps this could be sited on the central concourse on one of the ward floors.

b) Duty rooms and changing rooms for orderlies and domestics, male and female; this accommodation could be centralized to serve this whole block.

c) The need for a post-anaesthetic recovery room and for an intensive care unit has been recognised by the hospital and we understand that suitable provision has now been made.

d) A heating element is needed in the preparation or bowl room to provide boiling water for inhalations, etc., and for other purposes.

13 Further comments on the operating theatres

The following comments are additional to those contained in chapter V:

Parking space for trolleys, etc.

The parking space is barely adequate for the stretcher trolleys. A stores room for the mobile X-ray unit might be more advantageous than the parking bay used at present, and would certainly be more convenient for maintenance work on equipment, which is now done in the corridor.

Tea Room

This appears small as it is the only rest room for staff nurses and student nurses (total staff 38).

Heating and Ventilation

There may be advantages in having low level mechanical extract ventilation in the wash-up area with a reduced volume extracted from the sterilizing room.

Noise

As far as could be judged during the visits, the theatre floor was very quiet.

Cleaning and maintenance

No cracks were noticed in the floors or wall tilings; but it is too early to form any ideas on the extent of wear and corrosion or on problems relating to re-decoration. It was noticed that access to part of the plumbing in the scrub-up is from a removable panel from within the theatre.

Finishes

The terrazzo floor finishes are very good, and the standard of wall and ceiling finishes, their colour and low reflection value are all good.

Ultra-sonic washers

The ultra-sonic washers in the wash-up rooms are not as effective as the hospital had hoped and the suggestion was made that an automatic dishwasher of suitable type might do just as well.

Lighting

The anaesthetic room has high intensity tungsten lighting with open shades. These should be totally enclosed for use where explosive gases may be present. The patients' eyes may be affected by glare and indirect lighting would be more satisfactory.

Autoclaves

The two 10 cubic feet high speed downward displacement autoclaves appear to be of adequate size. The flash sterilizers shared by each pair of theatres provide adequate cover for dropped instruments.

14 Further comments on the central sterile supply department

The following comments are additional to those contained in chapter VI:

Office Accommodation

The administration of this Department is hampered because the office accommodation is divided into two by the main entrance. The Supervisor

has at present no office of his own, and has to make do with the laboratory, which in practice is never used for the purpose for which it was intended.

Make-Up Room

This is too small and in spite of recent improvements to the ventilation system the staff still suffer at times from the "wild" heat radiating from the autoclaves.

Linen Store

This is rather cramped as it also has to be used for the inspection and folding of linen.

Dirty Clean-up

This area is congested mainly because of the difficulty of achieving a satisfactory directional work-flow in the face of two separate delivery points (i.e., hoists).

Central Supply Store

With the conversion of part of this space into a much needed rest room for the staff, the area now available is barely adequate to hold three months' bulk supplies.

Sterile Stores

Although these two areas appear to be more than adequate in size there is a lack of shelf space during the production peaks each day. The division of this area in two, imposed by the basic plan of the department, has proved advantageous inasmuch as the theatre and ward supplies are housed separately.

Processing of dirty equipment

The two hoists serving the dirty clean-up area have no ejector system and the returned bins are stacked *ad-hoc* as they arrive. The installation of roller racking at bench height would assist the work-flow at these points. In the interests of the rest of the staff, this potentially infected work area ought to be shut off from the rest of the department.

Syringe and Needle Room

The excessive heat generated by the infra-red sterilizer has necessitated its removal to a fortuitous space in the solution room next door, thus spoiling an otherwise exemplary work-flow.

Telephones

There is a need for a telephone or "talk box" system for use with each of the hoists.

Pneumatic communication tube system

The two receiving stations could, with advantage, be reduced to one, and that would best be sited in the office.

Heating

Although some form of background heating is probably essential in the

event of the plenum plant breaking down in cold weather, this ought not to have been supplied in the form of traditional cast iron radiators which in practice are never used and serve only as dust traps.

Ventilation

The original plenum ventilation plant proved to be inadequate during the summer months. This has since been augmented by window fans and the introduction of refrigeration plant.

The rest room should have some form of extract ventilation.

Lighting

Even in bright weather natural lighting has to be supplemented at the back of the rooms. The general standard achieved seems adequate although it appeared to be low by modern standards.

General Comments

The finishes generally are standing up to working conditions, and the colours chosen are clean and cool.

The floors are at present cleaned by hand.

The noise level everywhere is high, particularly in the dirty clean-up at the beginning of the day.

15 Further comments on the engineering services

The following comments are additional to those contained in chapter VII:

Pipe ducts

The two main vertical pipe ducts are unlit. The catwalks may fail to prevent tools from falling to the bottom of the building, and do not in themselves constitute fire barriers between floors.

Floor drainage channels

The floor drainage channels are difficult to clean and leakage occurs between the tip of the channel and the floor finish. We were told that the channels in the autoclave room cannot always cope with the cooling water from the plant and the floor then becomes flooded.

Plant rooms

The hot water calorifier plant room is very warm and for those occasions when men are working there some means of improving ventilation and reducing temperature should be available. The heating calorifier room is less warm but the ventilation might well be improved by a grille in the outer wall.

Water storage tanks

The main hard and soft water storage tanks and the expansion tank are located at roof level and the water content gauges for these tanks are situated immediately below in the corridor adjacent to the lift motor

room. Because the "low-level" alarm in the engineers' office is common to all tanks, when it sounds it is necessary for an engineer to go to the top of the building to see which tank is concerned. We thought that a separate alarm for each tank would be more convenient and would save time if remedial action was necessary.

Ventilation plant

The filter banks of the ventilation plants are comprised of 50 cells. In changing these cells every ten days about 1,000 filters of the spun glass fabric type are used every three months, and we thought it probable that other types of filters could give equally satisfactory but less expensive service.

Theatre Autoclaves

The emergency downward displacement instrument autoclaves and the high pressure autoclaves on the theatre floor are supplied with unsoftened cooling water to condense the steam at the end of the sterilizing period. As the condenser coils were of a sealed type and not accessible for cleaning they have had to be replaced. Alternatively, softened water could have been used. We noted that maintenance access to the small instrument sterilizer chamber is from the scrub-up area of the theatre suite.

Water softening apparatus

The automatic water softening apparatus generally is satisfactory but has a tendency to jam when the filter bed is being back-washed. We understand that alterations are to be made and a new drain-pipe installed to serve as an over-flow from the back-wash receiving tank. Since there is demand for soft water in the hospital we suggest that there would be a saving in cost if the soft water supplied to the autoclaves could be recovered for re-use instead of running to waste.

Pneumatic tube communication system

Sometimes the pneumatic tube system carriers are posted upside down or with lids unfastened, and as many as 40 carriers have been found blocked in the system. It has been known for carriers to be placed in the access panels instead of the dispatch units. The costly delays which occur, when the apparatus or procedure fails to work correctly, emphasize the importance of making sure that new members of the staff are trained in the use of the apparatus. Our attention was drawn to the excessive wear on carriers.

Light fittings

Many of the fluorescent lighting fittings are of the "open" type pattern and appear to be difficult and time-consuming to clean.

Ward night lighting

The floor level night lighting fittings in the wards have on occasion become overheated causing rapid deterioration of their internal wiring. These fittings are designed for lamps up to 60 watts and the Consulting Engineers have suggested that this overheating may have been caused by using lamps of too high wattage. The quantity and distribution of the light emitted by these fittings causes glare which might be remedied by using low wattage coloured lamps.

Light switches, etc.

Laminated plastic plates have been fitted to lighting switches and socket outlets. This material is very durable, pleasing to the eye and easily cleaned, but unfortunately not entirely suited for use with the type of lighting switches actually installed. Only a thin plate could be accommodated under the plate locking rings and consequently these plates are tending to curl away from the wall thereby forming a gap between switch plate and the walls. We are informed that the switch and socket outlet boxes had already been installed when it was decided that plastic plates should be substituted for the satin chrome plates originally proposed, so as to avoid possible cleaning problems.

Bedhead electricity socket outlets

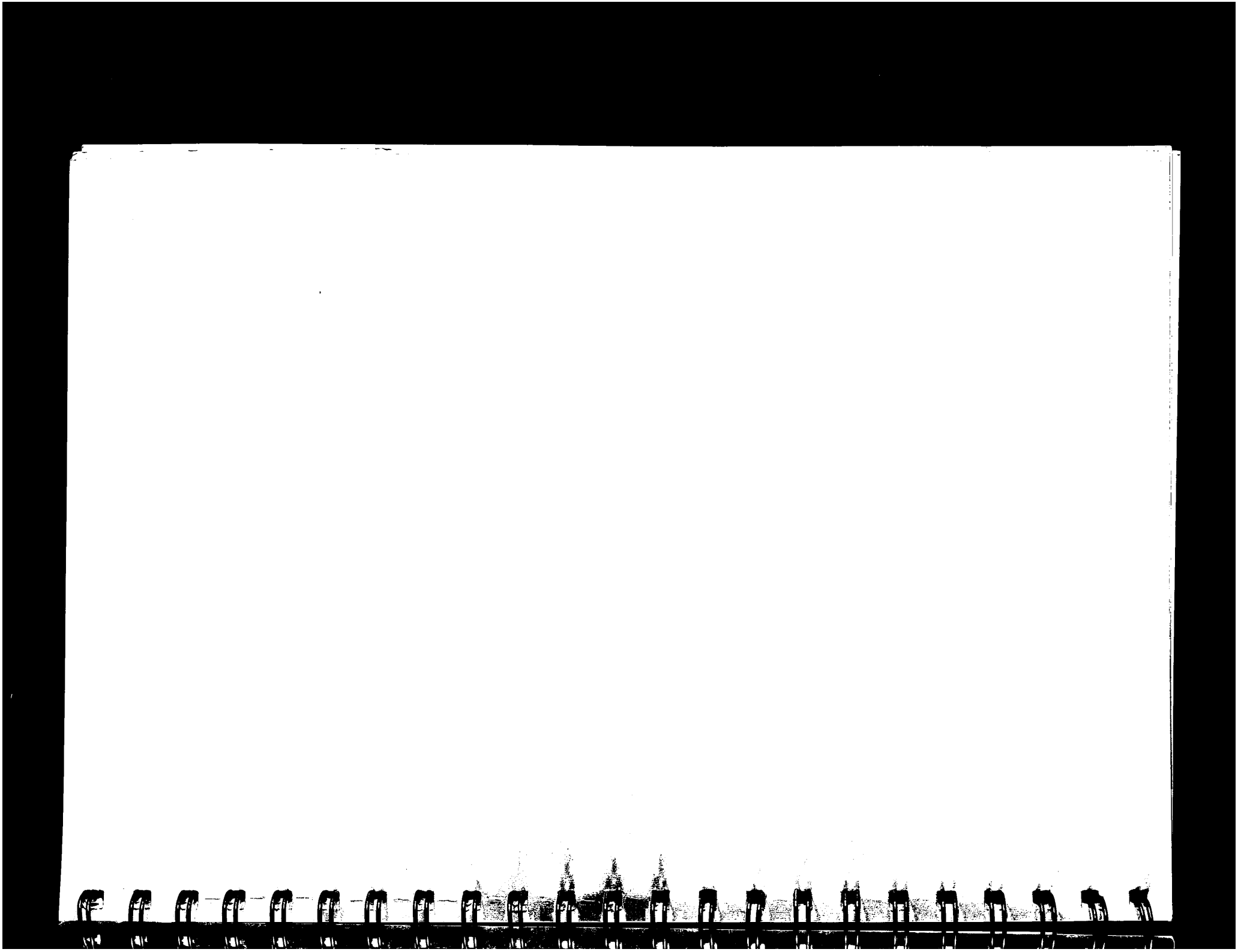
Of the two 13 amp. socket outlets mounted at each bedhead position in the wards, one is intended for the connection of the bedhead lighting fitting and is wired as a lighting circuit protected by a 5 amp. circuit breaker. The other outlet is installed for the connection of appliances and equipment and is protected by a 30 amp. circuit breaker. Unfortunately, equipment requiring currents in excess of 5 amps. is sometimes connected to the bedhead lighting sockets and the circuit breakers trip on overload. This is in no way serious but it can cause inconvenience to other patients on the same circuit and be a nuisance to maintenance staff. We feel that both socket outlets in these positions could, with advantage, have been wired to deliver their maximum rated output.

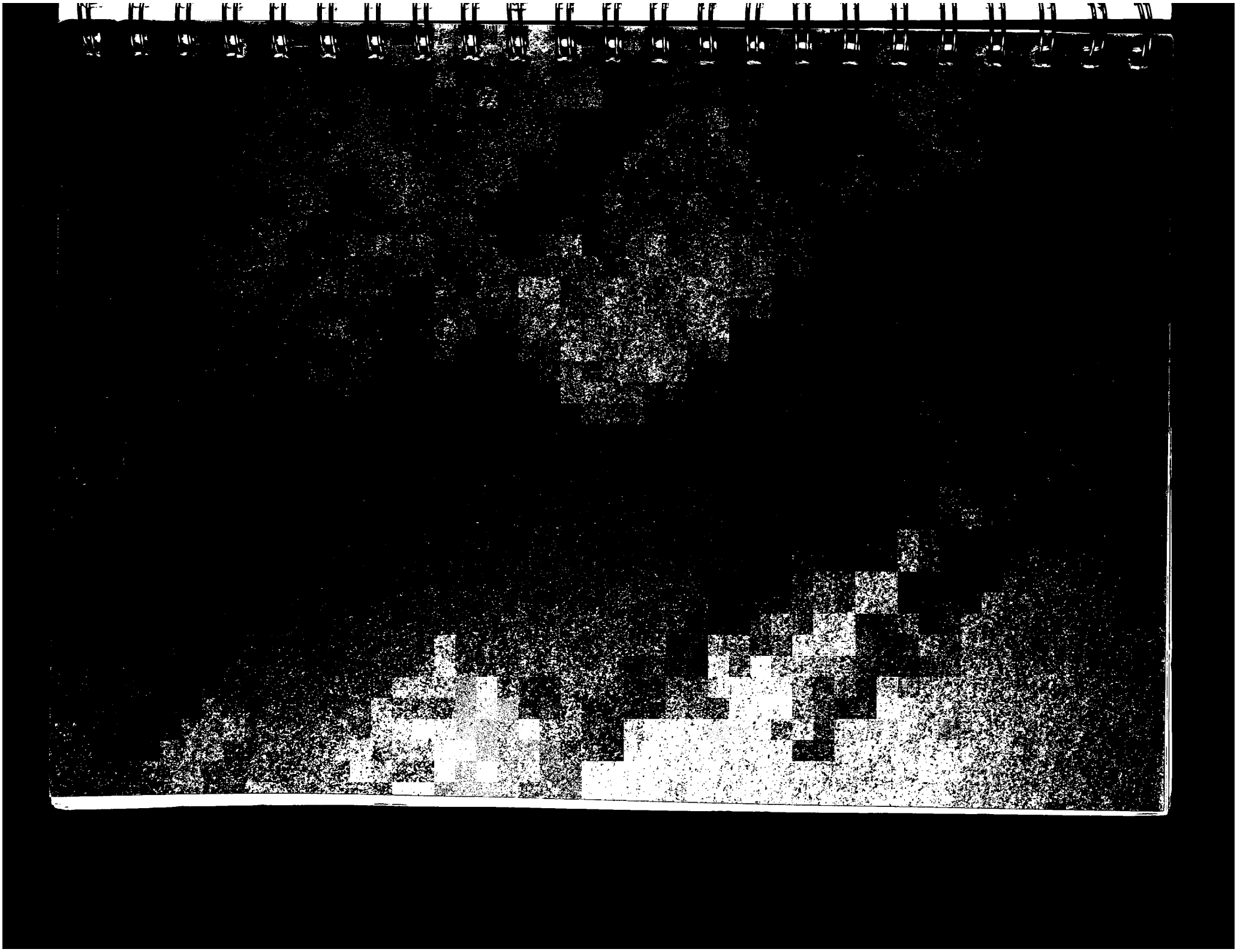
Electricity circuit breaker distribution boards

It is difficult to alter or extend the miniature circuit breaker distribution boards, for not only does the whole unit have to be isolated, but the complete panel has to be removed to gain access to the wiring and connections.

Telephone control equipment

The switch cupboards house both the telephone terminal boxes and the MV switch and distribution gear. The G.P.O. telephone engineers require frequent access to their equipments in these locked switch cupboards and it would have been better if these services had been installed in separate cupboard type enclosures.





16 Outline programme and aide-memoire

The information which follows was originally produced as a docu
out with spacing on alternate pages to allow for insertion
and notes, and was bound in a stiff cover for convenient ha
Copies were circulated to all members of the Working Party
Aide-memoire and to provide a convenient and organised b
making notes.

One specimen page - shown

specimen

17 Questionnaires sent to patients

Specimen

GUY'S HOSPITAL

NEW GUY'S HOUSE

* Please delete whichever is not applicable

1. Noise

   (a) Were you disturbed by noise by day? Yes/No*

   Were you disturbed by noise at night? Yes/No*

   (b) If so, please state causes:

   (i)

   (ii)

   (iii)

   (iv)

2. Privacy

   (a) Did you feel you were too near other patients or too far away?

   (b) Did the bed curtains give you enough privacy? Yes/No*

   (c) If not, would you have preferred to be in

   (i) a 4 bedded room? Yes/No*

   (ii) a single room? Yes/No*

3. Communications

   (a) Was it easy to call a nurse when necessary? Yes/No*

   (b) If not, in what way was it difficult?

4. Toilet and Washing Facilities

   (a) Were there enough toilet, bathroom and washing facilities? Yes/No*

   (b) Were they satisfactory? Yes/No*

   (c) If not, please state what was lacking

Specimen

5. Equipment

(a) Was the equipment at your bed side suitable? Yes/No*

(b) If not, please state any faults:

(i) the bed

(ii) bed side locker

(iii) control panel on lockers

(iv) light

(v) overbed table

(vi) bed side chair

6. Ward comfort

(a) Was the ward too warm? Yes/No*

(b) Was the ward too cold? Yes/No*

(c) Was the ward stuffy? Yes/No*

(d) Were the windows draughty? Yes/No*

(e) Please state the month you were in hospital .....

7. Day room and balcony

(a) Did you find the day room useful? Yes/No*

(b) Did you find the balcony useful? Yes/No*

8. Have you been in hospital before? Yes/No*

If so, please state if possible where and when

Ward .....

Please do not sign this

Age .....

Sex .....

specimen

ALL REPLIES TO
A.H. BURFOOT, B.A.F.M.A.
CLERK TO THE GOVERNORS

TELEPHONE NOS
HOP 3662

COUNTING HOUSE
GUY'S HOSPITAL
LONDON
S.E.1

September, 1962.

Dear Sir/Madam,

We are trying to find out what our patients think of the wards in New Guy's House and as you were a patient there yourself a short time ago I am seeking your help.

Would you please be kind enough to answer the questions on the enclosed form and return it to me in the stamped addressed envelope as soon as you can. The form does not have to be signed.

Nothing you write will be regarded as a criticism of the staff in any way so please reply as frankly and fully as you are able because your comments may benefit future patients.

Thank you very much indeed for your help.

Yours sincerely,

A.H. BURFOOT

Clerk to the Governors.

COUNTING HOUSE
GUY'S HOSPITAL
LONDON BRIDGE, S.E.1

August, 1962.

Dear Sir,

We are trying to find out whether our patients like the wards in New Guy's House, and, as you were a patient there yourself a short time ago, I am seeking your help.

Would you please be kind enough to answer the questions at the foot of this letter and return it to me in the stamped envelope enclosed.

Thank you very much indeed for your help.

Yours sincerely,

A. H. BURFOOT

Clerk to the Governors.

1. Did you like the open ward with all the patients together . . .

   . . . . . .

2. If not, please say why . . . .

   . . . . . .

   . . . . . .

   . . . . . .

18 Summary of replies to questionnaires addressed to patients

This report analyses the replies to the questionnaires issued to patients discharged from New Guy's House.

500 of the blue questionnaires, together with covering letters and business-reply-paid envelopes, were sent by post to patients who had been discharged from New Guy's House between May and August, 1962.

By 19th September, 334 (67%) of these questionnaires had been returned. This can perhaps be considered a good response, and is comparable to the proportion of questionnaires returned in the Fund's noise surveys in 1957 and 1960.

In this preliminary analysis, the questionnaires have been sorted according to the sex, ward and month of discharge of each patient. 127 male and 167 female patients have been classified in this way, whilst the questionnaires returned by 40 patients were insufficiently complete to enable a precise classification to be made. These 40 are described as "Unspecified" in this analysis.

The questionnaires sought the patients' views on seven main headings Noise; Privacy; Communications; Toilet and washing facilities; Equipment; Ward comfort; Day room and balcony. The analysis is therefore shown under these headings, but it should be mentioned that on a great many questionnaires the patients had taken the opportunity of making very complimentary remarks about New Guy's House and its staff. Some of these remarks are quoted in the following pages. The proportion of critical comments is in fact very small, and the overall impression from the analysis of the questionnaires is that the great majority of patients hold New Guy's House in very high esteem. This impression is confirmed by the response to the white questionnaires issued to patients discharged from the wards during August.

In most cases, there appears to be little significant variation in the replies given in relation to the age or sex of different patients, or in relation to the separate wards or month of discharge. In this paper, the replies have therefore generally been summarised into overall totals of 'Yes' or 'No'.

Noise

40 patients (12%) said that they were disturbed by noise by day, and 38 patients (11%) by night.

By day, easily the most common cause of complaint was the noise of the cleaning machines used daily - and often, it seems, during the patients' rest-period after lunch.

By night, the most common cause was the noise from other patients needing or receiving attention, and a number of patients remarked that they thought it would be much better if such people could be accommodated in single rooms.

The noise of the ripple-bed motor occasioned several comments, and other causes, by day or night, mentioned by a few patients included T.V. and radio from day-room; stiletto heels; electric clock; doors; echoing floor; bed-pans; nurses or doctors talking at night; curtains being drawn in night.

However, apart from cleaning-machines and other patients (and their ripple-beds), the number of adverse comments were very few, and in this respect the situation at New Guy's House compares very favourably with that found at the hospitals which participated in the Fund's noise surveys in 1957 and 1960.

Privacy

269 patients (80%) felt that the other patients were neither too near nor too far away. 3 felt they were too near, and 3 felt they were too far away, whilst 51 did not answer the question.

315 patients (95%) said the bed-curtains gave them enough privacy; 8 patients said they did not; 8 were in single rooms and 3 did not answer the question.

23 patients (7%) expressed a preference for a 4-bedded room, and 11 patients (3%) for a single room. 175 (52%) gave no answer.

The answers to this question seem to indicate that the great majority of patients are content to be in an open ward fitted with bed-curtains.

However, in the questionnaire, question 2(c) was linked with questions 2(a) and 2(b) and the patients were only asked to answer 2(c) if they thought the bed-curtains did not give them complete privacy. If the patients had been asked to say whether they would prefer a 4-bedded or single room, irrespective of their like or dislike of bed-curtains, the answers might have been different. This is perhaps a point to be remembered if similar questionnaires are to be issued in evaluating other hospitals.

Communications

Only 2 out of 334 patients said that it was not easy to call a nurse when necessary, so the communications system can be considered quite satisfactory.

Toilet and washing facilities

308 patients (92%) thought there were enough toilet and washing facilities. It is, however, significant that 20 out of 167 female patients (12%) thought there were not enough facilities, whereas only 1 out of 127 male patients (and 4 out of 40 'unspecified') were dissatisfied on this score.

Of the 21 patients who gave details of their criticism, 9 said there were insufficient toilets, 7 insufficient basins and 5 insufficient bathrooms.

280 patients (84%) thought the toilets were satisfactory. Here again, a higher proportion of female patients (35 out of 167) were dissatisfied than male patients (14 out of 137; 4 out of 40 'unspecified').

The chief cause of complaint was lack of cleanliness, due generally to the mess left by other patients in the bath or toilet. Several patients complained of inadequate flushing mechanism in toilet, blockage of drains from basins and faulty locks on toilet doors. Other points mentioned by a few patients included: toilet-seats too low; faulty lights; lack of privacy at wash-basins (female); need for coat-hook and shelf in toilet; stand-up urinals for male patients; more handrails; better ventilation; provision of shower; mixer-taps for basins; chairs for patients who would prefer to wash sitting down because of illness or disability.

Equipment

The great majority of patients expressed satisfaction with the ward equipment. There were altogether only 69 comments concerning the six items of equipment specifically mentioned on the questionnaire.

a) Beds. Of the 13 patients commenting about the beds, 3 complained about the backrest slipping; 3 would have liked the bed to be adjustable in height; 2 said it was too short and 2 that it sagged; 2 said that they wanted more blankets and one that the bed made her back ache.

b) Bedside Locker. Of the 12 patients commenting about the locker, 3 found it difficult to move; 3 found it difficult to reach; 2 wanted it bigger; individual comments suggested provision of a rim round the top; better storage for shaving gear and false teeth; incorporation of a foot-rest.

c) Control-panel. Of the 15 patients commenting about the control panel, 7 pointed out that the BBC Home and Light programme switches were reversed; 2 said the panel was difficult to reach and 2 that the ear-phones were too heavy; individual comments suggested that the button/switches were too close to each other, too complicated or too noisy; that more than two programmes should be available and that the electric-razor plug was unsuitable.

d) Lighting. Of the 4 patients commenting on the lighting, 2 said the overbed light was too high; one that anglepoise-type of light would be preferable, and one that the ceiling-light was 'too far forward for reading'.

e) Overbed table. Of the 9 patients commenting about the overbed table, 6 said that it should be adjustable and 3 that it was difficult to move.

f) Bed-side chair. Of the 14 patients commenting about the bedside chairs; 7 said there were not enough of them, and 7 that they were too hard.

Ward Comfort

Only 19 patients said that the ward was too warm at any time; 16 that it was too cold and 23 that it was too stuffy - the latter comment referring most commonly to the atmosphere first thing in the morning.

It is significant, however, that 115 patients (34%) complained that the ward was draughty. This was the biggest single source of unfavourable comment in the whole enquiry and about the same proportion of male and female patients were dissatisfied on this score. Analysing the comments month by month, and excluding the 'unspecified' incomplete questionnaires, it is shown that:

In May, 5 out of 17 patients complained of draughts,
" June, 37 " of 140 " " " "
" July, 48 " of 100 " " " "
" Aug., 15 " of 37 " " " "

Analysing these comments ward by ward, it does not seem that any individual wards are more or less draughty than any others.

Day-room and balcony

305 patients (91%) found the day-room useful. For the 25 patients who did not, the reasons given were about equally divided between those who found the T.V. tiresome, those who found the conversation too operation-centred, and those who could not stand the smoky atmosphere. 4 did not answer the question.

270 patients (81%) found the balcony useful. Of the 52 patients who did not, nearly all said the balcony was too windy, and some could not stand the height.

Previous hospital admissions

Of the 127 male patients, 35 had not been in hospital at all before, 23 had been in-patients in old Guy's Hospital, and 69 in hospital elsewhere.

Of the 167 female patients, 30 had not been in hospital at all before, 52 had been in-patients in old Guy's Hospital and 85 in hospital elsewhere.

It does not seem that those patients who had not been in hospital at all before were any more critical than those who had been in Guy's or elsewhere, or vice versa.

As mentioned earlier, the overall impression from the questionnaires is one of general satisfaction with New Guy's House. Of the comments that were made, the most significant perhaps were those concerning the noise from cleaning machines and other patients; the inadequacy, in certain respects, of the toilet facilities, and the draughtiness of the wards.

Below are quoted some of the comments made by the patients themselves, and these perhaps will give as good a summary as any of the patients' opinions of New Guy's House.

M.C.Hardie
20th September, 1962.

noise

The following are some of the comments made by patients in reply to the questionnaires:

June/Job/51/M Only by the electric floor polisher for about ½ an hour each day. A more silent type would be appreciated, but I imagine this is not practicable.

July/Queen/30/M The floor polisher was very noisy. But I only make this remark because it was. I quite understand the job had to be done.

Aug./Luke/53/M I found the whining of the electrical polishing machine for the floors disturbing. The polishing was done quite frequently and seemed to take a long time. Would not a mop dampened with an appropriate liquid be equally efficient and of course noiseless? ... Snoring was disturbing but of course unavoidable where several people are sleeping.

May/Samaritan/51/M By T.V. and Radio on very loud volume when Day Room door was left open - during early days after operation when confined to bed.

June/Naaman/25/M Post-operation patient crying out and moaning.

June/Naaman/34/M Nurses attending to other patients. ... Noise from patients very ill or otherwise restless. Is it not possible for these few to be moved into separate rooms - even if only at night?

June/Astley-Cooper/54/M It happened on one night only - the patient in the next bed was groaning and calling out for the nurse all night long. They kept him quiet the following night.

Aug./Luke/53/M Attention to Emergency Intakes in adjoining beds.

July/Luke/19/M Other patients at times. ... Motor Vehicles, particularly after 10 p.m.

July/Luke/25/M Noise at night due to high wind pressure around building at high level (Double glazing). ... Noise especially at night from very ill patients and from doctors and students,etc. (unavoidably in large wards).

July/Christopher/40/M Shouts from another patient in female ward.

June/Astley-Cooper/43/M I think the really serious cases, who need instant attention during the night should be kept in a room or ward by themselves and not in the general ward, as the other patients cannot get any sleep. The ether and other gases used on serious cases, left one feeling "doped" in the mornings.

June/Luke/56/M Doors shutting in corridor.

July/Job/60/M By the staff attending patients, but they made it as quiet as possible. (This is unavoidable). ... Noise from people returning home late at nights - in nearby flats or houses.

July/Samaritan/57/M The floors seem to echo the noises.

Aug./Esther/50/F Men coughing....Bedpans rattling, doors banging... Talking.

July/Dorcas/19/F The loud movement of the hands of the ward clock.

July/Dorcas/41/F Voices - doctors - students late at night after the ward was settled. Emergency admissions. A small child was admitted into the bed next to me (Women's Surgical Ward) with acute appendicitis. She cried a great deal and was taken to theatre for operation. Other restless patients. One in particular who vomited noisily all night following operation.

June/Evelyn/35/F By the emptying of bedpans.

June/Patience/28/F Noise from bed-curtains being drawn during the night.

Aug./Martha/38/F Special machines required through the night to operate such things as Ripple Beds.

Aug./Dorcas/39/F Patients recovering consciousness. Tour of ward by Sister and nurse-in-charge. Visits by doctors to patients. Note: sleeping tablets are a great help.

Aug./Esther/47/F Steam train around 5.00 a.m..... a patient in one side of the side wards making horrible noises.

July/Cornelius/22/F It would seem that a group of people outside of New Guy's House like to serenade the patients, admittedly they had good voices but the time they chose, usually between 11.0 p.m. and midnight was a little disturbing.

July/Dorcas/46/F Main reasons being that it was very windy during most of my stay and discovered that what disturbed me most after much searching once I was on my feet were cupboard doors in toilets leading to pipes - wished I could have put bolts on them.

July/Martha/39/F Patients coughing or in pain, needing attention.

June/Dorcas/47/F Outside building operations....traffic.

June/Dorcas/41/F You can hear objects being dropped in ward above also stiletto heels, which greatly surprised me.

June/Dorcas/28/F Noises from the ward kitchen....Telephone...Talking at the Report table - Sisters and Nurses do whisper - but not the Doctors. Constant traffic up and down the corridor passed the single rooms - not everyone has rubber shoes.

June/Lydia/38/F The electric clock which clicks very loudly every minute.

June/Queen/41/F Nurses talking loudly at duty desk, patients snoring.

June/Patience/20/F Because I was in the nearest bed to the nurses desk and the doctors at night when discussing patients, etc, were rather disturbing, nurses talking.

July/Christopher/17/F The floor polisher was going from 11.30 - 3.30 one of the days I was in there, usually it was from 11.30 - 2 p.m. Non stop.

July/Lydia/46/F The cleaners with their vacuum cleaners; they bang your bed when you are supposed to be resting.

June/Patience/41/F The polishing was always done during our afternoon nap, which was very disturbing.

June/Queens/52/F Electric Polisher very disturbing and irritating.

privacy

June/Astley-Cooper/42/M At night only, would I have liked a single room, as there is a lot of disturbance, if one has a serious case near one. By day, I would prefer to be in the general ward.

May/Samaritan/51/M Bed distance correct but too many patients in ward.

June/Job/51/M The cubicle space to me would appear to be perfect in every respect.

May/Astley-Cooper/66/M For 3 days (2 nights) at end of treatment I was in a single room and thought ghastly. It concentrates ones thoughts on morbid subjects.

June/Naaman/57/M Would suggest, however, that wards were too large - half size would be better.

June/Luke/38/M Overflap of curtains not satisfactory.

July/Job/13/M Would be too lonely most of the time, in single room.

June/Christopher/63/M Talking to and mixing with other patients in ward helped to pass time, also exchanging newspapers, books, etc. was very helpful.

June/Martha/38/F The distance between the beds is just right. Near enough to talk to neighbours if desired but far away enough for privacy during visiting hours etc.

June/Dorcas/37/F Neither; the beds I thought were about the ideal distance from one another.

communications

July/Naaman/62/M I did notice that new patients pressed the buzzer in error when wanting to switch on or off their light.

June/Luke/56/M Insufficient staff on many occasions.

June/Naaman/34/M Sometimes too easy to call the nurse in error. Better if call button was a little further from other switches and if the patient could cancel his call. Perhaps a switch would be better than a button.

July/Patience/28/F I think it is a great compliment to the organization of the ward to say that I never once heard anyone call or ring for a nurse - they seemed to anticipate every need.

toilet and washing facilities

Aug./Luke/53/M The sockets for the bolts on the doors of the toilets were easily damaged and in consequence some doors could not be securely fastened. (Causing a certain amount of embarrassment).

Aug./Luke/53/M The thing that was lacking was a cloth and cleaning powder to wipe the bath after use by patients able to do so.

July/Luke/25/M Bolts to toilets not always held.... Toilets did not flush adequately, bathrooms poorly ventilated; open windows at high floor levels are very draughty.

June/Astley Cooper/57/M I would consider for male patients, that a urinal would be an improvement to the present method of an up patient using the standard low level suite.

July/Job/60/M Water took a long time to drain away in bathroom and basins and there was no cloth or brush to clean bath after someone had used it.

June/Naaman/33/M Flushing capacity of toilets inadequate. Door bolts in toilets ineffective.

February/Job/M Seats in toilet too low.

Aug./Samaritan/46/M In my opinion the men's ward would have been improved by the inclusion of a stand-up latrine, because patients that are not too well are apt to soil the floor.

July/Luke/57/M Lavatory seats often soiled by other patients. Suggest that polythene covers should be made available to cover seats and disposed of afterwards.

July/Luke/55/M Premises satisfactory, but more frequent checking for cleanliness would be an advantage.

July/Luke/46/M The flushing of the pan was very bad - bad sanitation.

July/Job/37/M The flushing of the toilets were not up to standard.

June/Naaman/34/M I would suggest that lower mirrors would be an advantage for patients who might wash or shave sitting in wheel chair. A small shelf in W.C. compartments where toilet articles can be placed before going to wash would be an advantage.

May/Astley-Cooper/66/M There were no means of cleaning a bath or basin after use, some were left in a filthy state. I suggest a chained up, coarse sponge or similar item for patients to use, and the cleaners to go round more than once only. The stone floor, to slop around disinfectant may be effective but it is not clean, a finger rubbed on floor came up black.

June/Luke/38/M Inclined to be crowded just prior to breakfast due to patients following routine and not staggering visits, to the toilets.

June/Lydia/48/F The flushing of toilets, poor, each time I used the toilet I flushed the pan twice, to make sure it was clean for next person. One flushing of water not sufficient.

June/Dorcas/42/F One could not clean bath after use or before as there were no cleaning materials. A very bad fault found in every hospital I have been a patient in.

June/Martha/35/F At least two more toilets were needed for 24 patients and I think the curtains on the washing cubicles did not give enough privacy to patients who could not take a bath but needed a thorough wash down. Doors would be better.

June/Evelyn/-/F Toilet never flushed properly anytime...basin never empty quick enough.

June/Cornelius/39/F The toilet and washing facilities were satisfactory but the cubicles could have been larger. Also a mixer tap would make washing easier.

June/Cornelius/24/F I felt that the washbasins were not private enough. People could see each side of the curtains. The bathrooms, however, were good.

July/Evelyn/49/F A back brush would have been handy.

July/Patience/52/F The only thing missing was a hook for dressing-gown when washing.

Aug./Evelyn/34/F Two bathrooms in a ward of 30 women where most were required to take baths daily caused queuing, the wash basins became blocked, perhaps because people washed their hair in them. If a spray and hair dryer could be provided it would be the best possible thing in the women's wards. Too many patients went to bed with wet hair, etc.

June/Martha/56/F Insufficient toilets and faulty locks.

March/Lydia/-/F This I feel is rather a weak spot - 4 cubicles for washing for 24 beds is not nearly adequate particularly at times when a number of patients are needing to wash - i.e. before visits after supper when the time is being limited. Also 4 toilets too are not really enough. While the toilets are well looked after early in the day, I'm afraid they get into a very bad state as the day goes on, this I blame the patients for not the staff - but some sort of supervision might be helpful - I found, and others too, not being very tall, that the mirrors in the wash cubicles were too high, one had to stretch up to them.

July/Queen/53/F When quite a few patients were up and washing one has to wait such a long time for use of cubicles.

July/Lydia/16/F It was usual to queue for a wash in the mornings. There were enough toilets.

June/Dorcas/37/F My only critism here was that the wash basins had a tendency to get blocked.

June/Queens/52/F Toilets very low. No specified toilet round, this I think is essential.

June/Lydia/38/F I think a few more chairs by the washbasins would be an improvement, as after, a big operation it is easier to sit down to wash.

Aug./Martha/38/F Basins very often blocked and lights broken.

Aug./Dorcas/39/F Only that I would have preferred them to be cleaned more often, the toilets and the wash rooms.

July/Martha/39/F Toilets and wash rooms could have been a little cleaner.

Aug.Esther/47/F The toilets would not lock, this was obviously intentional but I should have felt happier if they had locked.

July/Cornelius/22/F I think that perhaps a shower attachment in one of the bathrooms would be welcomed by those patients who are able to take them and who may have such fittings in their own homes in preference to a bath.

July/Dorcas/46/F Toilets were often out of order for days and both toilets and bathrooms needed more attention paid to the cleaning of same.

Aug./Patience/35/F Bathroom and washing facilities were fine but not enough toilets.

Aug./Martha/58/F Four washing cubicles is hardly sufficient when 50% of the ward are mobile. In one of the cubicles there was no light and in another no shelf for putting toilet articles.

Aug./Dorcas/45/F Water does not run away from basins or bath quickly enough..... Lavatories do not flush regularly.

July/Lydia/33/F Toilets could have been cleaner.

July/Evelyn/41/F The electric light did not work in any of the four toilets.

June/Lydia/41/F For the size of the ward, toilet and bathroom facilities there were not enough.

June/Lydia/46/F I think the water in the wash basin took rather a long time to clear.

June/Evelyn/19/F There were not enough wash basins for the amount of people in the ward.

June/Esther/56/F Not enough toilets and bathrooms - not enough privacy in washing facilities.

June/Victoria/27/F Not enough wash basins for patients who were up to wash.

June/Martha/46/F Not enough toilets and bathrooms, could do with two more of each.

June/Martha/36/F Toilets left unclean after some elderly patients use, through no fault of staff.

June/Patience/53/F I think there should be more bathrooms three is not enough when most patients are up.

June/Queen/18/F Not enough toilets, only two for twelve people or more especially as one is told to go, and wash at certain times of the day.

equipment

Beds

June/Naaman/33/M The back-rest on the bed would slip back maybe I never got the 'knack' of it!

June/Naaman/34/M Better if height of bed was adjustable, i.e. lower for majority of time.

July/Job/60/M I could have made use of an extra blanket. Legs and feet cold at night (this kept me awake at times).

July/Samaritan/35/M The bed was rather too soft tending to sag in the middle.

June/Astley-Cooper/42/M When one is propped up in bed, the support at the back seems to slip backwards, surely something can be done to prevent this.

June/Evelyn/38/F The bed was too high for patients who have had operations.

June/Dorcas/28/F The bed was insufficient in length. Backrest constantly slipping back unless wedged with a pillow.

June/Queens/52/F The bed was very bad, dipped in centre. Had to sleep on the edge of the bed using my locker for pillows. Complained about this to the Houseman, Sister and Registrar but nothing was done. Night Sister put an armchair to prevent my falling out.

July/Lydia/16/F The bed made my back ache.

June/Martha/56/F The bed was a little too short.

June/Martha/35/F Not enough blankets (I was immediately supplied with them on request).

July/Evelyn/49/F I found the bed very high to get in and out of.

Bed side locker

June/Naaman/34/M The bed side locker was a little too heavy to move easily.

July/Job/60/M No cup for false teeth.

June/Luke/56/M Top of the locker was too small.

July/Job/47/M I think there could have been better facilities for soap and shaving gear at the back of the locker.

July/Job/60/M Needs a foot rest to put slippers on before putting feet to cold floor.

June/Dorcas/37/F I was in traction for thirteen weeks and found that I could not reach the main cupboard of my locker. For such patients, I think a locker that could swing over the bed with its main cupboard above would be a great improvement. The rest of the equipment was excellent.

July/Cornelius/22/F The bed side locker needed a ridge around the top to prevent things from slipping, i.e. water, magazines, etc.

May/Patience/50/F The bed side locker was too low to reach from bed, but only when feeling very weak.

July/Lydia/22/F The bed side locker not quite big enough.

June/Dorcas/28/F The bed side locker was good except that the wheels do not run very freely.

June/Queens/52/F The bed side locker's lower shelf was not suitable for bed patient or back patient, otherwise fair.

Control panel

May/Astley-Cooper/66/M I suggest that the Electric Razor plugs are changed to suit the panel on lockers, will save nurses from removing and replacing electric light bulbs at a time when they are very busy.

June/Esther/23/M The call nurse button perhaps was too near radio switches and it was possible to call a nurse unnecessarily.

Aug./Samaritan/18/M Radio panel could only obtain Light Programme and I.T.V. B.B.C. Home and T.V. unobtainable.

June/Naaman/33/M I believe the 'Home' and 'Light' programme switches were mis-identified.

June/Luke/56/M The control panel on locker was difficult to reach when the locker was pushed back.

July/Cornelius/22/F Apart from the fact that the Home and the Light programmes were wrongly indicated on most lockers the panel was simple to operate.

June/Dorcas/28/F The control panel was not in the easiest position when lying in bed.

June/Queens/52/F The control panel would be quite good if they were explained to patients and shown how to adjust. Not always easy for sick persons to grasp these things.

June/Martha/35/F The radio controls were mixed. The light control produced the home wave length and vice-versa.

June/Patience/47/F The B.B.C. Home and Light programmes were reversed on my own panel and one other bed to my knowledge, i.e. Home switch gave Light programme and vice-versa, but did not give inconvenience when one realised the fault.

June/Martha/56/F Earphones for wireless very uncomfortable preferred the light weight ones in use in Ruth ward.

June/Patience/20/F Rather noisy at night.

Aug./Esther/47/F The head-phones were too large, even when adjusted.

Aug./Evelyn/34/F I found there was no volume when on the light programme, no doubt this was just a fault in my particular control panel.

Light

June/Job/51/M The general lighting is highly satisfactory, but I wonder if something could not be done about the bed lamps, which always seemed too high to me, the strong day light bulb was too bright and the use of it, I believe and quite rightly frowned upon by some patients. The small bulb is much too weak for reading, this only applies to period 8.30 p.m. to 10 p.m.

Aug./Job/72/M Ceiling lights rather far forward for reading. Reading light on locker satisfactory.

July/Job/60/M The light was rather too high.

July/Queen/23/F The light would have been more useful had it been angle poised.

Overbed table

May/Astley-Cooper/52/M The castors were liable to become turned inwards so that they fouled the bed legs. After my operation I sometimes found I could not draw the overbed table towards me from the foot of the bed, and of course, I was unable to lift it.

June/Astley-Cooper/57/M The table was O.K. for meals, but an adjustable angle for reading and writing would be a great asset.

July/Martha/39/F Everything was excellent except the overbed table which was too high for comfort. If they could be made adjustable it would help many patients who cannot sit bolt upright!

June/Martha/38/F I found the table rather high for washing in bed it was difficult to reach up and into the washing bowl (I am fairly tall too).

July/Patience/59/F The bed table was slightly too high.

May/Patience/37/F The table was awkward when cradle on bed. Cantilever type might be better for nursing staff in the circumstances.

June/Dorcas/28/F The overbed table tips too easily on being pushed.

June/Martha/35/F The table was difficult for the nurses to manoeuvre over leg guards, but excellent in use.

Bed side chair

Aug./Luke/53/M One for every patient would be better for sitting as the small chairs are rather uncomfortable.

June/Naaman/67/M The chair I found very hard to sit on in pyjamas.

June/Naaman/57/M There were not enough armchairs and the dayroom was robbed of these leaving that room short.

Aug./Job/72/M The chair was rather hard for prolonged sitting.

July/Dorcas/46/M Not enough comfortable ones; only received one the last week I was in, then felt guilty in case anyone felt their need greater than mine.

July/Cornelius/22/F Would appreciate more arm chairs or easy chairs in ward during visiting hours for infirm and elderly visitors.

July/Evelyn/49/F The chair was very hard to sit on.

June/Martha/56/F Not enough arm chairs available.

July/Patience/52/F Could have done with an armchair for oneself when up and not feeling like the noise of the day room.

ward comfort

June/Luke/38/M Stuffiness due mainly to other patients demanding windows be kept closed. Unsuitable type of window which caused draft.

June/Dorcas/37/F One found that people opposite open windows complained of draughts. But windows need opening to prevent stuffiness.

June/Lydia/57/F When occupying Bed No.25 (nearest Sister's desk) draughts were experienced through the door to the toilets being left open, particularly at night and where the wind was strong.

June/Cornelius/39/F Would it be possible to install a ventilation system?

June/Lydia/38/F The windows are the only thing I would really complain about, as, if they were open, patients would always complain about the draught and if shut, the ward was stuffy. Otherwise, a wonderful block, and wonderful staff.

June/Martha/36/F The comfort of the ward was entirely up to the patients as nurses would always open or close windows as requested.

day room and balcony

Aug./Job/72/M I used the dining room as radio seemed to be always on in day room.....it was usually, however, too windy.

May/Samaritan/51/M Dining room and accommodation too small for the number of patients.

July/Job/47/M I think it should have been a larger room.

June/Samaritan/50/M The room was generally too crowded.

June/Luke/38/M Insufficient armchairs.

July/Patience/52/F It was all right for the young who wanted the wireless all the time. It was too small. We could have done with a 'quiet room' as well, for the older people. The dining room was also too small for the amount of people up...It was too cold outside.

July/Martha/42/F Time passed more quickly in the ward.

June/Evelyn/45/F The day room was useful but I found several patients smoked and being a non-smoker it irritated my cough.

June/Evelyn/52/F The day room was useful but not enough easy chairs.

June/Martha/45/F The room was too stuffy - too small; unable to escape from some patients discussions and details of their complaints.

June/Martha/43/F Suggestion: Posters on the walls ridiculing talk about operations.

June/Patience/20/F Patients kept talking about operations all the time so I didn't like it much.

June/Cornelius/24/F When sitting in the day room too many patients were morbid and I was much happier sitting by my own bed.

July/Patience/59/F The day room was useful but an additional room without television or radio for quiet occupations would be an advantage. Altering volume controls should not be accessible to patients particularly children.

June/Naaman/33/M Nobody ever used the balcony while I was there. For it was too windy! One look down terrified me!

July/Luke/25/M The balcony was not large enough also draughty (open balustrade) could only be used during hot windless days. I suggest balconys be made larger and to open off wards so that patients unable to walk could have beds wheeled out and also balustrade be made solid with a glazed sheet above it up to approx 5' to eliminate high winds to enable use during cool weather.

June/Naaman/34/M Too windy and exposed on 9th floor. More useful if provided with glazed screens and made more attractive.

June/Dorcas/41/F Too windy, even on hot days becaus of height.

June/Patience/41/F Too windy being high up - I was on the 8th Floor.

general comments

June/Job/56/M I can think of nothing which would improve the amenities of the particular ward I was in. The personal attention was beyond praise.

June/Astley-Cooper/54/M All the arrangements in the new Astley Cooper ward were excellent. I am full of admiration.

June/Samaritan/61/M I found the Doctors and Nurses and staff very helpful and was very pleased in their attention to me.

July/Luke/61/M I cannot speak too highly of the ward and the staff. I had every comfort and care.

June/Esther/23/M The ward being situated up in the clouds, the patient can only assume to be in the 'Royal' suite of a good class hotel: Food excellent; hygiene insurpassable; staff including Doctors and Dressers were wonderful.

July/Queen/30/M Again I would like to say that the nurses were wonderful also the cleaning staff and the medical students. I must compliment the Governors and Staff and all who help to run the hospital. My stay was wonderful even though nobody likes being in hospital.

July/Naaman/56/M I have been in another hospital but Guy's a much better place.

July/Job/16/M I was in Guy's Hospital old building, I entered January 6th 1960 was in Bright ward and Job ward for eight weeks. Had hole-in-heart type operation on Saturday, 6th February, 1960 performed by Sir Russell Brock, when I was 13 yrs. old. I am now 16 yrs. I cannot thank everybody concerned in both my operations enough, from surgeons to nurses, I was given all the attention possible, and am now in full employment, thanks to Guy's.

June/Luke/38/M Hospital and staff *admirable in every way*. I would complain, however, regarding appointment system prior to preliminary examination. It appears appointments are made from 9.00 a.m. onwards, whereas in fact, doctors and students do not arrive until 9.45 a.m. at the earliest.

June/Job/67/M My only complaint, looking down from the dining room window, the shocking insanitary buildings adjacent to the Hospital, why hadn't the responsible authorities been told.

July/Samaritan/43/M It was thought the facilities of the mobile shop was not as frequent as was necessary.

Aug./Luke/53/M In any future building programme could provision be made for smokers and non-smokers to be separated? e.g. glass partition. As a non-smoker I find a heavy pipe smoker at close quarters for any length of time quite irksome.....I was greatly impressed by the New Guy's House generally - the decorations and curtaining for example are tasteful and of course, the staff are really first class, helpful and considerate in every way.

June/Christopher/63/M Television set in ward had only short lead for connection, and was always placed at bottom end of ward, would be better if it was more mobile, and longer lead.

May/Luke/51/M My stay was only a short one (4 days) during which time I enjoyed every comfort and could not imagine anything more luxurious even in the most expensive London Nursing Home.

Aug./Evelyn/34/F I have been in Guy's for 3 previous visits, 4 wards, the first time in 1948, and always have I had wonderful treatment and I found the new block a great improvement on the old wards.

June/Queen/41/F Everything at Guy's is beyond all expectations. The noise at night I feel one must expect at all hospitals. While patients sleep, staff work. Thank God for Guy's Hospital, it owes me nothing, I owe all.

June/Martha/38/F I particularly appreciated the separate dining-room and not having to eat in the ward where perhaps patients were recovering from operations or wanting bed-pans. I am not fussy but I am easily put off my food!

July/Esther/49/F This was the 8th time I had been in Guy's Hospital since 1930 and I have always been very comfortable. I think New Guy's House is really marvellous and I know I would not be content to go into any other hospital.

July/Dorcas/64/F The only complaint I have to make, was the food, which was always cold, poor quality, and very small helpings.

July/Cornelius/22/F If I might be so bold as to suggest that in the 'L' shaped wards you either have no T.V., 2 T.V. or preferably a projector screen from the ceiling enabling all in the ward to see. I.T.V. caused a lot of friction between patients when one side has it then the other was wanted.

July/Lydia/46/F The only fault I found was that the only station that you could not get on the wireless was Luxembourg.

June/Evelyn/38/F I only have one complaint to make and that is only having 2 visitors and not being allowed to change, and the time is too short.

July/Dorcas/46/F I would like to say how much I appreciated the kindness shown by all members of staff concerned with my illness.

Aug./Martha/38/F I would add that my stay in New Guy's House was a very happy one, the Sister, Nurses, and Doctors were all wonderful. Thank-you.

March/Lydia/-/F I am very glad to take this opportunity of saying how very comfortable I was in Lydia, the nursing and attention I had was excellent and the hard generally had a very nice atmosphere due almost entirely I would say to the happy working relations among all the staff during that period.

July/Patience/51/F I was very comfortable and happy in Patience Ward, and the Sister and staff could not have been kinder.

June/Cornelius/24/F May I add that the nurses were wonderful.

July/Evelyn/46/F I would like to give credit to Guy's and all the staff; I have always been happy as an in-patient, and can only speak highly of this hospital in every way.

the open ward

During August, 1962, questionnaires were given by the Ward Sisters to patients on discharge from the wards. Two questions were asked:

1) Did you like the open ward with all the patients together?

2) If not, please say why.

Over 150 of these questionnaires were issued and 84 were returned. The overwhelming majority of the replies were in favour of the open ward. 67 patients gave an unqualified 'Yes' in answer to the first question; 13 answered 'Yes' but with some reservations; 3 patients were in a single room anyhow, and only one answered 'No'.

a) The following are some of the comments from the 67 patients who liked the open ward:

My opinion, for what it is worth, based on experience of a surgical ward where patients are not normally desperately ill, is that the association with other people is a tremendous factor in relieving the boredom of a necessarily long day and helps patients to forget their own particular troubles. Difference in social status is quickly overcome and I consider is not a serious factor in the problem.

My short stay at Guy's Hospital was the first time I have been into hospital and I found the patients in the ward extremely friendly cheerful and helpful toward each other and to myself.

I liked the open ward very much indeed, one's natural dread of hospital is immediately allieviated by the gay and friendly appearance of the light and airy wards.

I liked the open wards very much because the beds were well spaced out, in spite of which one was able to retain that friendly feeling.

I enjoyed the companionship of the other patients.

I liked the open ward, I found the other patients in the ward very friendly.

Everyone so kind and encouraging.

I think it is very good indeed and the staff are very gentle and kind.

A few words cannot describe the way I enjoyed my stay, the bright wards companionship - service were perfect, thank-you.

I like the open ward very much, it creates a happy atmosphere.

This system is ideal for active patients, particularly pleasing was the absence of the normal ward clatter. Post op. was not disturbed at all by noise.

I like the open ward: patients can talk to each other, they can see the visitors coming, they can see what goes on, the nurses can see them at a distance and it's nice to see the television.

b) The following are some of the comments from the 13 patients who liked the open ward, but with some reservations:

Privacy is the ideal for everybody and one hundred per cent privacy is to be found in a room for yourself. The same goes for hospitals, but as the patients have to be kept under some kind of observation, individual rooms would mean an increase in nurses. The best solution would be to have rooms with 4 or 6 beds where the patients can, if the need arises, call the nurses. Divisions of 4 or 6 beds could have glass partitions which could be open in the night and when needed.

Yes, for interest and comradeship.... No, for sleeping..... Much too noisy snoring, coughing, sneezing, people wanting attention,etc.

In any new construction, I would suggest in surgical wards, that a small four bedded ward to be incorporated close by Sister's desk, to ensure quietness and that an enclosed T.V. on sister's desk to the said ward would enable staff (especially night) to give full attention to said ward with the aid of same.

There are times when one wants to be on one's own, while by no means adverse to being 'mixed' generally. The paying private room system must cater for this surely? I do not see how any reasonable individual can object to your open system, and any sort of 'private' development must mean increased nursing problems.

Yes, I like the open ward, it is very friendly, but there is one drawback, you see and learn too much, and it is liable to scare the living daylights out of you.

I liked the open ward immensely; but in my humble opinion, the 'Ripple' bed should have been in the side ward as the noise ensuing from there at night is most disturbing to all but the heaviest of sleepers. I believe this is the concensus of opinion of the other patients.

Yes, but I also liked the last two or three days when in a single ward in a convalescent state.

Yes and No, I feel the really ill patients are better in a ward alone for the sake of the less ill patients of sensitive disposition.

I like the open ward but do not like the mens' ward so close to the womens'.

c) The following are the comments of two patients who were in single rooms anyhow:

I was in a private ward in Dorcas Ward, and I was amazed at New Guy's House, I thought it a wonderfully situated hospital.

I was rather spoiled and spent my stay in one of the single rooms. To me this was ideal. If I had not had this room, the open ward would appeal to me much more than a room with, say four beds in it.

d) The one patient who disliked the open ward gave the following reason:

No I do not like the open ward because the patients are disturbed at night by fellow patients who are restless and noisy requiring special attention.

19 The wards

Study based on the Scottish Hospitals Work Study Group's 'Notional Nursing Day'

This work study was prepared by Mr. Alan Bullwinkle, Senior Works Study Officer of Addenbrooke's Hospital, Cambridge, who has been working with that hospital's Planning Team in the preparation of similar studies for both Stage I and Stage II of the new hospital.

(The string diagram of the New Guy's House Unit prepared by Mr. Bullwinkle was made available to the Working Party).

One of the many criticisms of this method of study is the different results which individual examiners can produce from the same plan. The figures quoted later in this commentary are those produced by the Scottish Hospitals Work Study Group, with the exception of the Addenbrooke's example which was prepared by Mr. Bullwinkle.

Unfortunately we have not had the time to prepare the work study for all the five examples examined in Appendix I.

A summary of the results from the studies so far undertaken have resulted in the following efficiency factors.

Table I

Hospital	Efficiency factor
New Guy's House	5·9
Addenbrooke's Hospital	4·47
Larkfield - Experimental Unit	6·25
Musgrave Park - Experimental Unit	4·75

The application of the 'Notional Nursing Day' to the New Guy's House Ward Unit was based on the basic nursing duties in their group which we understand was the method used by the Scottish Hospitals Group. The groups are summarised as follows and the colours used were:-

a) (Black string)
Bedmaking
T.P.R.
Pressure Area Treatment
Doctor's round
Bathing
Pre and post operative care
Treatment and dressings
Patients for admission
Patients for discharge
Instructions (Sister's Office)

b) Sanitary and toilet rounds (Yellow string)

c) Meals (Green string)

The total length of string used was 137 yards which was made up of: Yellow 138 ft/Black 158 ft/Green 116 ft

This result produced a slightly lower efficiency factor then the one produced by the Scottish Hospitals Work Study Group in their examination of the New Guy's House ward plan but the difference is negligible and is probably made up of the different interpretations of the use of the wash hand basins adjacent to the patient's bed.

From the examination of the string diagram the following comments have been raised:

a) The ambulant patient has a long walk to the toilet from the day room.

b) The ambulant patient, in order to reach the toilet or bathroom, must pass the sluice room and compete with the traffic to and from the sluice room which is heavy and not particularly agreeable.

c) The very sick patients adjacent to the nurses' station are in the densest part of the ward from the traffic point of view and most nursing routines take them past these beds. This latter point can be interpreted two ways - as being necessary from a nursing point of view in order to keep sick people under observation for most of the time or, alternatively, creating disturbance for the individual sick patient.

d) The results of this study are generally a surprise for it might be imagined that the concentration of nurses' accommodation at the re-entrant angle of the two parts of the open ward would have produced a good "efficiency" figure. This example illustrates the amount of traffic to the Ward Kitchen and perhaps it is in the organization of catering routines that improvements in the distances travelled by the nursing staff could be achieved.

S E T Cusdin
18th September, 1962

20 The wards

Analysis of ward unit space in New Guy's House shown alongside the recommendations for a district general hospital (excluding teaching requirements) contained in the Ministry of Health Building Note No.4

Room	Recommendation in Building Note	Provision at New Guy's House	Remarks
a) Basic Accommodation			
Single wards	120 sq ft. At least 2 @ 140 sq ft	3 @ 147 sq ft	
	2 single rooms with separate WC's	Not provided	
Multi-bed wards (2 12-bed wards)	Min. width 20'6" beds 8'0" centre to centre	Width 24'0" Beds 9'4½" centre to centre 125 sq ft per bed*	*excluding circulation at junction of 2 wards
Day Room	15 sq ft per bed	355 sq ft per bed*	*including balconies
Treatment Room	180 sq ft	263 sq ft	
Clean Utility	100 sq ft		
Sterile and Prep Room		175 sq ft	
Dirty Utility	100 sq ft		
Soiled linen		58 sq ft	
Bins & Incinerator		65 sq ft	
Sluice	100 sq ft	147 sq ft	
Bowl Room		55 sq ft	
Test Room	20 sq ft	55 sq ft	
Bath Rooms	1 to 10 patients = 3 1 of these 120 sq ft	1 @ 33 sq ft 1 @ 37 sq ft 1 @ 82 sq ft	
Patients' Lavatory	1 to 6 patients = 4	4 + 6 in each 12-bed ward*	*excluding patients in single rooms
WC's	1 to 6 patients = 5	4	
Sisters Room	120 sq ft	161 sq ft	
Nurses' Station	80–100 sq ft	60 sq ft	
Medicine Room		53 sq ft	
Nurses' Lavatory	To be provided	122 sq ft*	*shared by 2 ward units
Ward Kitchen	120 or 200 sq ft	236 sq ft	
Stores			
Linen	50 sq ft	134 sq ft	
Other stores	80 sq ft	141 sq ft	
Cleaner's Room Flower Room	50 sq ft to be provided	137 sq ft	
Corridors	Minimum 7'0" wide	7'0" wide	
Wheel Chair Bay	To be provided	121 sq ft	
b) Additional accommodation			
Doctors Room	120 sq ft	150 sq ft*	*shared by 2 ward units
Relatives Room	180 sq ft	143 sq ft*	*shared by 2 ward units

Items shown in italics are the names of the rooms as annotated on the New Guy's House plans

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21 The wards

A comparison showing the use of space in square feet per bed in various types of Ward Unit based on the formula used in the Nuffield Provincial Hospitals Trust Book "The Function and Design of Hospitals".

The comparisons are shown in the accompanying diagram and illustrated below the line are the examples as shown in the Nuffield Provincial Hospitals Trust Book, and, above, some additional examples including the New Guy's House. These latter have been prepared in my office.

When the Nuffield book was published the two experimental units at Musgrave Park Hospital and Larkfield Hospital were still projects and in the final preparation of the drawings there were small adjustments in the areas. These amendments have not been taken into account and have no particular significance on the present discussions.

The comparison, however, highlights economy in the use of space as the *number of beds* in the unit increases. This is an obvious conclusion as approximately the same number of ancillary rooms are used for a greater number of patients.

This comparison serves to highlight a matter of major policy as to whether the ward unit is organised and planned for special team of medical and nursing staff concentrating on one or two specialities, or whether the proposals made in the Nuffield Provincial Hospitals Trust Book, whilst making for economy in space, create problems of the grading of nursing staff and put an undue burden on the sister in charge of the unit.

For our present purpose I have thought it best to make my comments on five of the examples with the complement of beds per unit similar to New Guy's House.

Of the five I have chosen the St. Thomas' Hospital is still a project but the calculations have been made on the latest copies of the plans. The example chosen from Addenbrooke's Hospital, Cambridge, is the Stage I Ward Unit and the proposals for the next stage relate very closely to the New Guy's House Ward Unit.

The five examples chosen and the ratio of sq ft per bed are as follows:

Table 1

Hospital	Beds	Sq ft per bed
New Guy's House	27	291·5
Addenbrooke's	26	213·0
St Thomas'	28	236·5
Westminster	26	207·2
St Lô	28	228·8

Comment

Whilst the area per bed in the New Guy's House would appear to be high it will be seen from the following tables that the increase is made up of space in the ward units themselves, in day space and in the patients' facilities, together with a high ratio for the utilities.

These spaces reflect a definite policy to provide sufficient space in the wards for doctors' rounds and reflect also the intention of the Hospital to provide improved facilities for the patients.

Bearing in mind that St. Thomas' Hospital has a further bed in the unit to reduce the ratio it would be seen that most of the comparisons will show clear uniformity with the recent trends in the use of space in the ward unit, related to the special requirements of a London teaching hospital.

Table 2 Multi-bed wards and single bed wards

Hospital	Multi-bed wards sq ft per bed	Single bed wards sq ft per bed
New Guy's House	125·4	17·4
Addenbrooke's	72·8	19·2
St Thomas'	72·0*	18·1
Westminster	104·2	11·2
St Lô	92·5	14·7

*(see notes Table 8 as well)

The New Guy's House in relation to St. Thomas' would be comparable if the areas in the centre of the four-bed bays in the St. Thomas' example were taken as ward areas and not as shown in the diagram as corridor space.

After consultation with the architect for St. Thomas' it is understood that they would regard this area as circulation and not part of the ward unit though it would fulfil exactly the same purpose as the centre of the open ward at Guy's.

Table 3 Day space

Hospital	Day space sq ft per bed	
New Guy's House	35·6*	*including balconies
Addenbrooke's	5·4	
St Thomas'	25·4	
Westminster	-	
St Lô	15·4	

The day space in the New Guy's House might be considered generous but it is one of the most agreeable features of the plan. The figure quoted in the Addenbrooke's example was the result of a definite decision to reduce the areas on account of the economy; in the next stage of the development a much greater area of day space has been proposed. The day spaces at Westminster Hospital are negligible and though balconies have been provided for most wards they are not often used as an amenity for the patient.

Day spaces it would seem are gradually changing from "desirable" accommodation into "essential".

Table 4 Patients' Bathroom, wash basins and WC's

Hospital	Bathrooms, etc Sq ft per bed
New Guy's House	20·4
Addenbrooke's	16·3
St Thomas'	19·4
Westminster	9·3
St Lô	14·8

It will be seen from this table that the comparison between Guy's and St Thomas' is approximately the same bearing in mind that there is an additional bed in the St Thomas' unit. Similar accommodation to this would be required in any ward unit where different sexes were being nursed at the same time.

The provision is consistent with the Ministry of Health Building Note No 4.

Table 5 Utilities

Hospital	Utilities Sq ft per bed
New Guy's House	55·6
Addenbrooke's	45·0
St Thomas'	35·0
Westminster	30·0
St Lô	27·1

Under this heading the New Guy's House Ward Unit is generous in the allocation of the space in all the utility areas and the addition of the medicine room is a traditionally local requirement.

Table 6 Treatment Room

Hospital	Treatment room area Sq ft per bed
New Guy's House	9·7
Addenbrooke's	8·5
St Thomas'	10·6
Westminster	-
St Lô	4·8

As will be seen later the area of the treatment room is in excess of the Ministry of Health Building Note, but this area would appear to be more than justified in a surgical block.

Table 7 Nurses' Station

Hospital	Nurses' Station Sq ft per bed
New Guy's House	2·2
Addenbrooke's	2·5
St Thomas'	2·8
Westminster	6·2
St Lô	5·2

The more modern examples in this instance show a closer uniformity than older examples of Westminster and St. Lo and incorporate accommodation previously provided in the treatment room and utilities.

Table 8 Corridor and circulation space

Hospital	Corridor space Sq ft per bed
New Guy's House	25·2
Addenbrooke's	43·3
St Thomas'	58·2*
Westminster	46·3
St Lô	33·8

*(See notes in Table 2)

As mentioned in Table 2 - (Wards) for the purpose of this calculation the central parts of the St Thomas' wards are taken as corridors and this accounts in reverse for the differences in the comparison between Guy's and St Thomas' in this Table.

Conclusion

The sub-division of space and the amount allocated in the New Guy's House Ward Unit would seem to be consistent with modern projects for a teaching hospital where it had been decided as a matter of major medical and nursing policy to maintain the ward unit of 27 beds under 1 sister and to provide adequate facilities in the wards for teaching purposes.

The plan also reflects, as far as the sub-division of space is concerned, the recent trends to improve amenities for the patients.

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18th September, 1962

Wards

Area of service ducts

Total duct area within ward unit	248 sq ft
Area of ducts serving 2 wards	26 sq ft ie 13 sq ft per ward
Duct area to each ward unit	261 sq ft ie 9·7 sq ft per bed
Area of main duct behind passenger lifts	53 sq ft

22 The wards

23 The wards equipment schedule

No	Item	Total cost £ s d
	Chairs	
56	Chairs, wood, upright stacking, Esavian Ltd, Stevenage, Herts.	121 2 0
9	Chairs, PK924, easy low, vynide, Parker-Knoll & Co, Berners St, London, W1	83 15 6
4	Chairs, easy high, Milligan, J Milligan, 45 Gt Russell St, London, WC1	47 16 0
2	Chairs, easy, PK924, Sister's Room, Parker-Knoll & Co, Berners St, London, W1	21 4 2
1	Chair PK747, Newlyn, Sister's Room, Parker-Knoll & Co, Berners St, London, W1	7 4 9
3	Chairs, Bathroom, Formica Faced, Esavian Ltd, Stevenage, Herts.	6 9 0
1	Chair adjustable, Nurses' station, Blue, A & E Bedser Ltd, Ludgate Circus, London, EC4	7 19 9
4	Chairs, Folding ZIMMER, Zimmer, George St, Glamorgan	110 0 0
2	Chairs, Blackley, Self Propelling, G McLaughlin, Rochdale	62 0 0
12	Chairs, stacking, No TU 19, W Steel & Co, Palmers Road, Roman Rd, London, E2	36 0 0
5	Stools, upholstered, Shaw Manufacturing, Ossory Rd, London, SE1	12 1 8
1	Stool Anaesthetists, A L Hawkins & Co, 15 New Cavendish St, London, W1	8 2 6
1	Stool Step, B & H Engineering Co, Holloway, London, E7	1 9 6
		525 4 10
	Tables	
4	Paragon bed tables, Hoskins & Sons, Upper Trinity St, Birmingham	19 1 0
2	Dining Tables, PEL T.6, Pel Ltd, 15 Henrietta Place, London, W1	38 16 8
1	Coffee Table, Formica top, Guy's Works Department	6 0 0
		63 17 8
	Curtains	
10	Ward screen curtains	
6	Sanitary annexe curtains (Total 16) material and making up	14 9 4
36	Cubicle curtains (large) each 26' long x 7' high, material and making up: 546 yards	246 16 9
18	Cubicle curtains (small) each 12' long x 7' high, material and making up: 126 yards	56 19 3
1	Curtain x 4½ (day room East)	
1	" x 2½ (")	
4	" x 1½ (")	
1	" x 4½ (day room South-East)	
1	" x 2½ (")	
2	" x 1½ (")	
1	" x 4½ (spare)	
1	" x 2½ (")	
2	" x 1½ (") material, lining and making up: 115 yards	118 17 11

2	Curtains, sisters room, material, lining and making up: 8 yards	8	5	4
		445	8	7

Medicine room

1	Electrolux antibiotic refrigerator, Contract Electrolux Ltd	37	15	0
12	Medicine glasses, H Hawkins & Sons		3	6
12	Oil cups, H Hawkins & Sons	1	17	0
6	Minim measures, H Hawkins & Sons		17	6
30	Clinical thermometers, H Hawkins & Sons	3	7	6
1	Box for labels, Mence Smith, Borough High Street, London, SE1		6	8
		44	7	2

Bowls room

12	Washing bowls, plastic, Crowden & Keeves	4	8	0
12	Vomit bowls with lids, Taw Manufacturing, High St, Hornsey, London, N8	27	7	0
27	Tooth mugs, Crowden & Keeves		15	9
27	Tooth containers, Crowden & Keeves		15	9
2	Powder dredgers, Crowden & Keeves		3	0
4	Head combs, Pryke & Palmer		2	0
2	Sackers combs, Pryke & Palmer		11	0
2	Nelsons inhalers, H Hawkins & Sons	1	5	0
2	Jugs, polythene, 1 gallon, Crowden & Keeves, Boundary St, London, E2	1	4	0
		36	11	6

Sisters' sitting room

1	Carpet, Poulton & Nicholson, 98 Curtain Road, London, E7	13	16	8
1	Desk, single pedestal, Carson Bros (Productions Ltd), Honywood Road, Basildon, Essex	14	17	6
1	Glass inkwell, Walter Henry Ltd		5	0
		28	19	2

Incinerator area

2	Double linen rounders, H Hawkins, Bromley	13	19	0
1 pair	Sealing pliers, Pryke & Palmer, Upper Thames Street	1	1	0
1	Box for tags (plastic) Mence Smith & Co, Borough High St, London, SE1		2	11
1	Rubber dustbin, Dunlop Rubber Co, Cambridge St, Manchester	4	15	7
1 set	Ring and base paper bag holders, Bedford Steer End & Co, Long Lane, SE1	1	6	0
2	Spur wall uprights and 6 buckets, Standard Range and Foundry Co, Watford	1	1	0
		22	5	6

Main ward

27	Chart Baskets, Bedford, Steer End & Co, Long Lane, SE1	20	18	3
27	Beds, Works Department	615	10	0

29	Dunlopillo mattresses, Dunlop Rubber Co, Rochdale, Lancs	279	9	9
81	Pillows (feather) Bernard Hicks, Bessborough Road, Middlesex	35	8	9
12	Pillows (firm) Bernard Hicks, Bessborough Road, Middlesex	11	5	0
27	Bedside lockers, Works Department	654	15	0
27	Overbed tables, H Hawkins, Bromley, Kent	214	6	0
15	Paper towel containers, Kimberley-Clark Ltd (On loan)			
3	Waste paper bins cream, Pryke & Palmer	1	10	0
15	Soiled towel containers WR17, Cresco Ltd, Broughton Road Works, Worthing	9	7	6
10	Pedal bins, red, Hospital Metalcraft, Bristol 5	22	5	10
1	White Bex 10 gallon bin, mobile carrier, with wheels, Hospital Metalcraft, Bristol 5	7	5	0
6	Wall thermometers, H Hawkins, Bromley, Kent	1	7	0
1	Incinerator, Contract (Made by Radiation)	115	0	0
	Side wards (additional)			
3	Wardrobes, Model 1613, D Meredew, Ltd, Letchworth	52	17	3
3	Mirrors, Dent & Hellyer Ltd	2	19	0
3	Venetian blinds, Seawright Ltd	16	10	0
		2,060	14	4
	Day rooms			
1	Carpet, 12' x 11'3", Poulton & Nicholson, 98 Curtain Rd, London, EC2	42	18	8
2	Standard Ashtrays, Acorn & Lumium Sales Co, 2 Victoria Street, SW1	6	18	8
2	Rubber wastepaper bins, Fortiflex silent (Dunlop Rubber Co), W Langley & Co Ltd, 14 Magdalen St, SE1	2	11	8
		52	9	0
	Lavatories & bathrooms			
5	Lavatory brushes & holders, Halex Ltd, Highland Park, E4	2	10	10
3	Rubber bath mats 'KUMFY', Crowden & Keeves Ltd, Boundary St, London, E2	4	7	6
1	Plastic bath rack 'ENCO', Crowden & Keeves Ltd, Boundary St, London, E2		3	7
		7	1	11
	Ward clerks			
2	Sphygmomanometers, H Hawkins, Bromley	12	5	0
1	Diagnostic set, Down Bros, St Thomas's Street, London, SE1	12	10	0
1	Stethoscope, Willen Bros, 44 New Cavendish Street	1	2	6
1	Patella hammer, Down Bros, St Thomas's Street, SE1		12	3
1	Tape measure, Deans, Down Bros, St Thomas's Street, SE1		2	6
1	Tuning fork, Gardiner Brown, Down Bros, St Thomas's Street, SE1	1	10	6
2	Metal spatulae, Down Bros, St Thomas's Street, SE1		12	6
1	Curved spoon, Down Bros, St Thomas's Street, SE1		1	0
3	Laryngeal mirrors, Down Bros, St Thomas's Street, SE1	1	8	6
2	Post nasal mirrors, Down Bros, St Thomas's Street, SE1	1	5	0
3	Probes, Down Bros, St Thomas's Street, SE1	1	7	0

3	Trays S S 8" x 10", Taw Manufacturing Co	4	15	0
1	Blotter, Walter Henry Ltd		5	0
1	Box for pins & files, Walter Henry Ltd		8	10
1	Red handlamp, Ever Ready Co, Holloway, N7	1	7	0
1	Wooden stationery rack, Walter Henry Ltd		16	9
2	Glass jars, metal lids 8 x 6, H Hawkins & Sons	1	3	6
2	Patients note trolleys, Hospital Metalcraft, Bristol 5	48	10	6
1	Glass inkwell, Walter Henry Ltd		5	0
1	Metal C I Cabinet single with Roneodex panel, Walter Henry Ltd	4	12	0
1	Brass bell, Educational Supply Association, WC2		12	6
1	Pen torch, Down Bros, St Thomas's Street		5	9
2	Viewing boxes, Contract (Newton Victor Ltd)	29	0	0
		124	18	7

Test room

1	Bunsen burner, H Hawkins, Bromley		4	3
2	Albuminometers, H Hawkins & Sons		4	0
1	Test tube rack, Hos. Lab. Supplies		9	10
1	Urinometer, H Hawkins & Sons		3	0
1	Spirit lamp, H Hawkins & Sons		2	4
1	B S R Stand, A L Hawkins, New Cavendish Street		10	0
		1	13	5

Treatment room (including preparation)

1	Examination couch, H Hawkins, Bromley	21	4	0
1	Ring and base (paper sacks), Bedford Steer End & Co, Long Lane, SE1	1	6	0
2	Plastic funnels, Mence Smith & Co, Borough High Street		1	6
1	Container for lotion thermometer, H Hawkins & Sons		3	6
1	10" S S bowl, Taw Manufacturing Co, High Street, N8	1	6	0
1	Burrell's flask, H Hawkins & Sons		3	6
1	Measuring jug - 1 pint, Taw Manufacturing Co, High Street, N8	1	1	6
2	Lotion thermometers, H Hawkins & Sons		15	4
1	Ointment spatula, Down Bros, St Thomas's Street		4	8
7	S S trays 6" x 8", Down Bros, St Thomas's Street	7	7	0
1	Drug basket, Bedford Steer End & Co, SE1	4	3	0
2	Winchester baskets, Bedford Steer End & Co, SE1	5	16	0
18	Metal drug trays, Works Department	9	0	0
12	Syringe stands, Works Department	3	0	0
5	Dressing trolleys 18" x 24", H Hawkins & Sons, Bromley	69	7	6
1	Height gauge, Down Bros, St Thomas's St, SE1	2	2	0
1	Syringe dispenser, Hospital Metalcraft, Bristol	4	5	0
1	Standard Lamp A P, Terrys Ltd	9	10	0
1	Tray S S 10" x 12", Taw Manufacturing Co, High Street, N8	2	0	0
1	Tourniquet Samways, Down Bros		15	6
1 pair	Stock scissors, Anglo Iranian Co		10	0
2	B L B masks, B O C, Brentford	3	0	0
1	E N T lamp, Down Bros	8	8	0
		155	10	0

Sluice room

		£	s	d
8	S S bedpans, Taw Manufacturing Co, High Street, N8	29	8	0
2	Sani chairs, Avon Engineering	41	14	0
2	Plastic mop containers, Shaw Regent Ltd		6	0
1 pair	Cheatle forceps with jar, Taw Manufacturing Co, High Street, N8	2	7	0
		73	15	0

Store room

		£	s	d
1	Window pole, Pryke & Palmer Ltd, SE1		13	9
1 pair	Fleetway steps, Crowden & Keeves, Boundary Street, E2	3	11	3
2	Metal screen frames, H Hawkins & Sons, 7, Dawkesworth Road	12	11	0
2	Belling bed warmers, Edmundsons Ltd, 62, Gt Russell St, WC2	3	10	0
4	Bed cradles, Regent Autocar Co, Market Harborough	9	10	0
2	Elevators, Hospital Metalcraft, Bristol	10	8	0
3	Fracture boards, F McKenna, 10 Gate House, Surbiton	3	15	0
6	I V Poles & Clamps, Works Department	7	0	0
2 pairs	Cot sides, Fort Engineering Co, 50 Setchall Rd, SE1	28	4	0
1 pair	Stretcher poles, Works Department		11	9
1	Suction unit, Works Department	23	0	0
1	Double bellows, Down Bros		10	0
1	Double flowmeter, B O C	8	15	0
3	Single flowmeters, B O C	14	12	6
6	Sorbo rings, H Hawkins & Sons	4	5	6
24	Nail brushes, Addis Ltd, Hertford, Herts	2	12	0
27	Plastic soap dishes, Crowden & Keeves	1	11	3
54	Coat hangers, (Institution Supplies)	2	14	0
6	Bed pulleys, Works Department	7	10	0
		145	5	0

Cleaners room

		£	s	d
1	Tidy trolley with 2 red buckets & lids, B & H Engineering Co, 9, Tufnell Park Road	17	2	0
	Hospital Metalcraft, Bristol 3	1	6	0
2	White buckets & lids, Crowden & Keeves	1	6	0
1	Dustpan and brush, Crowden & Keeves		8	6
2	Scrubbing brushes, Workshop for the Blind		4	0
2	Kneelers, H Hawkins & Sons		11	0
1	Do-all bucket & mop, Sargeant & Co		12	6
2	Housemaids boxes, Crowden & Keeves	1	4	0
1	Columbus Dixon suction pol,, Columbus Dixon, Empire Way, Wembley	43	11	6
1	Hoover Cleaner Mod 1334, Hoover, Perivale, Middlesex	14	3	0
1	Dustette Mod 2614, Hoover, Perivale, Middlesex	6	9	1
2	Ronuk polishers complete, Ronuk Products, Portslade Sussex	2	17	0
2	Spontex sponges, Crowden & Keeves, Boundary St, E2		9	1
1	Towel rail (8 prong), Pillar Products Ltd, Bromley, Kent		11	4
		90	15	0

	Kitchen			
1	Gas stove with lights & grill, Contract New World Oven Range S E G B	90	0	0
1	Calomax boiler, Contract Calomax	64	4	6
1	S S drip tray, Contract Calomax	6	15	3
1	Dishlex washing machine, Contract Dishlex G B Ltd	208	0	0
1	Electrolux refrigerator, Contract Electrolux Ltd	108	0	0
1	Rack for pig food, Cartem Engineering Co, 40, Dover St, London, W1	1	12	0
1	Tray trolley, B & H Engineering Co, 9, Tufnell Park, N7	25	16	0
1	Food Service Trolley, B & H Engineering Co, 9, Tufnell Park, N7	15	3	0
1	Wall can opener, Crowden & Keeves, Boundary St, E2		13	6
31	Trays rectangular,	31	7	9
32	Trays round, Lundegard Hardwood & Woodware Co, 161, Borough High Street, SE1	20	16	0
1	Diet scales, G Salter & Co, 31, High Holborn, WC1	2	4	0
2	Frying pans, Benham & Sons, 66, Wigmore St, W1	3	4	8
1	Sink tidy, Crowden & Keeves, Boundary St, E2		2	2
2	Squeegee bottles, X-Lon Products, 48, Gillingham St, SW1		14	0
1	Juice extractor, Selfridges, Oxford St, W1	1	7	6
2	Large toast racks, Taw Manufacturing, Campsbourne Works, London, N8	3	1	10
3	Small toast racks, Sheldon Cutlery	2	16	0
27	Condiment sets, L B Clarke, 44, Burlington Lane, W4	12	3	0
8	Plate covers, Pryke & Palmer	1	10	0
1	Teapot aluminium, Crowden & Keeves, Boundary St, E2	1	5	0
1	Kettle 4 pint, Crowden & Keeves, Boundary St, E2		15	0
3	Saucepans, single, Benham & Sons Ltd, 66, Wigmore Street, London, W1	5	10	4
2	Saucepans, double, Benham & Sons Ltd, 66, Wigmore Street, London, W1	5	4	0
2	Egg poachers, Benham & Sons Ltd, 66 Wigmore St, W1	2	6	4
1	Bread board, Crowden & Keeves		3	6
1	Strainer, large, Crowden & Keeves		8	3
1	Strainer, small, Crowden & Keeves		5	9
1	Egg whisk, Crowden & Keeves, Boundary St, E2	1	4	9
27	Metal egg cups, Institution Supplies	1	13	9
1	Wooden spoon, Pryke & Palmer		2	0
1 pair	Nutcrackers, Pryke & Palmer		5	7
1	Bottle opener, Pryke & Palmer			3
2	Ladles, Crowden & Keeves		14	0
1	Fish Slice, Crowden & Keeves		2	1
1	Bread knife, Crowden & Keeves		3	6
6	Table spoons, J Taylor, 29 Ely Place, EC1		9	9
60	Dessert spoons, J Taylor, 29 Fly Place, EC1	4	18	9
36	Tea spoons, J Taylor, 29 Ely Place, EC1	1	13	9
30	Egg spoons, J Taylor, 29 Fly Place, EC1	1	8	9
60	Forks, J Taylor, 29 Fly Place, EC1	4	17	6
24	Fish knives & forks, J Taylor, 29 Fly Place, EC1	4	4	0
4	Serving spoons, J Taylor, 29 Ely Place, EC1		12	0
60	Knives, Walker Hall Ltd,	10	10	0

1 set	Barrier crockery, Green & Nephew Ltd	2	6	11
40	Tumbler, Shorter Bros, Hersham Rd, Walton	1	1	8
27	Jugs, glass, Shorter Bros, Hersham Rd, Walton	2	19	5
1	Plastic pot rack, Bedford, Steer End & Co	1	19	6
5	Sugar bowls, Chinacraft		9	4½
5	Slop basins, Chinacraft		10	2½
12	Nurses' beakers, Chinacraft		16	0
40	Coupes, Chinacraft	4	10	0
46	Saucers, Chinacraft	3	9	0
46	Cups, Chinacraft	3	11	11
32	Plates 10", Chinacraft	4	1	10
46	Tea plates, Chinacraft	2	19	5
2	Jugs, 1 pint, Chinacraft		8	2
1	Jug ½ pint, Chinacraft		2	3
1	Coffee pot, Chinacraft		4	2
1	Tea pot, Chinacraft		10	3
		678	9	10

Items not included in above schedule (mainly gifts)

1	Mini piano, Kemble & Sons	108	13	0
1	Television, Pye Ltd	55	2	0
27	Glass ash trays, Lawley Ltd	2	0	6
27	Metal Flower Vases, Regent Tableware	14	14	9
1	T V trolley, British Relay Wireless	12	9	0
1	Television set (Hire)			
3	Footstools, F McKenna	8	5	0
2	Towelmasters (Hire)			
6	Hi-Dri paper roll holders (Hire)			
1	Fire extinguisher, Ministry of Supply	6	4	0
1	Coffee Table, rectangular, Formica top	6	0	9
		213	9	0

	Total cost whole ward	4,770	15	6

24 Allocation of beds

	West wing	East wing
9th floor	Naaman - Male	Esther - Mixed
	Male Genito-Urinary 24 Beard 2 Office 1	Male Septic 7 Dental 3 Beard 2 Female Septic 7 Dental 5 G U 1 Beard 2
8th floor	Samaritan - Male	Patience - Female
	Male E N T 17 Radiotherapy 7 Cardiovascular X-ray 2 Office 1	Female E N T 18 Cardiovascular X-ray 2 Genito-Urinary 6 Office 1
7th floor	Christopher - Mixed	Queen - Mixed
	Male Accident 12 Orthopaedic 2 Female Accident 11 Orthopaedic 2	Male Orthopaedic 13 Female Orthopaedic 14
6th floor	Luke - Male	Dorcas - Female
	Male Eckhoff 11 Wass 13 Glover 3	Female Eckhoff 9 Wass 7 Glover 5 V Vs 2 Beard 3 Office 1
5th floor	Job - Male	Lydia - Female
	Male Blackburn 9 Thoracic 12 Brain 6	Female Blackburn 11 Thoracic 10 Brain 6
4th floor	Astley Cooper -	Martha - Female
	Male Atkins 12 Lawrie 6 Glover 4+1 V V Beard 3 Office 1	Female Atkins 18 Lawrie 6 Gynaecological 2 Office 1
3rd floor	Cornelius - Mixed	Evelyn - Female
	Male Intensive Therapy 12 Female Radiotherapy 13 Gynaecological 2	Female Gynaecological 27

Side wards are not allocated to individual surgeons, but should be used as dictated by the medical needs of patients.

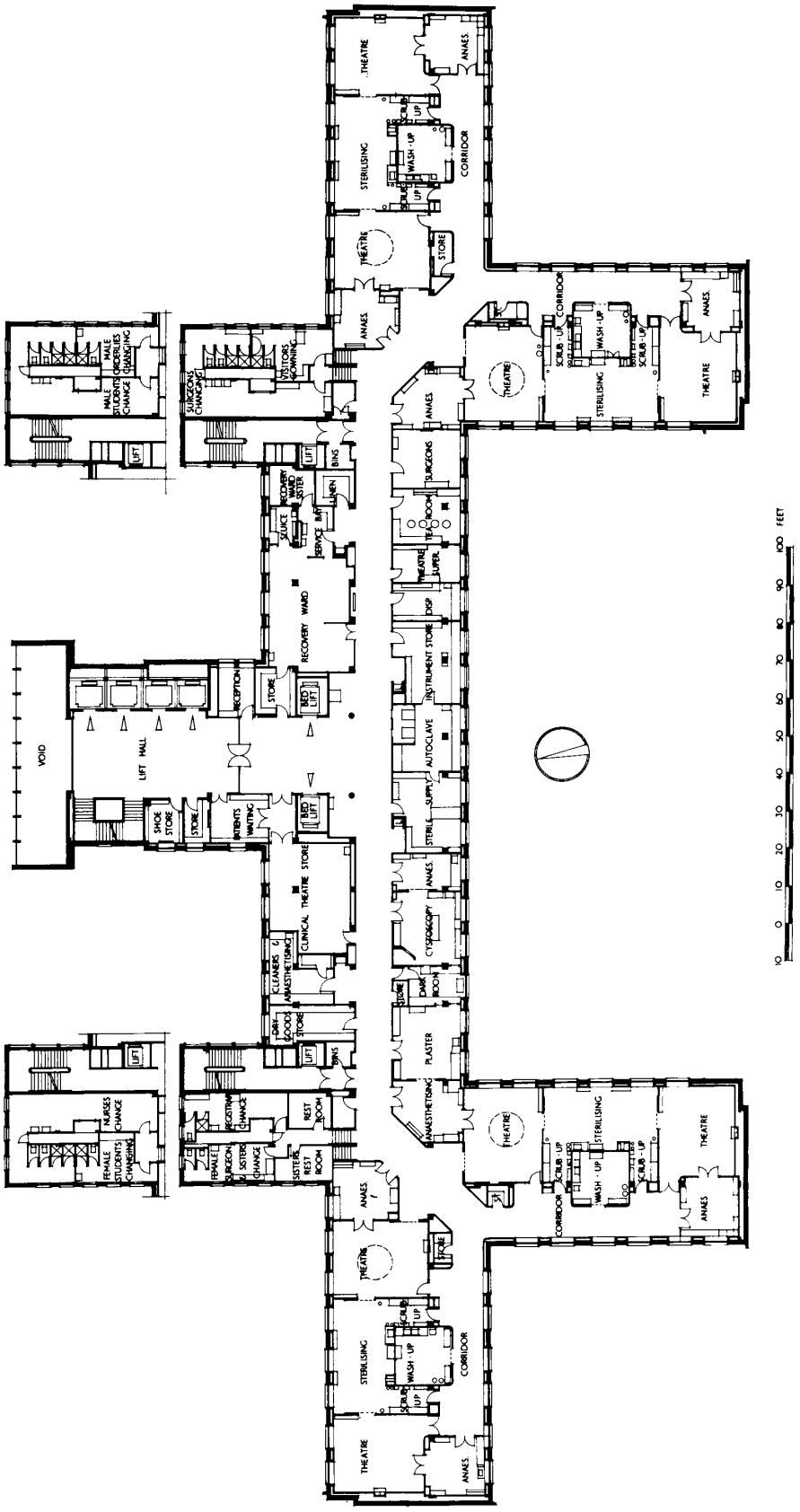
Occupancy

Year 1960 217 surgical beds - average occupancy 203
1st quarter 1962 221 surgical beds - average occupancy 207
24 cases transferred to New Cross

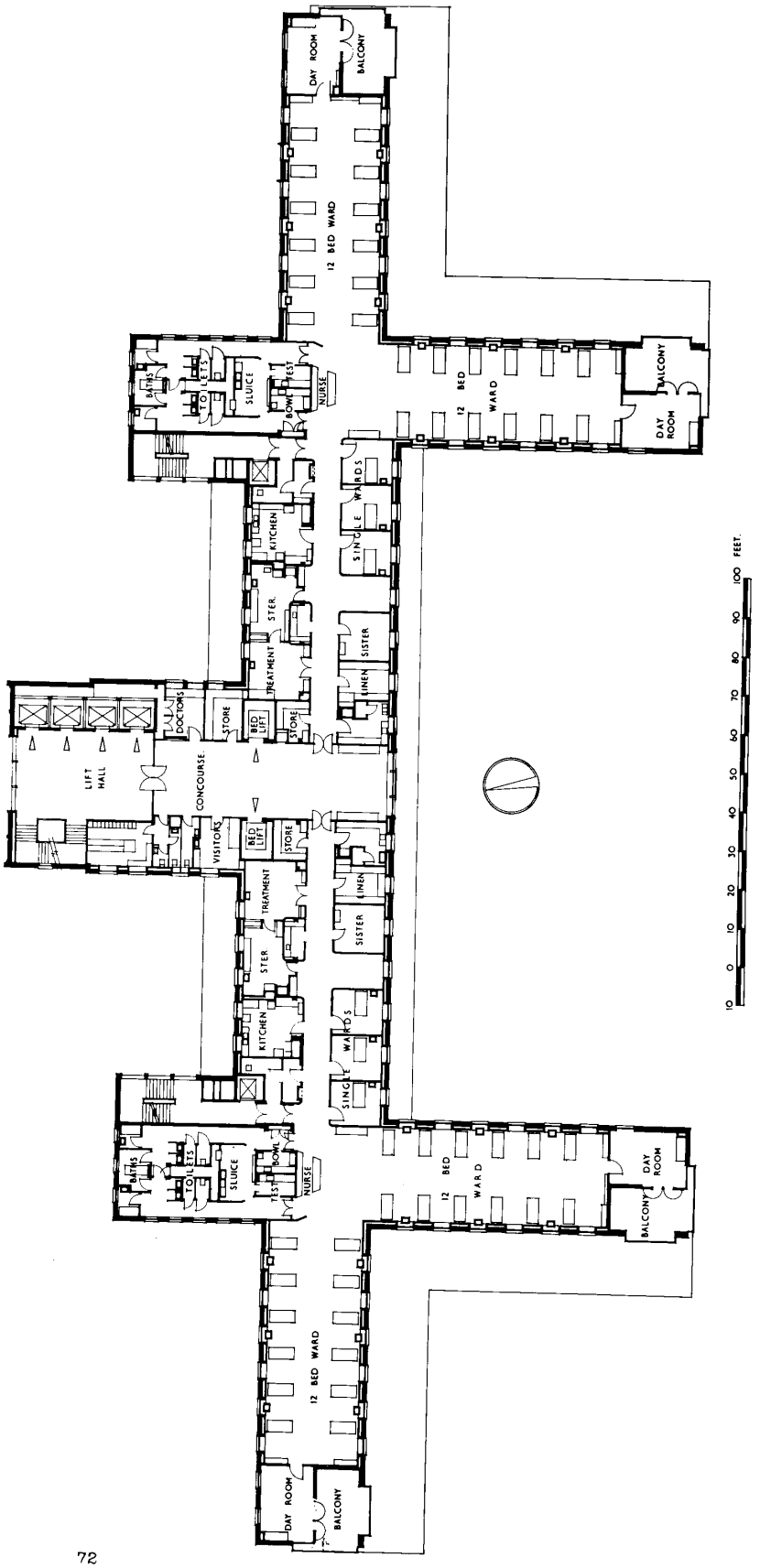
17th May, 1962

25 Plan of lower ground floor

26 Plan of first floor



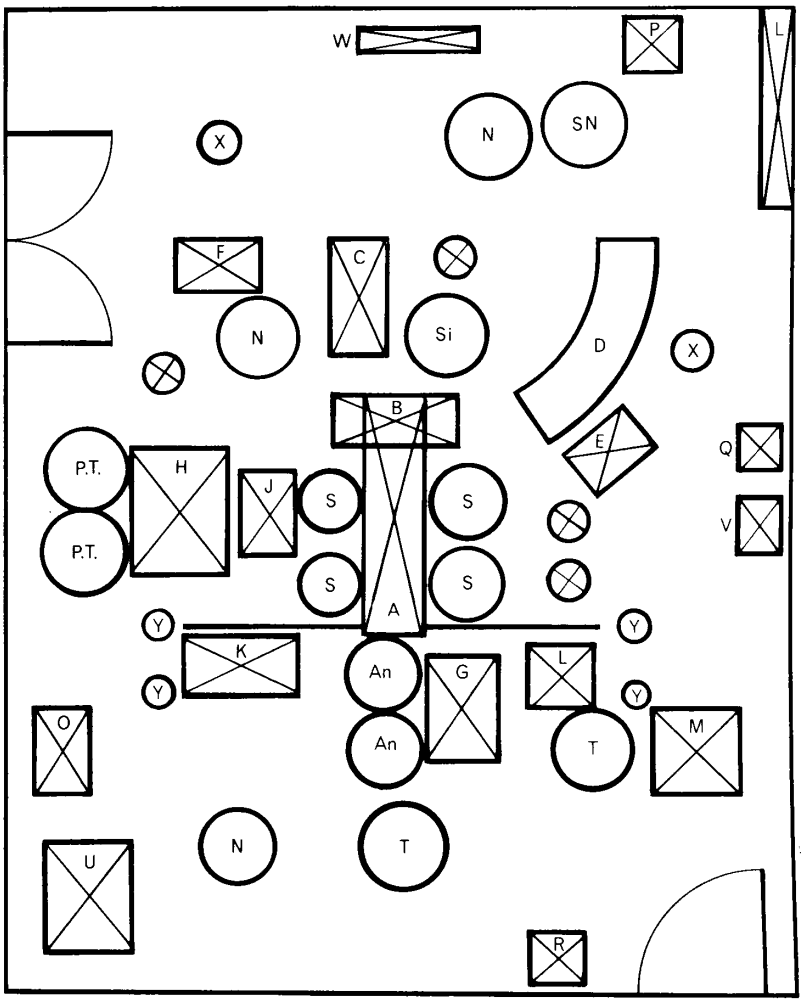
27 Plan of 3rd to 9th floors (wards)



28 Diagram showing use of space in an operating theatre 20' x 25'

1 Emergency Sterile Pack shelves
S Surgeon and Assistants
An Anaesthetist
Si Sister
SN Staff Nurse
N Nurse
PT Pump Technician
T Technician

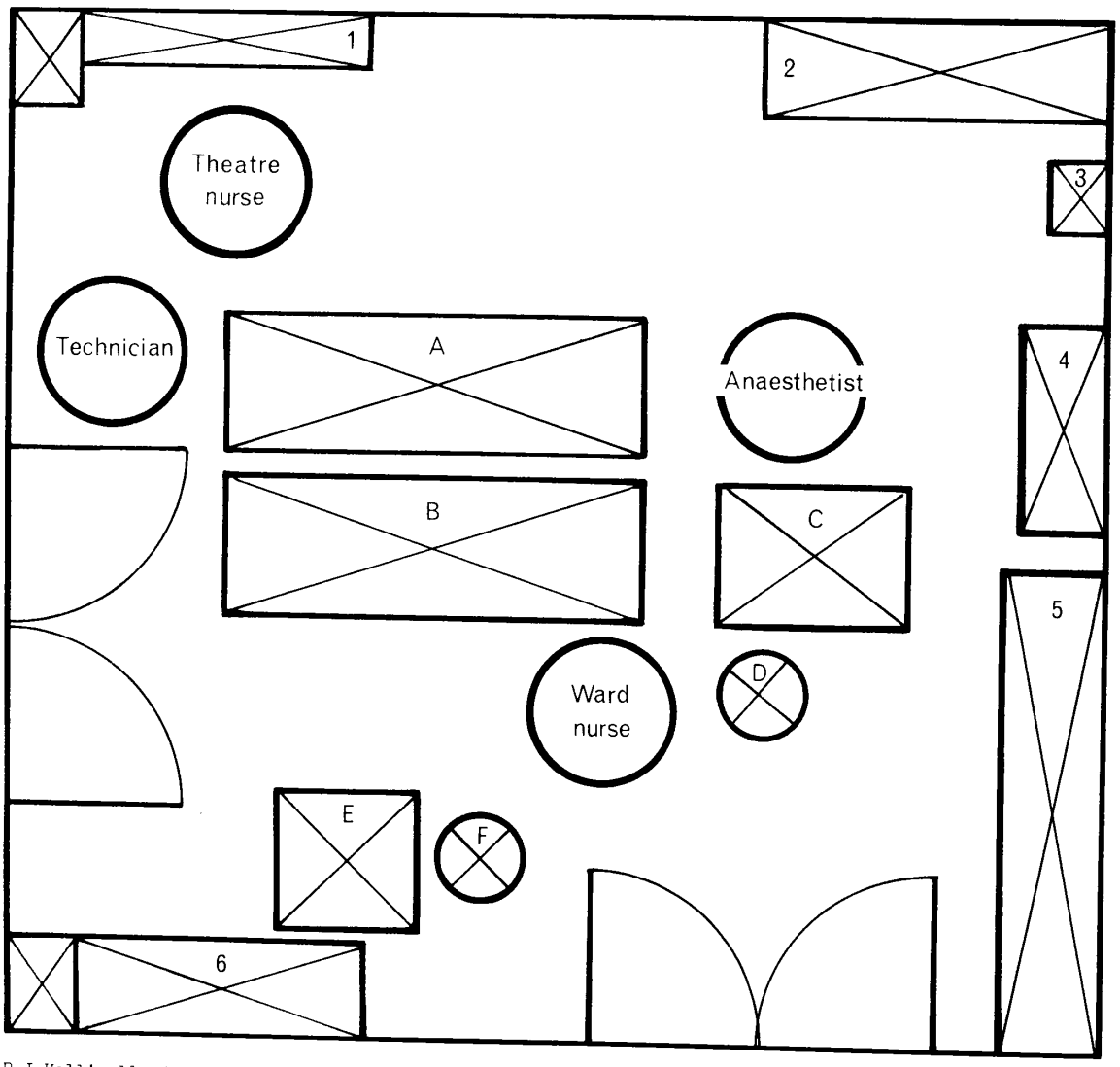
A Operating Table
B Overtable (Instruments)
C Instrument Trolley
D Main Instrument Trolley
E Cannulae and Connections
F Suture Trolley
G Anaesthetic Apparatus
H By Pass Trolley
J Pump connections
K Diathermy Machine
L Monitor Leads
M Monitoring Apparatus
O Pump Accessories
P Blood Loss Scales
Q Heater for Blood
R Monitoring Accessories
U Heat exchange unit
V Drip Trolley
W Swab Rack
X Spot Lights
Y Drip Stands
⊗ Bowl Stands



P J Helliwell, 1962

29 Diagram showing use of space in an anaesthetic room 15' x 16'

1 Drug cupboard
2 Anaesthetist's working shelves
3 Refuse receptacle
4 Sink
5 Cupboard for table parts with work top
6 Shelves for theatre coverings and register
A Patient's trolley
B Operating table
C Anaesthetic trolley
D Suction apparatus with bowl for dirty articles
E Drip and catheterisation trolley
F Drip stand



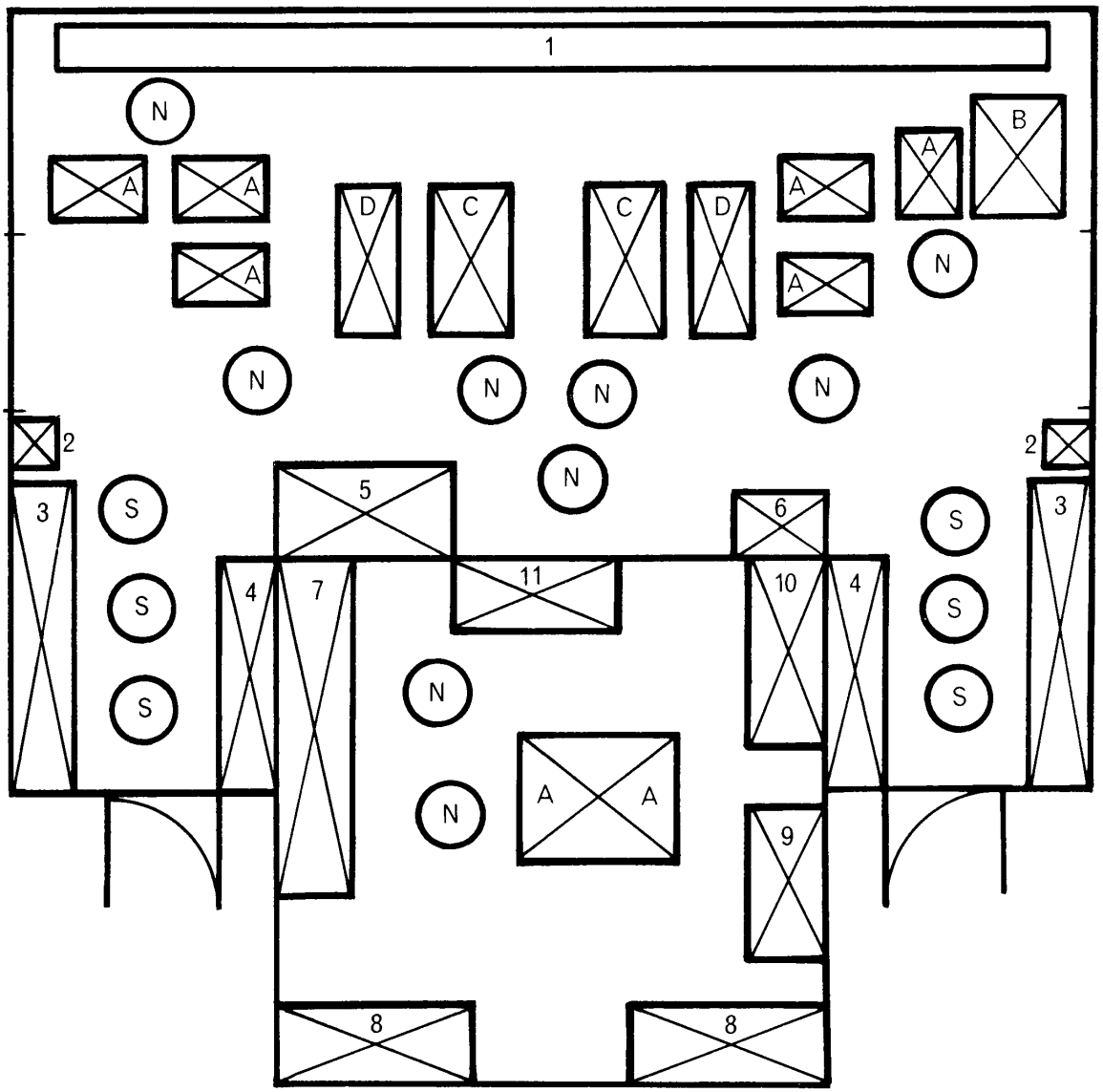
P J Helliwell, 1962

30 Diagram showing use of space in a scrub-up, clean preparation rooms and dirty clean-up room

Clean Prep Room
1 Shelves for ligatum post etc
2 Refuse receptacle
3 Scrub-up trough
4 Sterile gown and glove shelves
5 Pasturiser
6 High speed autoclave

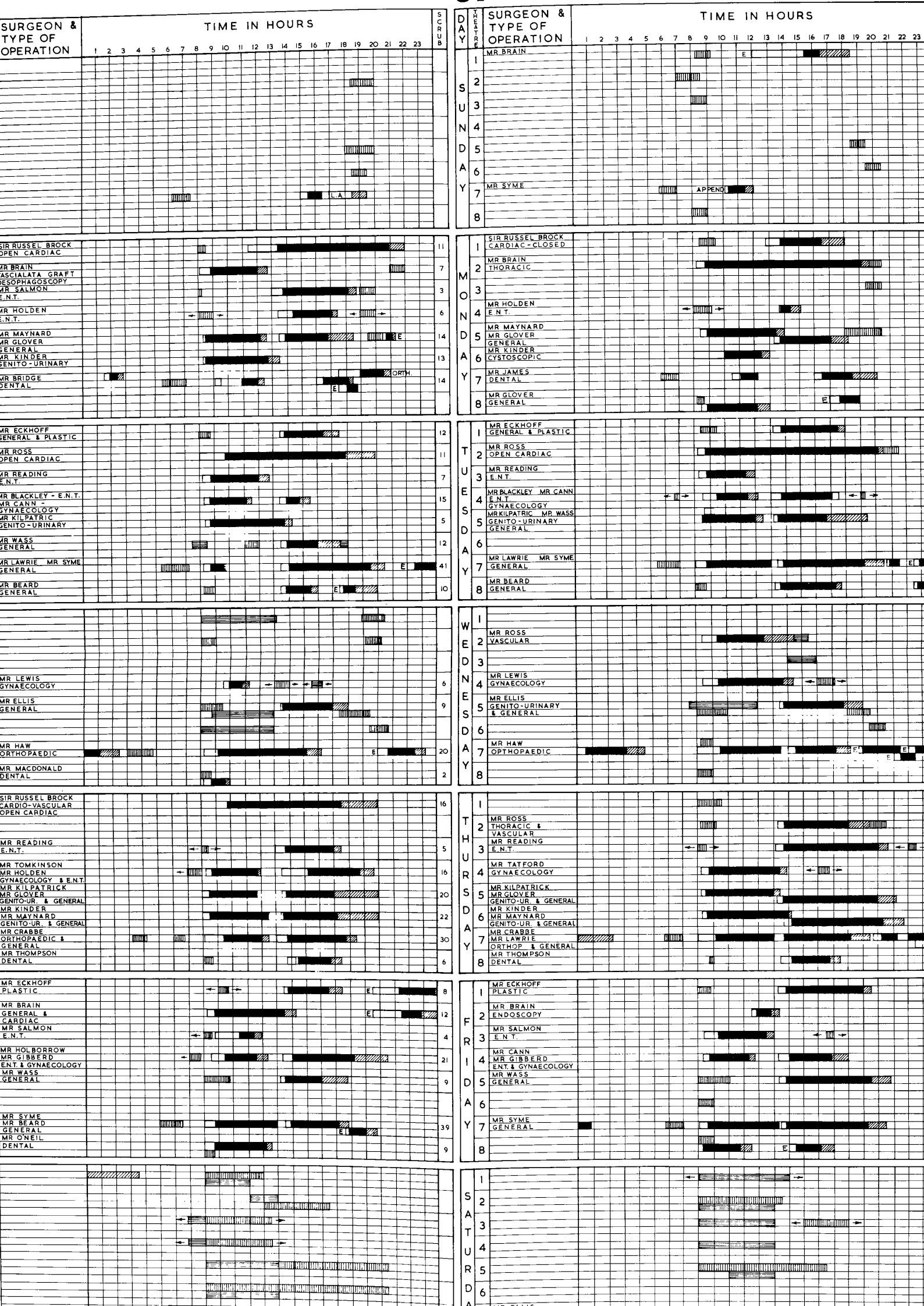
Dirty Clean-up
7 Stainless steel sink unit
8 Shelves for trunks for CSSD return
9 Dirty linen rounders
10 Ultra-sonic washer
11 Shelf for washed articles needing direct return

Clean Prep
A Instrument trolleys
B Heated sterile water container
C Sterile pack shelves (Mobile)
D Pack opening shelves (Mobile)
N Nursing Staff
S Surgical Staff



P J Helliwell, 1962

31 Time chart


SURGEON & TYPE OF OPERATION
TIME IN HOURS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
SCRUB
L.A.
DAY
THEATRE
SURGEON & TYPE OF OPERATION
TIME IN HOURS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
SUNDAY
1 MR BRAIN
E
2
3
4
5
6
7 MR SYME
APPEND
8
SIR RUSSEL BROCK OPEN CARDIAC 11
MR BRAIN VASCIALATA GRAFT 7
DESOPHAGOSCOPY
MR SALMON E.N.T. 3
MR HOLDEN E.N.T. 6
MR MAYNARD 14
MR GLOVER GENERAL E
MR KINDER GENITO-URINARY 13
MR BRIDGE DENTAL 14
ORTH.
E
MONDAY
1 SIR RUSSEL BROCK CARDIAC - CLOSED
2 MR BRAIN THORACIC
3
4 MR HOLDEN E.N.T.
5 MR MAYNARD MR GLOVER GENERAL
6 MR KINDER CYSTOSCOPIC
7 MR JAMES DENTAL
8 MR GLOVER GENERAL
E
MR ECKHOFF GENERAL & PLASTIC 12
MR ROSS OPEN CARDIAC 11
MR READING E.N.T. 7
MR BLACKLEY - E.N.T. 15
MR CANN - GYNAECOLOGY
MR KILPATRIC GENITO-URINARY 5
MR WASS GENERAL 12
MR LAWRIE MR SYME GENERAL E E 41
MR BEARD GENERAL E 10
TUESDAY
1 MR ECKHOFF GENERAL & PLASTIC
2 MR ROSS OPEN CARDIAC
3 MR READING E.N.T.
4 MR BLACKLEY MR CANN E.N.T. GYNAECOLOGY
5 MR KILPATRIC MR WASS GENITO-URINARY GENERAL
6
7 MR LAWRIE MR SYME GENERAL
8 MR BEARD GENERAL
E
MR LEWIS GYNAECOLOGY 6
MR ELLIS GENERAL 9
MR HAW ORTHOPAEDIC E 20
MR MACDONALD DENTAL 2
WEDNESDAY
1
2 MR ROSS VASCULAR
3
4 MR LEWIS GYNAECOLOGY
5 MR ELLIS GENITO-URINARY & GENERAL
6
7 MR HAW OPTHOPAEDIC
F E E
8
SIR RUSSEL BROCK CARDIO-VASCULAR OPEN CARDIAC 16
MR READING E.N.T. 5
MR TOMKINSON
MR HOLDEN GYNAECOLOGY & E.N.T. 16
MR KILPATRICK
MR GLOVER GENITO-UR. & GENERAL 20
MR KINDER
MR MAYNARD GENITO-UR. & GENERAL 22
MR CRABBE ORTHOPAEDIC & GENERAL 30
MR THOMPSON DENTAL 6
THURSDAY
1
2 MR ROSS THORACIC & VASCULAR
3 MR READING E.N.T.
4 MR TATFORD GYNAECOLOGY
5 MR KILPATRICK MR GLOVER GENITO-UR. & GENERAL
6 MR KINDER MR MAYNARD GENITO-UR. & GENERAL
7 MR CRABBE MR LAWRIE ORTHOP & GENERAL
8 MR THOMPSON DENTAL
MR ECKHOFF PLASTIC E 8
MR BRAIN GENERAL & CARDIAC E 12
MR SALMON E.N.T. 4
MR HOLBORROW
MR GIBBERD E.N.T. & GYNAECOLOGY 21
MR WASS GENERAL 9
MR SYME
MR BEARD GENERAL E 39
MR O'NEIL
DENTAL 9
FRIDAY
1 MR ECKHOFF PLASTIC
2 MR BRAIN ENDOSCOPY
3 MR SALMON E.N.T.
4 MR CANN MR GIBBERD E.N.T. & GYNAECOLOGY
5 MR WASS GENERAL
6
7 MR SYME GENERAL
8
E
SATURDAY
1
2
3
4
5
6

32 Operating theatres

Comparison with Ministry of Health Building Bulletin No 1

	Recommendation in Building Bulletin	Provision at New Guy's House	Remarks
Operating theatres	325–360 sq ft Minimum width 17'0"	4 @ 480 sq ft 4 @ 525 sq ft Minimum width 20 ft	
Cystoscopy theatre Minor theatre	300 sq ft	360 sq ft	
Plaster room	300 sq ft	342 sq ft	
Anaesthetic rooms	150–165 sq ft Minimum width 11'6"	4 @ 225 sq ft 2 @ 256 sq ft 2 @ 272 sq ft Minimum width 15'0" *1 @ 180 sq ft	*adjacent to Cystoscopy theatre
Sterilizing room	320–360 sq ft (to 2 theatres)		
Drum store Nurses' prep room	105 sq ft 220 sq ft serving a 4 theatre suite		
Sterilizing room		510 sq ft (to 2 theatres)	
Autoclave room Instrument store Sterile supply store		324 sq ft 380 sq ft 360 sq ft serving all theatres	
Sink room (wash-up room)	220–240 sq ft serving 2 theatres	4 @ 225 sq ft each serving 2 theatres	
Scrub-up	90–95 sq ft for one theatre	82 sq ft serving one theatre	
Recovery ward	1 or 2 beds per theatre, each Recovery room 100 sq ft	700 sq ft serving whole suite	
*Recovery ward Sister		120 sq ft	*Related to Recovery ward
*Sluice		80 sq ft	*Related to Recovery ward
*Service bay		130 sq ft	*Related to Recovery ward
Sisters office Theatre Superintendent	90 sq ft (for 4 theatres)	180 sq ft	
Reception office		117 sq ft	
Dispensary		180 sq ft	
Laboratory	60 sq ft (for 4 theatres)	*	*Specimen collected in Cleaners room Laboratories on floor above
Disposal room or rooms	25 sq ft per theatre		
Bin rooms Soiled linen rooms		2 @ 60 sq ft 2 @ 48 sq ft	
Dark room	60 sq ft (for 4 theatres)	150 sq ft	

Stores, cleaners room		
Linen store	65 sq ft (for 4 theatres)	100 sq ft
Equipment store	170 sq ft (for 4 theatres)	
Supplies store	85 sq ft (for 4 theatres)	
Plaster store	60 sq ft	
Dry goods store		220 sq ft
Clinical theatre store		250 sq ft
Other stores (7)		355 sq ft
Cleaner, Specimen & Cylinder store		270 sq ft
Cleaners room	50 sq ft (for 4 theatres)	
Changing rooms		
Nurses'	190 sq ft (for 4 theatres)	560 sq ft
Female Surgeons' Female Surgeons' & Sisters	120 sq ft (for 4 theatres)	230 sq ft
Male Surgeons	180 sq ft (for 4 theatres)	560 sq ft
Registrars		230 sq ft
Male nurses, Technicians, Orderlies, Porters, Male orderlies	120 sq ft (for 4 theatres)	217 sq ft
Visitors' gowning		240 sq ft
Students male Students female		560 sq ft 217 sq ft
Rest rooms, etc		
Surgeons'	160 sq ft (for 4 theatres)	288 sq ft
Nurses'	130 sq ft (for 4 theatres)	
Sisters rest room		138 sq ft
Rest room		100 sq ft
Tea room		270 sq ft

S E T Cusdin
November, 1962

33 Central sterile supplies department

Comparison with Ministry of Health Building No 13

It will be appreciated that the Building Note was published long after the Guy's C S S D was planned and it may be doubted whether this comparison serves any real useful purpose. The question arises as to whether the Building Note was based on the same type of organisation as that evolved at Guy's, ie the so-called American Pack with everything contained in the one package for a given routine, as distinct from the proposals of the Nuffield Provincial Hospitals Trust of having combination packs.

In addition to this, of course, an unknown problem of how much the commercial firms will be able to supply certain sterile goods in bulk remains and this will have a considerable affect on the amount of accommodation required for processing.

It is because of these important matters of organization that it is difficult to make any fundamental comments on the Guy's plan.

Schedule

Room	Recommendation in Building Note	Provision at New Guy's House	Remarks
Basic accommodation			
Trolley unloading bay	150–200 sq ft		**combined with circulation space
Clean up, washing and drying	250–350 sq ft	634 sq ft	
Glove room	60–80 sq ft	78 sq ft	
Syringe and instrument room	250–300 sq ft		
-Syringes		352 sq ft	
-Still room (solution)		380 sq ft	
Bulk store	400 sq ft		
-Equipment store		99 sq ft	
-Instrument storage bays		198 sq ft	
-Circulation space common to equipment store and instrument storage bays		162 sq ft	
-Central supply store		320 sq ft*	*in east wing outside limits of C S S D
-Central supply store		196 sq ft*	
Linen store	300 sq ft	160 sq ft	
-Sewing bay		100 sq ft	
Supervisors office	100 sq ft		
-Sisters office		63 sq ft	
Work, packing and autoclave room	700 sq ft		
-Make up room including autoclave area		1381 sq ft	
Sterile store	500–600 sq ft		

-Sterile store (wards) -Sterile store (theatres)		475 sq ft 448 sq ft	
Trolley loading bay	150-200 sq ft		
-Clean trolleys (wards) -Clean trolleys (theatres)		150 sq ft 280 sq ft	
Staff lockers and lavatories	Not less that 100 sq ft		
Circulation space		616 sq ft	**combined with trolley unloading
Additional accommodation			
Rest room	Where no alternative facilities exist a rest room may be required about 10 sq ft per person with a minimum of 100 sq ft		
Clerks office	If required 60 sq ft per clerk with minimum of 100 sq ft		
-Office		63 sq ft	
Bacteriologist (office)		79 sq ft	
Bulk store	Some bulk storage area additional to that provided in Basic Accommodation may be necessary depending on output of department & whether supplies are delivered direct to department or via central group stores		See provisions under Basic Accommodation
Cleaners room	May be required unless there is one in the vicinity of the department - 50 sq ft should suffice		
Autoclave area for clean up room	If an autoclave is provided in the clean up room for disinfection of fouled articles an extra 100 sq ft will be required		

Note. Items shown with hyphen are the special annotations of the rooms in the New Guy's House plans

S E T Cusdin
20th September, 1962

34 Report on lift services

contents

appendix

introduction

Terms of reference

There were two communications aspects of New Guy's House about which the Evaluation Committee agreed it would be useful to collect data to assist in the work of assessment. The first was the use being made of the lift services, which is the subject of this paper and the second concerned the pneumatic tubes system on which a separate paper has been produced. The terms of reference for the short lift study were to establish by continuous observation or activity sampling the patterns of usage and peak loading and to provide data on the incidence and extent of delays.

A schedule of the 8 lifts and 4 electric hoists installed at New Guy's House is produced at Appendix A and an extract from the record of breakdowns at Appendix B.

The collection of data

As both time and the availability of recording staff were limited it was necessary to examine features of the lift services in apparent order of priority. From discussions with the Hospital staff and from test recordings there seemed no doubt that the peak periods of pressure on the passenger lifts and the integration of demands on the bed lifts caused most concern and it was therefore at these two points that recording began. One full-time and two part-time observers recorded passenger and bed-lift traffic from the 27th August to the 9th September 1962. Including test recordings and repetition of some peak periods, an aggregate of about ninety hours of recordings by continuous observation were made which on amalgamation gave the following coverage:

Passenger lifts

Ground floor (weekday) - 7.45 am - 8.30 pm
Ground floor (Sunday) - 1.45 pm - 4.45 pm
Third floor (weekday) - 7.45 pm - 8.30 pm
Ninth floor (weekday) - 7.45 am - 8.30 pm
Lower ground floor (weekday) - 7.45 am - 7.15 pm

Bed lifts

Ground floor (weekday) - 7.30 pm - 5.30 pm
First floor (weekday) - 9.30 am - 5.30 pm

No recordings were made of the use of the C S S D electric hoists and the goods lifts.

The Interpreting of the data

We agreed with the Hospital's view that the only reliable guide to the service being provided by the lifts was a record and analysis of actual passenger experience. Those post-installation recordings of traffic made by lift manufacturers which we have seen, relate more specifically to lift performance and although the average departure incidence and numbers carried are significant in a contributory sense, such factors as the effect of sudden arrivals of two or even three lift loads and of the way in which people make use of lifts are not reflected in them. It was clear that much needed to be known about what really happens to the intending passenger who stands hopefully in front of a lift.

But however clearly an analysis of actual waiting times might illustrate the standard of lift service at all times of the day, there still remains the problem of deciding whether it is an acceptable one. This problem is a general one which is as yet largely unresolved. We had made enquiries in other spheres from such organisations as office blocks and department stores where there also exist good motives for moving people efficiently - either to their desks or, in department stores, to other floors where money can be spent, but although some claimed the adoption of a standard of (say) 30 seconds, this was almost invariably the lift departure incidence and none we contacted really knew how long their passengers waited. The results of recordings we have made in department stores and government offices are included in the appendices not as comparisons from which conclusions may be drawn but as sample illustrations of the standard of service provided in other places.

Results of the survey
a) Passenger Lifts

If for the purpose of this paper, we adopt what appears to us to be the relatively high standard of providing ground-floor lift service within a maximum of 30 seconds for about 90% of the passengers at any time of the day, then on this basis the passenger lifts are giving a good service throughout the day except consistently for a few minutes at the peak of arrival of visitors when the load placed on the lifts is some 13 times greater than normal. From the ward floors

observed the normal service takes about 90% of the passengers within a maximum of 40 seconds but again the departure of visitors pushes the rate up to nearly 12 times normal and for a few minutes the service deteriorates. In subsequent paragraphs we discuss how these peaks may be reduced by the adjustment of concurrent hospital activities.

b) Bed Lifts We think that further study is required of the methods of using the bed-lifts and the co-ordination of demands made on them. The data collected suggest that an occasional delay can occur when, for example, the turnover in the theatres is high but closer adherence generally to the regulations the Board have made concerning the use of the lifts would improve the service. These points are elaborated in the section dealing with Bed Lifts.

passenger lifts

Coverage

In order to obtain as useful a cross-section of lift usage as time allowed, sets of recordings were built up each covering a full day at the Ground, the 3rd and the 9th floors. A further day covering the use of the lifts at the Lower Ground Floor was produced to help in assessing the impact of goods traffic on the passenger service and finally, a period of three hours on a Sunday to include what appeared to be the peak visiting traffic of the week. The analyses of these recordings showing for each ¼ hour period the number of passengers who used the lifts allocated over a range of waiting times are reproduced at Appendices C to G.

Hospital activities and lift usage

We were told that the original planning intention was to use the goods lift in each wing both for deliveries to the wards (meals, stores, clean linen etc.) and for the collection of "dirty" items (refuse, swill, soiled linen etc.) but that, in the event, it was considered that the use of the same lift for "clean" and "dirty" items would not be desirable. As a result, the clean goods traffic with the wards had to be accepted by the passenger lifts. With the intention of spreading this load over the day so as to cause as little disturbance as possible to the normal functioning of the passenger lifts, the Hospital drew up the schedule of collections and deliveries shown at Appendix H.

Lift services, as was realised, are only inadequate when unacceptable delays still occur after the loads placed on them have been spread as evenly as is administratively convenient. Hospital activities such as the reception of visitors, the attendance at meals and the going on and off duty of nursing staff are important contributions to the load placed on the lifts. These activities, in addition to the collection and delivery services, are shown diagrammatically at Appendix J under the same time scale as the weekday lift usage at the Ground Floor in order to illustrate their concurrence with the varying loads on the passenger lifts. From this it may be seen that for most of the day only minor peaks occur and it is unlikely that re-arrangement or removal of any activity would significantly affect waiting times, but from about 6.30 pm to 7.00 pm large numbers of visitors use the lifts to the wards (for the 7.00 to 7.30 pm visiting period) and the peak formed is relatively extremely high. The concurrent activities shown below the time scale consist of the visitors who largely create the peak, the collection of empty meal trolleys from the wards and the movement of two parties of nursing staff going to and returning from supper. Each of these coincidental activities imposes loads on the lifts of varying weight and must contribute to the lengthening of waiting times between 6.30 pm and 7.00 pm. It follows that there are a number of alternative adjustments which could be made to relieve the pressure at this point. The collection at this time of empty trolleys, for example, which involves locking off one of the lifts is a departure from the Hospital's schedule and could no doubt be done at another time but the most effect would of course be produced by expanding, staggering or splitting the present visiting half-hour so as to spread the main constituent of the peak.

Comparison of off-peak and peak waiting times

Appendix K compares waiting times at Ground Floor level for the whole of the day, for the off-peak period and for the successively rising peaks. From this it may be seen that although the rate at which passengers enter lifts during the peak 5 minutes is over 13 times higher than

during the off-peak period, the percentage of passengers who wait 30 seconds or less falls comparatively little - from 92.1 to 80.2%. It is in the medium waiting ranges from 31 to 50 seconds that the falling-off in service is more apparent but nevertheless these figures seem to us to demonstrate the ability of large-capacity lifts to absorb surges of traffic.

It is of interest to note that none of the 0.8% of passengers who waited over 60 seconds travelled in the peak period. The explanation is that the tendency to stand in front of one lift and disregard any others which become available is greater when there are few passengers about than when there are crowds who lead the way. Most of the 0.8% could have used a previous lift.

Passenger waiting times at New Guy's House and other organisations

Appendix L shows waiting-times at New Guy's House, post-war government offices and at department stores. We have no comment other than to note the close similarity between the first two, particularly in the under-30 seconds aggregates.

Average passenger waiting times

In Appendix M we have shown average waiting times at peak and off-peak periods at some of the floors in New Guy's House and in other organisations. These figures have, of course, less significance than the ranges of times shown in previous appendices.

The use of stairs

As was to be expected the number of persons using the stairs rose when the pressure on the lifts was greatest. (See Appendices C - F). From the Ground Floor up and from the 3rd and 9th Floors down the peak of use of the stairs coincided with the visiting peak. The numbers who used the stairs down from the 3rd Floor exceeded, of course, those from the 9th Floor whilst there was little difference in the numbers of visitors who chose to walk up from the Ground Floor as between a week-day and a Sunday. Usually, the decision to use the stairs instead of the lift had either been taken in advance or was made immediately, for only on few occasions were the stairs used after a period of waiting for the lift. Where this occurred the waiting period at the lifts was generally between 30 and 50 seconds.

Behaviour of intending lift passengers

Many visitors to the Hospital are unfamiliar with automatic lifts and uncertain of their use. As a result, waiting times can increase and the Board may wish to consider whether notices should be more informative and emphatic. Our observers recorded the following:

a) Use of call button This varied from off-peak periods when some users pressed every button in the row several times to peak periods when for much of the time the button was never pressed at all. This for the most part was presumably because each thought the other had pressed it. This might tend to cause delay because a lift from the Lower Ground would by-pass the Ground Floor in the absence of a signal.

b) Failure to enter available lifts There appeared to be four reasons why some intending passengers did not take the first lift available. These were:

i) They were unwilling to enter a three-quarters full lift particularly when several passengers were carrying flowers.

ii) They did not notice that a lift had arrived other than the one in front of which they were standing.

iii) Having noticed another lift arrive they were still determined to take the one in front of which they were standing.

iv) They were afraid of being caught in the doors. This accounted for several lifts leaving incompletely filled.

Complaints about the service

a) From visitors We found no evidence of any complaints from visitors about the lift services.

b) From staff We were told that the number of complaints from staff had decreased considerably in recent months.

the bed lifts

The use of the bed-lifts from the 1st Floor (Theatres) was recorded on one day (a Tuesday) from 9.30 am to 5.30 pm and from the Ground Floor (Casualty) on the afternoon of the same day and on other occasions, covering the aggregate period 7.30 am to 5.30 pm. The analysis of the

results are shown at Appendices N and O.

The coincidental recording of two levels on the Tuesday was intended both to cover a period which the Theatre Superintendent and the Casualty Sister expected to be a busy one and to observe how the lift activities of two major users were integrated. Examination of the data for this period provided no evidence that the lift usage of either department affected that of the other.

Waiting times

At the Theatre Floor between 9.30 am and 5.30 pm there were 5 occasions involving 12 persons when waiting times for lifts exceeding one minute. For all other journeys except two (which involved 4 persons) the waiting time was less than 40 seconds.

The first two of the waiting times over one minute both occurred at 1.38 pm when two pairs of attendants with trolleys waited 120 and 124 seconds respectively. At 1.59 pm 4 persons with a trolley waited 115 seconds and between 4.28 pm and 4.35 pm two pairs of attendants with trolleys waited 420 and 110 seconds.

When patients on trolleys were being held at the lifts for return to wards, observers had to distinguish carefully between the delays associated with theatre requirements (eg waiting for attendants) and the subsequent waiting periods for lift service. In aggregate the former were much the greater.

At the Casualty Floor between 7.30 am and 5.30 pm there was only one occasion when the waiting time exceeded one minute. This was at 12.46 pm when a porter with a dispensary trolley waited for 408 seconds.

Unauthorised use of bed lifts

The Board's wish to restrict the use of the bed-lifts to their own special function is not always respected although an appropriate notice is displayed. The following are examples from observers' records:

a) The use of bed-lifts for radiotherapy patients carried on trolleys which have been specially designed to fit the passenger lifts. This is done contrary to the wishes of the Radiotherapy Department Sister.

b) The use of bed-lifts by passengers with no loads or loads which can as easily be carried in the passenger lifts eg tea-trolley, folded stretcher.

c) The holding of a bed-lift at the Ground Floor whilst a passenger alights, obtains refreshments from the canteen and then rejoins lift.

It seems likely that the reduction of traffic of this kind would improve the service for permitted users.

other lifts

No recording was done of the traffic on the goods lifts and the C S S D electric hoists because the work loads placed on them are comparatively light and there are no problems of integration.

The 2 goods-lifts are used in the morning and for an hour in the afternoon for the removal of 'dirty' items (other than C S S D). The 4 C S S D electric hoists are used intensively for 1 - 1½ hours in the early evening for delivery of 'clean' and collection of 'dirty' C S S D items and apart from filling ad hoc demands of about 12 per day (of which perhaps a quarter are emergencies) the hoists do no other work.

conclusion

Perhaps the most significant feature which the data suggests is that the movement of goods by passenger lift does not impair the standard of service adopted for this survey except possibly in one instance during the visiting half-hour when the Hospital's schedule was not observed. That the ground floor passenger lifts maintain a standard of providing service for 90% of the passengers within a maximum of 30 seconds as well as carrying goods seems largely due to the careful spreading of collection and delivery services throughout the day. These services for the most part occupy only a portion of the time shown as allocated to them on the Schedule at Appendix H and the methods adopted to ensure as short a use of the lifts as possible are generally effective. On this

evidence, the installation of two additional goods lifts would contribute little to the standard of lift service provided. The more effective measure to which we referred in paragraph 9 would seem to lie in the reduction of the one outstanding peak created by the present arrangements for visitors.

We should be glad to provide the Board with any additional analyses which the data collected may yield and in due course to make further test recordings to measure the effectiveness of any changes introduced.

We were grateful for the very full and active co-operation of everyone at Guy's Hospital concerned in these surveys.

G L Hughes
September, 1962

appendices

A lift services

Number	Type or purpose	Capacity	Speed
4	Bank of 4 synchronised passenger-lifts (sited centrally)	3,000 lbs each	500' per min
2	Bed-lifts (sited centrally)	3,500 lbs each	300' per min
2	Goods lifts Collection - dirty only (1 in each wing)	1,500 lbs each	300' per min
4	Electric Hoists Used by C S S D 2 for deliveries (clean) 2 for collection (dirties) (1 of each in each wing)	224 lbs each	300' per min

B extract from record of lift breakdowns

Date	Reported at hospital	Defect	Reported to lift company	Rectified
5.7.62	8.40 am	No 2 (Passenger) out of order	11.00 am	3.00 pm
5.7.62	10.45 am	No 3 (Passenger) jammed on 4th floor	11.00 am	3.00 pm
6.7.62	3.30 pm	No 3 (Passenger) jammed on 9th	5.30 pm	6.30 pm
7.7.62	9.30 am	West (Goods lift)	10.55 am	12.05 pm
7.7.62	5.05 pm	No 3 (Passenger) not working	5.10 pm	7.45 pm
8.7.62	7.00 am	No 3 (Passenger) jammed on ground floor	1.15 pm	?
9.7.62	11.30 am	No 3 (Passenger) jammed on 9th	1.30 pm	2.30 pm
10.7.62	5.05 pm	East (Bed lift) doors	5.45 pm	6.15 pm
10.7.62	8.05 pm	West (Bed lift) not opening all floors	9.15 pm	9.45 pm
12.7.62	3.00 pm	Nos 1, 2 and 3 jammed	cleared before engineers arrived	
13.7.62	8.15 am	No 1 (Passenger) not working	11.00 am	1.00 pm
15.7.62	8.15 am	Bed lift jammed on 9th	9.45 am	10.30 am
18.7.62	8.20 pm	Nos 3, 4 jammed on 6th	9.30 pm	10.00 pm
21.7.62	3.05 pm	No 3 (Passenger) jammed on 6th	4.30 pm	6.35 pm
25.7.62	5.35 pm	No 2 (Passenger) not stopping at floors	5.40 pm	?
28.7.62	8.45 pm	No 4 (Passenger) not working	9.45 pm	10.00 pm
9.8.62	6.55 pm	West (Bed lift) jammed on 5th	7.30 pm	8.10 pm
19.8.62	10.05 am	No 1 (Passenger) broken selector tape	10.50 am	11.45 am

NOTE: We were informed that during August 1962 the lift company were at Guy's New House overhauling the lifts and were able to rectify minor faults at once. These were not recorded in the breakdown book.

C ground floor – weekday

7.45 am - 8.30 pm

Time	Number of passengers who waited							Total	Stairs up
	0-10 secs	11-20 secs	21-30 secs	31-40 secs	41-50 secs	51-60 secs	60 secs plus		
am									
7.45-8.00	48	12	3	3				66	22
8.00-8.15	16	2	1	1	2			22	3
8.15-8.30	5	2		1				8	9
8.30-8.45	5	2	1					8	5
8.45-9.00	4	3	1	1				9	8
9.00-9.15	32	4	2		1	1	1	41	9
9.15-9.30	20	3	1	1				25	9
9.30-9.45	22	4	2		1			29	5
9.45-10.00	26	7	1					34	8
10.00-10.15	13	3	1	2	1			20	3
10.15-10.30	19	5	3					27	8
10.30-10.45	20	5	2		1			28	6
10.45-11.00	16	4	1	1				22	7
11.00-11.15	17	6	1					24	
11.15-11.30	8							8	
11.30-11.45	14				2		1	17	4
11.45-12.00	15	2				1		18	
pm									
12.00-12.15	10	1	1					12	6
12.15-12.30	6		1	1	1			9	5
12.30-12.45	22	5	6	5	4	2	4	48	12
12.45-1.00	19	5	3	2	2	5	2	38	7
1.00-1.15	19	8	2	2				31	5
1.15-1.30	36	5	4					45	10
1.30-1.45	20	6	3	3	1			33	5
1.45-2.00	26	5	4	2				37	12
2.00-2.15	25	6	1	1	1			34	10
2.15-2.30	13	3	1					17	2
2.30-2.45	25	2						27	1
2.45-3.00	10	3	2		1			16	4
3.00-3.15	14	1	1		1			17	7
3.15-3.30	13	3	2	1	2	1	1	23	3
3.30-3.45	18	2	1					21	4
3.45-4.00	14	3		2				19	1
4.00-4.15	12	2	3		2		1	20	5
4.15-4.30	41	9	3	1				54	7
4.30-4.45	18	5	4	1	2			30	2
4.45-5.00	24	4	4	4	2	1	2	41	6
5.00-5.15	21	5	4			1		31	2
5.15-5.30	5		2		2			9	2
5.30-5.45	11							11	
5.45-6.00	3	1						4	2
6.00-6.15	6							6	1
6.15-6.30	23	2		2				27	6
6.30-6.45	97	19	11	1	2			130	4
6.45-7.00	176	26	15	15	16	4		252	21
7.00-7.15	49	11	3	1				64	6
7.15-7.30	32	5	2		1			40	5
7.30-7.45	6	1	1				1	10	2
7.45-8.00	9	1		1				11	1
8.00-8.15	16		1					18	1
8.15-8.30	18	2	1	1				22	3
	1157	215	106	57	49	16	13	1613	
	71.7%	13.4%	6.6%	3.5%	3.0%	1.0%	0.8%	100%	

D ground floor – sunday

1.45 pm - 4.45 pm

Time	Number of passengers who waited							Total	Stairs up
	1-10 secs	11-20 secs	21-30 secs	31-40 secs	41-50 secs	51-60 secs	60 secs plus		
pm									
1.45-2.00	12							12	
2.00-2.15	55	7						62	
2.15-2.30	196	34	17	10	2	2	2	263	14
2.30-2.45	174	59	33	25	17	4	2	314	12
2.45-3.00	66	15	11	2	1			95	1
3.00-3.15	72	12	6	5	1	1		97	2
3.15-3.30	35	7	7	1				50	4
3.30-3.45	17	5	3					25	6
3.45-4.00	13	2		1				16	1
4.00-4.15	17	2	1					20	
4.15-4.30	12	1	2					15	5
4.30-4.45	23	5	3	1	1			33	1
	692	149	83	45	22	7	4	1002	
	69.1%	14.9%	8.2%	4.5%	2.2%	0.7%	0.4%	100%	

E third floor – weekday

7.45 am - 8.30 pm

Time	Number of passengers who waited							Total	Stairs down
	1-10 secs	11-20 secs	21-30 secs	31-40 secs	41-50 secs	51-60 secs	60 secs plus		
am									
7.45-8.00		1	2					3	
8.00-8.15	2	1						3	
8.15-8.30	2	3	2		1			8	
8.30-8.45									
8.45-9.00	3	2			1			6	
9.00-9.15	2	1	2					5	
9.15-9.30	3	3	1					7	
9.30-9.45		1						1	1
9.45-10.00		2	1					3	3
10.00-10.15									
10.15-10.30	3	3	2					8	
10.30-10.45	1	2		1				4	1
10.45-11.00	2	2	1	1				6	1
11.00-11.15	3	1		1	1		1	7	3
11.15-11.30	2	1	1	1	1		1	7	6
11.30-11.45	2	1	2		2	1		8	5
11.45-12.00	1	2		1				4	4
pm									
12.00-12.15	5		1	1	1	1		9	6
12.15-12.30	2	1	1	1	1	1	1	8	2
12.30-12.45	2						1	3	1
12.45-1.00	3	3	3	1	1	1		12	3
1.00-1.15		1	1	1				3	2
1.15-1.30		2		1				3	2
1.30-1.45	1	2		2	1			6	4
1.45-2.00	2	2						4	
2.00-2.15	3	3	1					7	
2.15-2.30		1						1	1
2.30-2.45	3							3	3
2.45-3.00	6	2	2			1		11	3
3.00-3.15	4	1	1	2	3	1	1	13	13
3.15-3.30	2	2	1					5	5
3.30-3.45	2		1					3	3
3.45-4.00	1	2		1	1			5	4
4.00-4.15	1	2						3	2
4.15-4.30	1	1			1			3	1
4.30-4.45	2	2	3		1	1		9	
4.45-5.00	1	1						2	2
5.00-5.15	1	1						2	2
5.15-5.30	1		3	1	1			6	4
5.30-5.45		1				1		2	3
5.45-6.00		2	1					3	7
6.00-6.15	2	1		1				4	3
6.15-6.30	1	1						2	2
6.30-6.45	4	1	2	1				8	4
6.45-7.00					1			1	7
7.00-7.15	2	2	3	1	1			9	4
7.15-7.30	3	3	1	1			1	9	4
7.30-7.45	7	6	4	4	5	3	3	32	105
7.45-8.00	2	2	1				1	6	3
8.00-8.15			1					1	1
8.15-8.30	1	1	2					4	1
	91	75	47	24	24	11	10	282	
	32.3%	26.6%	16.7%	8.5%	8.5%	3.9%	3.5%	100%	

F ninth floor – weekday

7.45 am - 8.30 pm

Time	Number of passengers who waited							Total	Stairs down
	0-10 secs	11-20 secs	21-30 secs	31-40 secs	41-50 secs	51-60 secs	60 secs plus		
am									
7.45-8.00									
8.00-8.15	1							1	1
8.15-8.30	2	5						7	2
8.30-8.45	5			1				6	
8.45-9.00	2				1			4	5
9.00-9.15			2			2		4	4
9.15-9.30									
9.30-9.45		1	2			1		4	7
9.45-10.00		1	1					2	
10.00-10.15		2	1	1				4	3
10.15-10.30	11	3	1	1				16	2
10.30-10.45	1	2						3	
10.45-11.00	1	2	2					5	1
11.00-11.15	3					1		4	2
11.15-11.30	3	2	1	1		1		8	5
11.30-11.45	6	3	2	1				12	1
11.45-12.00	2	2						4	
pm									
12.00-12.15	2	2	1	1				6	
12.15-12.30	5	1	1	1				8	
12.30-12.45	9	2	2			1		14	3
12.45-1.00	6	1		1		1		9	1
1.00-1.15	2	2		1				5	
1.15-1.30	2	1	1					4	2
1.30-1.45		1		1				2	
1.45-2.00		1	1	1	1			4	
2.00-2.15	1	3	1			1		6	5
2.15-2.30			2					2	1
2.30-2.45			1	1			2	4	1
2.45-3.00	4		1	1			1	7	2
3.00-3.15	3	1	1					5	1
3.15-3.30	2	1						3	
3.30-3.45	5	1		2				8	3
3.45-4.00	4						1	5	
4.00-4.15	1	1		1				3	2
4.15-4.30	5	2						7	4
4.30-4.45	1	3	1	2				7	1
4.45-5.00	1	3	1	2				7	
5.00-5.15	6	3		1				10	
5.15-5.30	5							5	3
5.30-5.45	4	1		1				6	
5.45-6.00		1		1				2	
6.00-6.15	4		1					5	
6.15-6.30	4	3	1					8	3
6.30-6.45	2	1	2	1	1		1	8	
6.45-7.00							1	1	1
7.00-7.15	1	3		1	2			7	2
7.15-7.30	6				1			7	
7.30-7.45	16	11	7	3	3	3	1	44	
7.45-8.00	7		1	1	1			10	
8.00-8.15			1					1	
8.15-8.30									
	145	72	39	30	10	11	7	314	
	46.2%	22.9%	12.2%	9.6%	3.2%	3.6%	2.3%	100%	

G lower ground floor – weekday

7.45 am - 7.15 pm

Time	Number of passengers who waited							Total
	0-10 secs	11-20 secs	21-30 secs	31-40 secs	41-50 secs	51-60 secs	60 secs plus	
am								
7.45-8.00	1	1	1			1		4
8.15-8.30		2		1				3
8.30-8.45	2		1					3
8.45-9.00	1	4	1			1		7
9.00-9.15	3	4	1	2			1	11
9.15-9.30	1	1	2		1			5
9.30-9.45		2	2	1	1		1	7
9.45-10.00	1	3	1	2	1	1	1	10
10.00-10.15		2	2	3			1	8
10.15-10.30	2	5	2	3				12
10.30-10.45	4	1	5	2	1	2	2	17
10.45-11.00	7	2		1				10
11.00-11.15	12	6		2				20
11.15-11.30	3		1	4	1	1	4	14
11.30-11.45	1	2	2	2	2			9
11.45-12.00			1	1		3	2	7
pm								
12.00-12.15			1			1		2
12.15-12.30	3	1	1		1		2	8
12.30-12.45	3	1		1	1			6
12.45-1.00	2			3	2			7
1.00-1.15	10	3	2	1				16
1.15-1.30	2	3	1					6
1.30-1.45	2	4		1	1			8
1.45-2.00		3	2	1		1		7
2.00-2.15		3	2	1				6
2.15-2.30	1	2	3		1	1		8
2.30-2.45	2	4	1		1	1		9
2.45-3.00	2	6	5	2				15
3.00-3.15	1	1	1	1	3		3	10
3.15-3.30	1	2	2	2	1		3	11
3.30-3.45	3	4	5		1			13
3.45-4.00	2	2	3	1				8
4.00-4.15	2	2		1				5
4.15-4.30		1	2	1		1		5
4.30-4.45					1	1		2
4.45-5.00	1	1	1	1			1	5
5.00-5.15	6	2	1	1				10
5.15-5.30	16	5	2	1			1	25
5.30-5.45		1	1	2		1		5
5.45-6.00			1		1			2
6.00-6.15	2		2	1				5
6.15-6.30	2	1						3
6.30-6.45		2	1		1			4
6.45-7.00		2	3					5
7.00-7.15			1					1
	101	91	66	46	22	16	22	364
	27.7%	25.0%	18.1%	12.6%	6.1%	4.4%	6.1%	100%

H schedule of collections and deliveries

Time	Service	
8 am - 9.45 am		Dispensary (collection)
8 am - 9.45 am	Bread delivery	
9.45 am - 11.15 am	Eggs, fruit, ice cream, butter, etc	
9.45 am - 11 am		Clinical pathology (collection)
11 am - 11.45 am	Meals - delivery	
11 am - 1 pm		Dispensary (delivery) (Saturdays)
11.15 am - 12 noon		Diets - delivery
11.45 am - 1.15 pm		Central stores delivery
12.30 pm - 1.15 pm	Meals - collection	
1.15 pm - 2 pm	Cakes	
1.45 pm - 3 pm		Groceries (delivery) Monday - Friday
2 pm - 4 pm		Dispensary (delivery) weekdays
3 pm - 5 pm	Milk - delivery	
4 pm - 5 pm	Clinical pathology - delivery	
4 pm - 5 pm		Fumigation - delivery
5 pm - 5.30 pm	Meals - delivery	
5 pm - 5.45 pm		Diets - delivery
6.15 pm - 6.45 pm	Meals - collection	
Laundry - clean	All day - individual trolley	

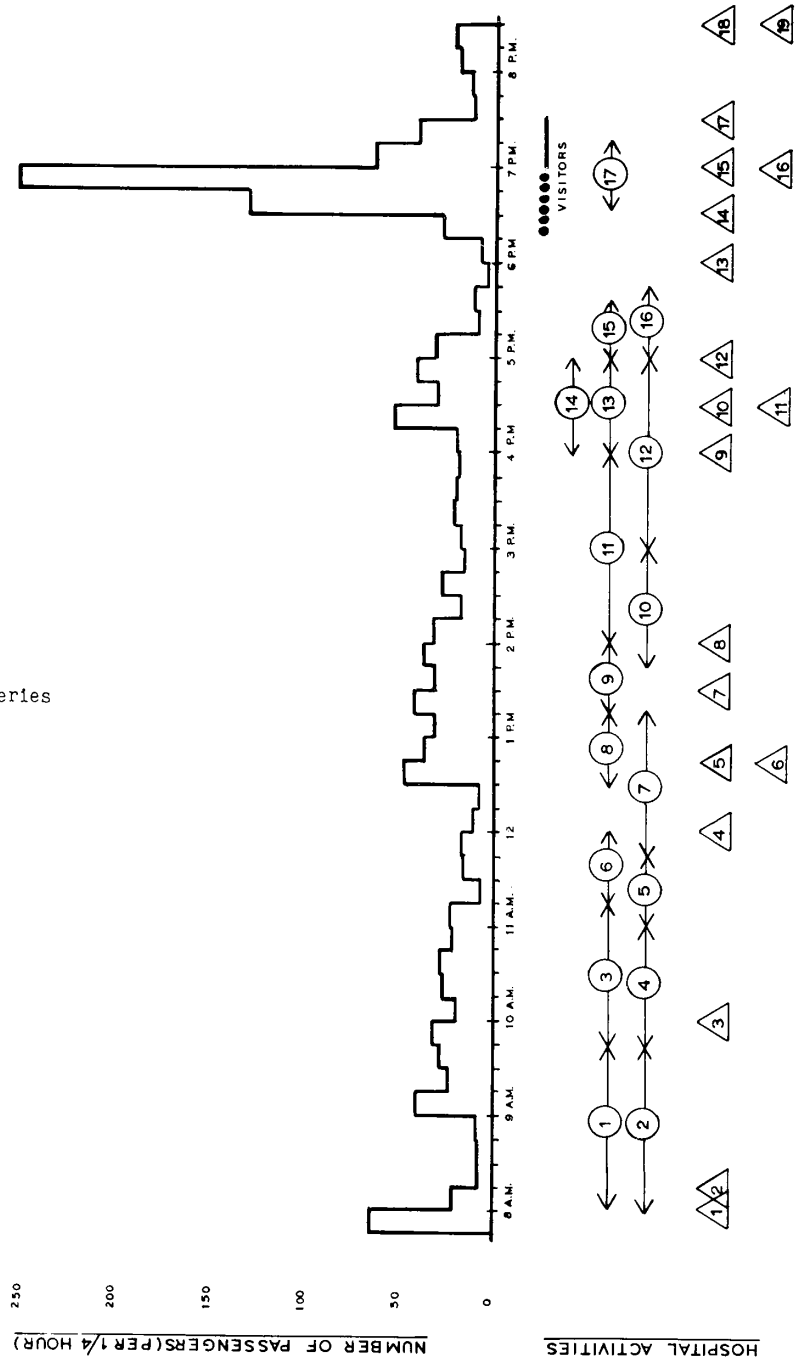
J diagram – concurrent hospital activities

Key △ Nursing Staff

1 On duty
2 Night staff off
3 Off duty (some)
4 To lunch (1st)
5 Return from lunch (1st)
6 To lunch (2nd)
7 Return from lunch (2nd)
8 Off duty (some)
9 To tea (1st)
10 Return from tea (1st)
11 To tea (2nd)
12 Return from tea (2nd)
13 Off duty (some)
14 To supper (1st)
15 Return from supper (1st)
16 To supper (2nd)
17 Return from supper (2nd)
18 Day staff off
19 Night staff on

Key ◯ Collections and Deliveries

1 Dispensary collection
2 Bread delivery
3 Other provs. delivery
4 Pathology collection
5 Meals delivery
6 Diets delivery
7 Stores delivery
8 Meals collection
9 Cakes delivery
10 Groceries delivery
11 Dispensary delivery
12 Milk delivery
13 Pathology delivery
14 Fumigation delivery
15 Meals delivery
16 Diets delivery
17 Meals collection



Use of passenger lifts from ground floor

Weekday 7.45 am – 8.30 pm

Showing concurrent hospital activity on same time scale

K comparison of off-peak and peak waiting times: passenger waiting times – New Guy's House

7.45 am - 8.30 pm

Period	Percentage of passengers who waited								Rate Passengers per hour
	0–10 secs	11–20 secs	21–30 secs	31–40 secs	41–50 secs	51–60 secs	60 secs plus		
Over whole day 7.45 am to 8.30 pm	71.7%	13.4%	6.6%	3.5%	3.0%	1.0%	0.8%	100%	127
Off-peak period whole day less peak half hour	71.8%	13.8%	6.5%	3.3%	2.5%	1.0%	1.1%	100%	100
Peak half hour 6.30 pm to 7.00 pm	71.5%	11.8%	6.8%	4.2%	4.7%	1.0%		100%	764
Peak quarter hour 6.45 pm to 7.00 pm	69.8%	10.3%	6.0%	6.0%	6.3%	1.6%		100%	1008
Peak five minutes 6.50 pm to 6.55 pm	62.2%	9.0%	9.0%	8.1%	9.9%	1.8%		100%	1332

L government offices and department stores

Passenger lifts at	Percentage of passengers who waited							
	0–10 secs	11–20 secs	21–30 secs	31–40 secs	41–50 secs	51–60 secs	60 secs plus	
Off-peak								
New Guy's House ground floor	71.8%	13.8%	6.5%	3.3%	2.5%	1.0%	1.1%	100%
Post-war government offices ground floor	75.8%	9.5%	6.4%	2.9%	2.1%	1.7%	1.6%	100%
Department stores all floors	22.8%	35.8%	15.4%	2.1%	7.2%	2.5%	14.2%	100%
Peak half hour								
New Guy's House ground floor	71.5%	11.8%	6.8%	4.2%	4.7%	1.0%		100%
Post-war government offices ground floor	61.4%	13.2%	14.0%	4.4%	6.1%	0.9%		100%
Department stores all floors	7.6%	22.2%	12.4%	10.3%	10.8%	4.2%	32.5%	100%

M average passenger waiting times

New Guy's House								Government offices		Department stores	
9th floor (weekday)		3rd floor (weekday)		Ground floor (Sunday)		Ground floor (weekday)		Ground floor (weekday)		All floors (weekday)	
Off-peak	Peak	Off-peak	Peak	Off-peak	Peak	Off-peak	Peak	Off-peak	Peak	Off-peak	Peak
15.1 secs	20.9 secs	17.6 secs	32.0 secs	3.3 secs	14.0 secs	5.6 secs	10.7 secs	6.1 secs	11.7 secs	31.2 secs	51.1 secs

N first floor (theatres)

9.30 am - 5.30 pm

Time	Number of passengers who waited							Total	Trolleys from theatre
	0-10 secs	11-20 secs	21-30 secs	31-40 secs	41-50 secs	51-60 secs	60 secs plus		
am									
9.30-9.45									
9.45-10.00			1					1	1
10.00-10.15	2							2	1
10.15-10.30	5							5	2
10.30-10.45	4	4						8	4
10.45-11.00	3							3	1
11.00-11.15	2							2	1
11.15-11.30	2		1					3	1
11.30-11.45									
11.45-12.00	1	3						4	1
pm									
12.00-12.15	1	3	1					5	1
12.15-12.30									
12.30-12.45	2							2	1
12.45-1.00	1							1	
1.00-1.15	2							2	
1.15-1.30						2		2	1
1.30-1.45	2						4	6	3
1.45-2.00	2		3				4	9	3
2.00-2.15	2	2						4	2
2.15-2.30	5							5	2
2.30-2.45	6							6	3
2.45-3.00	10							10	4
3.00-3.15	5		3					8	2
3.15-3.30	4							4	2
3.30-3.45	2	1						3	1
3.45-4.00	1			3				4	1
4.00-4.15	3			2				5	3
4.15-4.30			2				4	6	2
4.30-4.45									
4.45-5.00						2		2	1
5.00-5.15		2						2	1
5.15-5.30									
	67	15	11	5		4	12	114	
	58.8%	13.2%	9.6%	4.4%		3.5%	10.5%	100%	

0 ground floor (casualty)

7.30 am - 5.30 pm

Time	Number of passengers who waited							Total	Trolleys wheelchairs etc
	0-10 secs	11-20 secs	21-30 secs	31-40 secs	41-50 secs	51-60 secs	60 secs plus		
am									
7.30-7.45									
7.45-8.00	1							1	
8.00-8.15									
8.15-8.30	2							2	
8.30-8.45									
8.45-9.00									
9.00-9.15	2							2	1 wheelchair
9.15-9.30									
9.30-9.45									
9.45-10.00				1	1			2	1 tea trolley
10.00-10.15									
10.15-10.30									
10.30-10.45									
10.45-11.00									
11.00-11.15									
11.15-11.30									
11.30-11.45		1						1	
11.45-12.00									
pm									
12.00-12.15									
12.15-12.30									
12.30-12.45									
12.45-1.00							1	1	1 disp.trolley
1.00-1.15	3							3	
1.15-1.30									
1.30-1.45									
1.45-2.00		3						3	
2.00-2.15				1				1	
2.15-2.30									
2.30-2.45									
2.45-3.00	2		3		2			7	1 wheelchair 1 str.trolley
3.00-3.15	4		2	3				9	4 str.trolley
3.15-3.30									
3.30-3.45		1				3		4	1 wheelchair
3.45-4.00	2							2	
4.00-4.15									
4.15-4.30									
4.30-4.45									
4.45-5.00									
5.00-5.15	2							2	1 str.trolley
5.15-5.30									
	18	5	5	5	3	3	1	40	
	45%	12.5%	12.5%	12.5%	7.5%	7.5%	2.5%	100%	

35 Report on pneumatic tube communication system

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Appendices

Object

The object in installing the pneumatic tube communication system was to reduce the time spent, principally by ward staff, in running errands and to improve efficiency generally by having errands completed with the utmost despatch. It was appreciated from the outset that only a minute proportion of the total movement in the hospital would be eliminated by use of the tube and no reduction of portering staff was anticipated or sought, or has been realised.

Prior to the final decision being taken to go ahead with the installation an attempt was made to assess its probably contribution to the efficiency of the hospital. Mainly due to the absence of practical experience of the use of tube communication systems in this country and on the continent at the time, no firm conclusions could be drawn beyond that there was some doubt whether it was worthwhile to proceed. After

due consideration it was decided to install the system subject to its effect being evaluated in due course so that at least the deficiency of lack of practical experience of the systems in this country could be remedied.

Summary of conclusions

The conclusions which have been reached and the references to the appropriate succeeding paragraphs of this report are:

a) the equivalent revenue cost of providing and operating the existing pneumatic tube installation is £2980 per annum; (see Cost of installation). (See also sub-para c below.)

b) the saving of staff time spent on errands, attributable to the use of the pneumatic tube, is equivalent to a financial saving of £450 per annum; (see Results of enquiry, 4th paragraph).

c) extending the tube system to cover all wards and departments in Guy's Hospital would double or treble the capital costs so far incurred, and entail equivalent revenue costs of £6,000 to £9,000 per annum with a maximum possible notional saving of only £1500 per annum on reduced staff time spent on errands; (see Effect of extension of system, 2nd paragraph).

d) the provision of a single additional station at any particular point in the hospital would not be economically justified; (see Effect of extension of system, 3rd paragraph).

e) the total time spent by nursing staff on errands in the hospital as a whole is equivalent only to 0.375% of the total nursing time available; (see Contributing factors to small use made of pneumatic tube).

f) the pneumatic tube at present only eliminated about 44% of the errands arising in New Guy's House. Even if made fully comprehensive the system will not eliminate more than 60% of the total errands arising; (see Effect of extension of system).

g) five of the pneumatic tube stations are at present serving no useful purpose beyond providing a degree of flexibility which may or may not be required in the event of a change of use of the locations involved; (see Siting of stations).

h) the system has only limited use in the transportation of items other than paper eg pathological specimens and drugs; (see Contributing factors to small use made of pneumatic tube, 2nd paragraph).

i) in transplanting the system from American hospitals to a British hospital no regard has been paid to the absence in British hospitals of the primary function and main justification of tube systems in American hospitals, namely, the transportation of thousands of charge chits per day from treatment areas to a central accounts section; (see Contributing factors to small use made of pneumatic tube, 4th paragraph).

j) the speed with which the tube completes errands has been greatly overrated; (see Contributing factors to small use made of pneumatic tube, paragraph 5).

k) only limited objections are raised to the noise created by the system; (see Noise).

l) present operating costs can be reduced by about £700 per annum merely by switching off the system at night and over week-ends when it is hardly ever used; (see Reduction of operating costs).

m) consideration should be given to replacing the tube system by a messenger service covering the whole hospital, which for a cost approximating to the present electricity and maintenance charges, could possibly result in a near 100% elimination of errands throughout the whole of the hospital instead of the present 44% elimination in approximately one third of the hospital (see Reduction of operating costs, paragraph 2).

Siting of stations

A brief description of the 4" pre-selector tube system is given at page 30 of the booklet on New Guy's House. The distribution of the 26 stations is set out at Appendix A to this report. At the present moment five of the stations can be said to be superfluous to requirements, viz: one each on the Departmental, Theatre, Casualty and C S S D floors of New Guy's House and the Medical Records station in Hunt's House, which

is unused. The superfluous stations in New Guy's House, however, do provide some degree of flexibility should there be any change of use of the four floors concerned. The Medical Records stations is not likely to be used since new flexible covers would be required for all patients folders, and the expense and trouble hardly seems justified when the existing portering arrangements for handling medical records are satisfactory and could not be replaced by the tube.

Cost of installation

The cost of the installation, including modifications found necessary in the light of experience, was £21,800 (approx.) The manufacturers suggest that in addition to normal maintenance expenditure the Board should be prepared to spend 30% of the original capital cost (plus adjustment for inflation) at 10 yearly intervals to completely renovate the system and adopt any modifications found desirable. In the light of this, the conversion of the capital cost of the installation to an equivalent revenue cost has been based on an amortisation period of 20 years. The calculation of the revenue cost, including operating costs, is set out at Appendix B, the resultant revenue cost being £2980 per annum. The fuel and maintenance charges in this calculation have been estimated as accurately as possible and agreed with the manufacturers. The actual maintenance costs in the first year of operation have been ignored as non-representative, being due in the main to misuse of the system. An indication of the extent of misuse is that from June, 1961, to July, 1962, there were some 50 major faults half of which could be directly attributed to misuse of the system and, in addition, between December, 1961, and August, 1962, there were some 130 rejected carriers which required the time of porters, engineers or ward staff to retrieve and re-direct.

Enquiry of the manufacturers revealed that the average capital cost of providing extra stations on the tube system would be about £1,000 each, the actual cost of each being above or below this figure depending on the amount of work involved. A conversion of the capital cost of each extra station to a revenue cost, including operating expenses, is set out at Appendix C. The revenue cost of each additional station approximates to £132 per annum or approximately £2 10s per week.

Method of enquiry

Preliminary enquiries revealed wide divergencies of opinion regarding the contribution made by the tube system towards the efficiency of individual departments and the hospital as a whole. It was also clear, however, that in some cases these opinions were biased owing to the bad impression of the tube created by the numerous breakdowns etc. due to misuse in the early days of its operation. Moreover, test quantification of the amount of use made of the tube showed it to be generally much less than commonly thought. In the light of these circumstances a comprehensive measurement of the effect of the tube on the number of, and time spent on, errands was undertaken so that a reliable and objective assessment could be made.

With the co-operation of Matron and the whole of the nursing staff all wards throughout the hospital were asked to keep a record of errands showing the time of commencement and completion, destination, and purpose, for a period of one week from 3rd to 9th September 1962, inclusive. In addition wards in New Guy's House were asked also to record similarly the use made of the pneumatic tube. In the absence of data showing what would have been the number of, and time taken by, errands had the tube not been installed in New Guy's House, comparison between New Guy's House and the rest of the hospital should show the extent to which the number and time taken by errands had been reduced by installation of this pneumatic tube.

As the exercise progressed it became apparent that York House (Psychiatric Unit - 46 beds) and Nuffield House (Private Patients - 72 beds) were organised on different lines from the rest of the hospital and, therefore, should be excluded from the comparison with New Guy's House. The comparison made therefore, was between New Guy's House (Surgical Block - 378 beds) and Hunt's House (Medical Block - 361 beds).

Comparison of relevant statistics for the two blocks (Appendix D) revealed that the number of errands arising is tied more closely to the number of beds than the medical or surgical nature of the wards concerned or the number of wards involved. This is compatible with the ad hoc

nature of the errands which tend to arise more from the treatment aspect of individual patients rather than any other cause. Although the number of errands per week in New Guy's House is 7% in excess of those in Hunt's House and there are only 5% more beds, the extra 2% of errands can be disregarded being to some measure caused by the tendency of the tube to create several single destination and purpose journeys rather than one multi-destination and purpose journeys as in Hunt's House. For the purpose of the exercise, therefore, it was decided that the figures obtained for errands in Hunt's House should be increased by 5% before comparison with the figures for New Guy's House to ensure strict bed for bed comparability.

Comparison of the number of errands in New Guy's House and Hunt's House by destination (Appendix E) disclosed nothing significant except the expected heavier traffic to the Dispensary from Hunt's House (Medical Block) compensated to some extent by heavier traffic to C S S D from new Guy's House (Surgical Block). Comparison of the two in regard to the volume of traffic throughout the days of the week (Appendix F) disclosed a similar general pattern in both blocks with a trough of errands in the middle of the week. No adjustments of figures arising from either of these analyses were, therefore, considered necessary.

Comparison of the average time taken per errand (Appendix G) disclosed that errands from New Guy's House averaged 11 minutes each compared with nine minutes each from Hunt's House. It was decided, therefore, that the time spent on errands from Hunt's House should be increased by 2/9ths before comparison with New Guy's House to allow for the longer distances involved from New Guy's House. The existence of the tube in New Guy's House tended to eliminate short duration errands and thus increase the average duration of the remaining errands, but it was decided to ignore this factor since any slight resultant bias would be in favour of the tube system.

Results of enquiry

The summary of actual time spent by ward staff on errands in Hunt's House, adjusted in accordance with the 4th and 6th paragraphs in Method of enquiry, less the summarised actual time spent by ward staff on errands in New Guy's House is set out at Appendix H. The resultant difference is the apparent saving of ward staff time which can be attributed to the use of pneumatic tubes. The saving is 38½ hours per week of which approximately two thirds is nursing time, the rest being mainly orderly and domestic time.

Not all of the 38½ hours per week was actually saved, however, since there is an offsetting factor being the actual time taken to operate the tube system. A calculation of the total ward staff time spent in operating the system is set out in Appendix J, the resultant figure being 4½ hours per week for all wards. It is significant to note that this time is almost entirely trained nursing time whereas errands, in the main, are undertaken by student nurses or domestic staff.

An approximation of the amount to which the tube installation is put by departments other than wards is set out at Appendix K. The principal other user of the installation is the Dispensary in distributing some drugs required urgently by the ward. No saving of time can be attributed to this use, however, since otherwise the drugs would have been collected by ward staff at the time the prescriptions were delivered. Similarly little if any, saving results from the use of the tube by Casualty and X-ray since otherwise the traffic would make little difference to the work load of the porters on duty. In the light of these circumstances it was considered that a nominal figure would suffice to cover the notional financial savings attributable to the use of the tube by departments other than wards.

The calculation of savings attributable to the use of the tube is set out at Appendix L. The net saving is approximately half the time of one nurse and one third of the time of one orderly which, after making a nominal allowance for savings in other departments as suggested above, is equivalent to a notional financial saving of £450 per annum.

Effect of extension of system

The installation of the tube in New Guy's House has reduced the total number of errands by 44% and the total time spent on them by 43% (see Appendix M). Having regard to the fact that the present tube system is

not comprehensive, the effect of a fully comprehensive system is more likely to be obtained from analysis of the relationship of tube usage and errands to destinations with pneumatic tube connections, ie Path. Laboratory, Dispensary, X-ray and C S S D. Appendix M discloses that in these cases the average reduction in errands attributable to the tube is approximately 60%.

The total time spent on errands by ward staff in the whole of Guy's Hospital including Nuffield House and York House is 191 hours 11 mins. per week (Appendix N) ie roughly equivalent to 4½ whole time staff. If 60% of these can be saved by extending the tube system to all wards and departments the saving in staff time, therefore,is likely to be approximately 2¾ whole time staff, of which approximately 2 will represent nursing time and ¾ orderly time. The total financial saving likely to accrue, therefore, is in the region of £1500 per annum. The additional capital cost necessary to achieve this saving is likely to fall between two and three times the cost of the present installation and the equivalent revenue cost including operating costs, is likely to fall between £6000 and £9000 per annum.

The economic relativities of installing single extra stations at specific points, eg Stores, Matron's and Superintendent's Offices, Works Department, can be assessed by comparing the revenue cost of each additional station, £2.10.0 per week (Appendix C), with the cost of the actual weekly time likely to be saved (60% of the time shown in the appropriate column relating to New Guy's House in Appendix G). In no case would the installation of an extra station be economically justified.

Contributing factors to small use made of pneumatic tube

The use made of the pneumatic tube is obviously much less than was contemplated at the planning stage but it is significant that although the object was to reduce errand running by nurses, the total time spent by nurses in running errands throughout the hospital is only equivalent to the time of three whole time nurses out of an establishment of approximately 800, ie 0.375% of the total nursing time available. It is apparent, therefore, at the planning stage too much emphasis was given to a comparatively minor nursing activity and the expensive solution adopted, even if 100% successful, was doomed to economic failure before it began.

The items at present transported by pneumatic tube, together with those which are apparently suitable for transport by tube but not so transported, are listed at Appendix O. The bulk of the traffic in the tube system consists of some pathological specimens, some prescriptions and drugs, some X-ray request forms and some C S S D requisitions. Except in the case of the Dispensary, practically all of the traffic is one way - from wards to departments. In the case of specimens sent to the Pathological Laboratory there is a trend for the number despatched by tube to fall and to be restricted to small blood samples in special plastic phials, and swabs. So many cases of leakages from urine and faeces specimens have occurred that the practice is growing to send these by hand rather than tube, although no official ruling has been issued to this effect. Carriers known to have been soiled by leakages of infected specimens have been sterilized but no check has been made to see if residual infection has been left in the tube itself. Some doubt is also felt about the advisability of continuing to send small blood samples since cases of "separation" in individual samples sent by tube have occurred although not to any set pattern of frequency. Dangerous and scheduled drugs are collected by hand despite the availability of a lockable container since the greater security of hand to hand transfer with signatures at all stages is preferred. Detailed comment about other aspects of usage or non-usage of the tube system for particular items is included in Appendix O.

The extent to which the tube system is used must also be looked at in relation to the portering service available which, in New Guy's House, is of the same standard as the rest of the hospital. This portering service consists of routine rounds by dispensary porters to collect prescriptions and requisitions and deliver bulk supplies of drugs and dressings as well as fulfilled individual prescriptions; routine rounds by the pathological laboratory porter to collect specimens, including

large 24 hour specimens, and deliver reports; routine collection of bed states, patients records, X-rays, stores requisitions, work requisitions, etc, each morning by porters; routine escorting of patients and delivery of records by porters as required on admission, transport between wards and departments, and on discharge. The small use made of the tube system is perhaps a testimonial to the adequacy of these arrangements and the use made of them by ward sisters for all purposes but the ad hoc errands which arise. Extended use of the tube would not dispense with the need for this portering service since the need to collect large pathological specimens deliver bulk drugs, escort patients etc. would still remain.

The small use made of the tube system and its disappointing financial return do not apparently tie up with the enthusiasm for tube systems in the USA, where they are said to be both justified and economic. The most familiar use of pneumatic tubes in this country is in department stores where they are used to convey bills and money to and from a central cashier's position. An American hospital can be likened, perhaps harshly but nevertheless accurately for this purpose, to a department store selling treatment. The justification for tube system in American hospitals is the same as the justification for them in department stores; a constant flow of charge chits - thousands per day - to a central accounting position. The use of the tube for other purposes eg path. specimens, drugs, etc, is a secondary and minor use taking advantage of a system which is totally justified on other grounds. It is little wonder that the tube system in New Guy's House is uneconomic when the main justification for it in American hospitals does not exist in this country.

Much play is made of the pneumatic tubes' speed of 25 to 30 feet per second, which it is contended is a much faster method of undertaking errands than any known alternative. Carriers despatched via the tube, however, do not go direct from point to point but follow a circuitous route controlled by "selectors" and "spacers". Test timings indicated that the time taken by a carrier to travel from New Guy's House to the Pathological Laboratory varied between two and three minutes. The time taken to walk at a normal (quite slow) pace from New Guy's House to the Pathological Laboratory by the "long outdoor" route is four minutes. It is, therefore, conceivable that in a real emergency a "runner" taking the shortest possible route could actually be quicker than the pneumatic tube system when account is taken of the time necessary to insert the contents into the carrier, dial the code and insert the carrier into the tube. Since there is no guarantee that any station is always manned it is certainly much surer to send a really urgent message by hand since the "runner" can seek the absent recipient. In any case the arrival of a human messenger always tends to take precedence over the arrival of a mechanical one.

Noise

Although some objections to the use of the tube because of the noise it creates was expected none were raised on the wards, probably because the tube stations are situated at a reasonable distance from patient areas. Only two objections to the noise were recorded, one in the Pathological Laboratory where the noises caused by the random arrival of carriers tended to upset technicians engaged on delicate tests, and the other from the Almoner's Office where the sound of carriers rushing through the tube which passes through the office is found to very disturbing. The actual tubing used in the hospital is made of steel but quieter operation can be achieved by using plastic tubing. The plastic tubing, however, creates an electrostatic effect, collecting dust and aggravating the cleaning problem. In addition, experience on the continent indicates that the electrostatic effect of plastic tubing can cause interference with electronic and radiological equipment and, therefore, its use is not suitable for hospitals.

Reduction of operating costs

Excepting the amortised capital costs, the running costs of the tube system are £990 per annum for electricity and £300 per annum for maintenance (Appendix B) a total of £1290. Analysis of the use of the tube by time of origin of each usage (Appendix P) indicates that 98% of the despatches occur between 8 am and 6 pm. There seems to be little point in keeping the system running from 6 pm to 8 am each night merely to deal with an occasional errand. Analysis of the use of the tube by

day of the week (Appendix Q) indicates that 94% of the errands occur in the period Monday to 1 pm on Saturday. If alternative arrangements were made to convey the routine C S S D requisitions from wards to C S S D on Sunday (eg by placing in a tray in the "dirty" hoist) the percentage of errands occurring from 1 pm on Saturday to 8 am on Monday would be negligible. There seems little point in keeping the system running from 1 pm on Saturday to 8 am on Monday morning. These periods of little or no traffic, of course, more or less coincide with the times when the main receiving departments are closed in any case. Shutting down the system for these periods should effect a 60% saving of electricity costs, almost £600 per annum, and a $33\frac{1}{3}$% reduction in maintenance costs, about £100 per annum, with virtually no reduction of the use made of the system.

The present recurring operating costs of £1290 per annum could, if the system were shut down entirely, be used to employ two extra porters. It is worthy of consideration whether two extra porters, supplemented if possible and necessary by support from existing portering staff, could provide an hourly messenger service for the whole hospital during the hours and days of maximum errand running: and eliminate a much greater proportion of the errands over the whole hospital than the mere 60% over one third of the hospital achieved by the tube installation. Such a service is likely to be economically justified whereas the tube system is never likely so to be.

Acknowledgements

The courtesy, consideration and assistance afforded by all grades of staff in the hospital during the course of the investigation are gratefully acknowledged. The co-operation afforded by all grades of nursing staff in recording the errands undertaken by them, often when they were working under pressure, is recorded with particular appreciation.

R W Hornsby
September, 1962

appendices

A distribution of stations on the pneumatic tube communication system

New Guy's House (2 stations per floor)	
Wards (one per ward)	14
Departmental floor (shared)	2
Theatres (including recovery ward)	2
Casualty	2
C S S D	2
Hunt's House	
X-ray	1
Dispensary	1
Medical records	1
School Building	
Pathological laboratory	1
Total	26

B equivalent revenue cost of providing and operating the pneumatic tube communication system

(Note: In addition to normal maintenance expenditure, the manufacturer of the pneumatic tube installation suggests that at 10 year intervals extraordinary maintenance costing about 30% of the original capital sum (plus appropriate adjustment for inflation) should be undertaken. This is equivalent to doubling the capital cost over a period of 40 years. In converting the original capital cost to a revenue charge, therefore, an amortising period of 20 years has been used.)

Capital cost of installation (including extras purchased and installed in first year or so of operation)	£21,800
Revenue costs per annum	
Amortisation of capital cost	£1,090
Interest at 5½% on 50% of capital cost	£600
*Fuel costs - 148,920 units at 1s 6d per unit	£990
Maintenance costs (normal)	£300
Total revenue cost	£2,980

*Estimated power consumption agreed with manufacturers.

Estimated maintenance costs as agreed with manufacturers. Actual maintenance costs in first year of operation were much in excess of this due to damage,etc, caused by misuse and, therefore, have been ignored as non-representative.

C calculation of revenue cost of installing an extra pneumatic tube station

Estimated average capital cost per station (as agreed with manufacturers)	£1,000
Revenue costs	
Amortisation of capital cost	£50 pa
Interest @ 5½% on 50% of capital	£27 pa
Running costs (electricity charge) say	£45 pa
Maintenance costs say	£10 pa
Total revenue costs	£132 pa

approximately £2 10s 0d per week

D statistical comparison of New Guy's House with Hunt's House

Building	Number of wards	Number of beds	Number of errands per week (including dispatches by tube)
New Guy's House (surgical)	14	378	524
Hunt's House (medical)	12	361	488
Margin by which New Guy's House exceeds Hunt's House			
Number	2	17	36
Percentage	17%	5%	7%

E analysis of errands (and despatches by tube) by destination

Errands and despatches by tube to: (per week)		Path lab	Disp	X-ray	Supt and matron's office	Stores	Works	C S S D	Others	Total
New Guy's house	No.	81	105	41	29	24	8	110	126	524
	%age of total	15%	20%	8%	5%	5%	2%	21%	24%	100%
Hunt's house	No.	69	152	37	24	34	13	81	78	488
	%age of total	14%	31%	8%	5%	7%	3%	16%	16%	100%

F analysis of errands (and despatches by tube) by day of week

Building		Mon	Tue	Wed	Thur	Fri	Sat	Sun	Totals
New Guy's house	Errands	64	50	39	38	66	27	12	296
	Tube des-patches	41	46	32	48	36	14	11	228
	Total	105	96	71	86	102	41	23	524
Hunt's house		92	94	93	65	79	48	17	488

G comparison of time taken for errands

		Path lab	Disp	X-ray	Supt and matron's office	Stores	Works	C S S D	Others	Total
New Guy's house	No of errands	30	44	18	29	24	8	27	116	296
	Time spent (mins)	420	543	257	285	418	120	274	804	3,121
	Time per errand (mins)	14	12	14	10	17	15	10	7	11
Hunt's house	No of errands	69	152	37	24	34	13	81	78	488
	Time spent (mins)	595	1,067	298	213	479	166	704	713	4,235
	Time per errand (mins)	9	7	8	9	14	13	9	9	9

H calculation of apparent saving of ward staff time

	Mon (mins)	Tue (mins)	Wed (mins)	Thur (mins)	Fri (mins)	Sat (mins)	Sun (mins)	Total (mins)
Actual time spent on errands in Hunt's house	817	867	822	562	693	336	138	4,235
Add: 5% to bring to equivalent number of beds as in New Guy's house	41	43	41	28	35	17	7	212
Sub-total	858	910	863	590	728	353	145	4,447
Add: 2/9ths to compensate for larger distances involved in travelling from New Guy's house	191	202	192	131	162	78	32	988
Calculated time spent on errands in New Guy's house if pneumatic tube had not been installed	1,049	1,112	1,055	721	890	431	177	5,435
Actual time still spent on errands in New Guy's house	619	537	443	403	681	312	126	3,121

Calculated apparent saving on errands attributed to use of pneumatic tube	430	575	612	318	209	119	51	2,314
Daily total	7 hrs 10 mins	9 hrs 35 mins	10 hrs 12 mins	5 hrs 18 mins	3 hrs 29 mins	1 hr 59 mins	51 mins	38 hrs 34 mins say 38½ hrs

J calculation of nursing time absorbed in operating pneumatic tube installation

Time to move to pneumatic tube station, insert contents, dial receiving station, dispatch tube, and return to main part of ward	40 secs
On return of carrier from receiving station time allowance to move to station, check that carrier is empty and return to ward	30 secs
Total time expended per dispatch on every dispatch	70 secs
Extra time expended on dispatches to pathological laboratory only - insertion of specimen in special inner container and packing with plastic foam	10 secs
Total time expended in using pneumatic tube system:	
i) On all carriers sent = $\frac{70 \times 228 \text{ mins}}{60}$	266 mins
ii) Extra time on carriers to pathological laboratory = $\frac{51 \times 10}{60}$	9 mins
	275 mins or 4 hrs 35 mins

K traffic handled by pneumatic tube installation other than that originated by wards

	No of dispatches
Pathological laboratory	
Dispensary (otherwise collected by ward staff or distributed as routine by dispensary porters)	45 pw
X-ray (casualty X-ray reports otherwise distributed by porter)	6 pw
C S S D	nil
Departments (2nd floor)	say 5 pw
Theatres and recovery ward	say 15 pw
Casualty (mainly swabs otherwise taken by porter)	say 20 pw
Total	91 pw

NB Little or no realisable saving of staff time resulting from the use of tube shown above.

L calculation of savings attributable to use of pneumatic tube

Total ward time saved by use of pneumatic tube (Appendix H)	38½ hrs pw
Nursing time saved = $\frac{2}{3}$ x 38 hrs 34 mins	say 26 hrs pw
Other time saved (mainly orderly and domestic) = $\frac{1}{3}$ x 38 hrs 34 mins	say 12½ hrs pw
Total	38½ hrs pw
Total time expended in operating pneumatic tube (all nursing time) (Appendix J)	say 4½ hrs pw
Value of net saving of nursing time = $\frac{(26 - 4\frac{1}{2}) \text{ hrs}}{44 \text{ hrs}}$ x £570 (average annual nursing salary) (average working week)	£279 pa
Value of saving of orderly time = $\frac{12\frac{1}{2} \text{ hrs}}{42 \text{ hrs}}$ x £450 (approximate annual salary) (working week)	£134 pa
Total	£413 pa
Add: Allowance for marginal benefits from use of tube in other departments (theatres, casualty, dispensary, X-ray, etc)	say £37 pa
Grand total saving	£450 pa

M calculation of percentage saving of errands attributable to pneumatic tube

	Path lab	Disp	X-ray	Supt and matron's office	Stores	Works	C S S D	Others	Total
No of dispatches by pneumatic tube	51	61	23				83	10	228
No of errands	30	44	18	29	24	8	27	116	296
Total	81	105	41	29	24	8	110	126	524
%age of errands eliminated by pneumatic tube	63%	58%	56%				75%	8%	44%
Time saved by pneumatic tube									(mins) 2314
Total calculated time spent on errands if no tube									5435
%age saving of time attributable to pneumatic tube									43%

N proportion of nursing time spent on errands

Total ward time spent on errands (all staff)	
New Guy's house	
1) Errands as measured	3121 mins pw
11) Calculated saving on errands due to tube	2314 mins pw
Hunt's house	4235 mins pw
Nuffield house	1508 mins pw
York house	293 mins pw
Total	11471 mins pw or 191 hrs 11 mins pw or approx 4½ whole time staff

Total nurses in post at Guy's hospital	800 approximately
Proportion of nurses time spent on errands assuming ⅔rds of all errands undertaken by nurses	$= \frac{4\frac{1}{2} \times \frac{2}{3} \times 100}{800}\% = 0.375\%$

O items transported by tube

Outward from wards of theatres etc

1) Prescriptions to dispensary (Hunts house) (some)

11) Specimens (mainly blood specimens and swabs) to pathological laboratory (school building) (some)

111) X-ray request forms to X-ray department (Hunt's house) (some)

iv) C S S D requisitions to C S S D (New Guy's house) (some)

v) Transferred patients letters to other wards (New Guy's house) (few)

Inward to wards or theatres etc

1) Drugs from dispensary (Hunt's house) (some)

11) Transferred patients letters (New Guy's house) (few)

111) Non-urgent X-ray reports to casualty (New Guy's house) from X-ray (Hunt's house) (1 delivery per day)

Items apparently suitable for transport by tube but not so transported

Medical records
new flexible cover would be required and even then many files would still be too bulky. Doubts expressed about continual rolling of files causing disintegration even of rollable covers provided. Bulk distribution and collection of records by porters would still be necessary.

X-rays
radiologist will not permit rolling of films which could result in detail being missed when reading.

Patients mail
could deal with letters but not parcels. No particular point made available for dealing with mail. Existing arrangements seem to be adequate.

Blood samples for transfusion purposes
system of hand to hand transfer using services of medical students in operation as a safety factor.

Bed states etc
no point available at office. Routine collection by porters each morning seems adequate.

Stores requisitions
no point available in stores. Routine weekly collection by porters at time of collection of bed states etc seems adequate except for urgent special requisitions outside normal routine.

Works requisitions
no point available in Works department. Non-urgent requisitions collected by porters with bed statements. Urgent requisitions by phone and also special messenger with chit.

Dangerous drugs
lockable container available but Ministry of Health recommended system of hand to hand transfer with signatures at all stages preferred.

Pathological investigations reports
routine bulk distribution of reports by porter at end of day. Signing reports individually and despatching individually would be a considerable interruption factor in the work of the Pathological laboratory. Even sending one carrier to each ward each night takes a considerable time in loading and directing carriers and waiting for their return. Urgent reports invariably telephoned.

C S S D items (small) (eg syringes)
distribution by hoist preferred when small and large packs can follow the same procedure. Special packing procedures would be necessary for any items sent by tube.

Reports for night superintendent
always taken by hand by headnurse to give any explanations etc required.

P analysis of errands and despatches by tube by time of origin

	Proportion of total errands etc					
	Hunt's house		New Guy's house			
	No	%	Total errands (including tube)	%	Tube despatches only	%
Midnight to 7 am	12		8			
7-8 am		2	1	2		
8-9 am	6		15		9	
9-10 am	27		66		20	
10-11 am	94		67		27	
11-12 noon	81		92		37	
12 noon to 1 pm	36		34		10	
1-2 pm	25		43		21	
2-3 pm	62		74		42	
3-4 pm	43		48		36	
4-5 pm	37		24		8	
5-6 pm	41	93	21	92	13	98
6 pm to midnight	24	5	31	6	5	2
Totals	488	100	524	100	228	100

Q analysis of errands and despatches by tube by day of week

	Proportion of total errands etc					
	Hunt's house		New Guy's house			
	No	%	Total errands (including tube)	%	Tube despatches only	%
Monday	92		105		41	
Tuesday	94		96		46	
Wednesday	93		71		32	
Thursday	65		86		48	
Friday	79		102		36	
Saturday (to 1 pm)	36	94	27	93	12	94
Saturday (after 1 pm)	12		14		2	
Sunday	17	6	23	7	11*	6
Totals	488	100	524	100	228	100

*All to C S S D

36 Report on commissioning New Guy's House

Introduction

This paper deals with the commissioning of New Guy's House. This is defined as the period from the time the building was taken over until the last patient or department had moved in and the whole block was working satisfactorily. In very brief outline, the period involved was from the 2nd January, 1961, on which day the building was formally taken over from Messrs Y J Lovell the contractors, until the 10th August, 1961, when the last department (Clinical Microscopy) moved in. As a matter of interest the last patients were moved in well before this, on the 15th June, 1962.

The commissioning of a large hospital building bears some similarities to that of a ship. There is the bare building rather like a hull, which has to be fitted out, equipped and made ready for people to live in or to use; there are the services - steam, water, gas, electricity, the working of the electrical and mechanical machinery, and the heating and ventilating each to be started up. All these have to be "worked up" and put in order before the patients and staff, rather like the passengers and crew, can come aboard. Of course, a good deal of this has to be thought about and planned well ahead and so, although the commissioning process itself started in January, 1961, it is necessary to go back some way before that date in order to make clear the reason why things were done in a particular way. This is dealt with below.

Preparatory planning

Apart from the functioning of the various services in the building there were three main problems to consider:

a) the furnishing and equipping of wards, departments, waiting areas, concourses, etc

b) the moving in of patients and departments

c) the methods to be used for administering the building

Furniture and equipment

New Guy's House was designed to house the following:
14 Surgical wards, each of 27 patients, total 378 beds
8 main operating theatres
Casualty department
Radiotherapy department
Cardiac and neurological X-ray department
Central sterile supply department
Medical school departments of surgery, gynaecology and obstetrics, and anaesthetics, plus a small thoracic surgery unit, all on one floor

The net increase of beds over old Guy's House, which the new building replaces as far as the wards are concerned, is 161*. In addition the theatre floor capacity is, of course, greater and the same can be said of the new departments of Casualty, Radiotherapy and Cardiac and Neurological X-ray.

*Hitherto these beds were housed at New Cross Hospital replacing those lost by war damage at Guy's.

It was envisaged from the start that all the equipment in use in the old surgical block which was in good serviceable condition would have to be moved over for continued use in the new block. This building was, therefore, not completely re-equipped and re-furnished from scratch, only the extra amounts required for the additional beds plus the increased commitments of the departments and, of course, the furnishing of new areas which did not exist before, such as ward concourses. Nevertheless, there was a great deal of equipment to be purchased; the increased number of patients meant just on 6 complete new wards alone

and altogether some £120,000 was spent on furniture and equipment of all kinds.

While it is not proposed to deal in great detail with the procedure followed for the purchasing of furniture and equipment, some of the background to this may be of interest.

The first very approximate estimate of the cost of furniture and equipment was produced in 1951 and was revised in 1954. In August 1956 these preliminary estimates were followed by a detailed room by room list of furniture and equipment which was based on the inventories of the old wards and departments, together with an estimate of requirements for the additional rooms. This outline schedule was subsequently reviewed by the various officers and by the time tenders for the building work were invited in the summer of 1957 a revised schedule of requirements was available. This included many items which it had previously been intended to transfer but which over the years had deteriorated and reached the end of their useful life. The estimated cost of furniture and equipment at this stage was approximately £71,000.

Detailed consideration of the furniture was begun in 1958-59 and at this stage a further review of the existing stocks was made. No formal purchasing committee was formed but a Senior Administrative Assistant was made responsible for the co-ordination of the equipment programme including the control of the budget and the placing of orders. This officer acted closely with the Hospital's Adviser on Interior Decoration who selected the furnishings. This selection was made by the Adviser in consultation with the nursing staff and other users and the Hospital's supplies staff. So far as medical equipment was concerned, the Administrative Officer acted in consultation with an Administrative Sister, the Director of the Department of Anaesthetics, who was a member of the Medical Planning Committee for the building, and the staff of the Supplies Department. A few items, particularly large ones on which some degree of relative priority for purchase from within the budget could be determined, were considered by the Medical Sub-Committees of the Building Committee. Concurrently with the purchase of new furniture and equipment a programme of renovation of the existing items was undertaken. As in the case of new furniture, this was arranged by the Adviser on Interior Decoration in consultation with appropriate members of the staff.

A particularly difficult department so far as estimating requirements was concerned was the Central Sterile Supply. Detailed investigation showed that the initial allocation made for the stock of instruments, etc, was quite inadequate and late in 1959 application was made to the Ministry of Health for a further £10,000 to cover this item. Details of the major Central Sterile Supply equipment were worked out by a Sub-Committee of the Medical Building Committee, whilst the types of instrument, etc, to be used were considered by a small committee comprising senior nursing staff, the Manager of the Central Sterile Supply Department, together with other members of the staff who were co-opted for discussion on items on which they had special knowledge.

As the time for opening the building approached the actual orders were placed. The bulk of the ordering was done in 1960. As the exact date when the building would be available was not known far enough in advance for items with long delivery dates, all orders were placed for delivery at the time provisionally fixed for the handover by the contractor, but a special condition was added to each order that in the event of a later date being finally fixed the goods should be held without charge to the Hospital by the supplier until they were required. In fact the date had to be postponed twice, once from 1st July, 1960, to 1st September of that year and subsequently until 2nd January, 1961. In order to avoid hardship to firms holding valuable supplies for the Hospital, arrangements were made for firms to be paid 90% of the value of the goods on account.

As far as the commissioning period itself is concerned it will be seen from the foregoing that there were two aspects of equipping the building:

a) the taking-in and distributing of new equipment

b) the moving-over of existing equipment from the old hospital.

For (a) it was appreciated that a period of something like three months would be required. This was rather a 'hit or miss' estimate since no-one had done this sort of job before and, in the event, it was cut to two months principally because the completion date of the building was later than anticipated; instead of being ready in October, 1960 it was not finished until the end of December of that year. The more concentrated period allowed involved planning a time-table which gave little flexibility. In the event everything went almost entirely according to this plan, but in this perhaps there was some element of luck.

For the actual reception and handling of goods, the plan was for a Senior Administrative Officer to have an office set up in New Guy's to control the operation, together with a small staff of a clerical officer, a typist and eight porters. A great deal of thought was given to the actual process of taking-in and distributing equipment as it was realised that congestion could easily occur if the methods used were not properly planned.

The main aim was to have deliveries from manufacturers spread out over the whole two month period and accordingly all the firms involved were asked to make their deliveries only on the set dates given to them.

Also it was decided that the Casualty Department main entrance area should be used for goods reception but that there should be no lengthy hold-ups here for detailed checking and inspection; the principle was to clear the goods quickly to the appropriate floor and never to have a blockage in the reception area. This in fact meant completely clearing all goods received on the actual day of arrival and under no circumstances were goods to be allowed to remain in the reception area overnight. More details of the process and how it worked are given in later paragraphs.

The moving of existing equipment in use in the wards in old Guy's House was naturally bound up with the move of the wards themselves, and this is discussed more fully in subsequent paragraphs. But, in brief, as at least five new wards were to be completely equipped with all the main essentials such as beds, chairs, bedside lockers, crockery, cutlery, utensils, etc, it was common sense to use this five wards 'worth' of equipment for the first wards to move over and so to be something like five jumps ahead. The old equipment from these wards as they moved, could then be put into the new ward areas for the wards moving over later, and thus there would be time for a methodical and accurate sorting out. This was all the more necessary as the sizes of the wards in old Guy's House were all different and in only one case the same size as the wards in New Guy's House. Of course, the detailed method of moving the various types of equipment from the old wards into their new locations was rather complicated, but nothing like as difficult as it would have been to move a ward over with its own equipment to its new location, not to mention the work which would have been caused to the Ward Sister and her staff. The aim was to have every new ward completely equipped with essentials and ready in every respect including all beds made up, for receiving patients, at least one day before they were due to move in, and this was achieved in every case.

Moving of patients and departments

The general over-all policy of movement was governed to some extent by the fact that the availability of New Guy's House was the first opportunity the hospital had for moving out medical patients from Hunt's House (the medical block) in order to replace the staircase in that block, together with other repairs. Hunt's House received a direct hit during the war, and the central staircase was destroyed. It had never been possible to replace this with a proper staircase as the patients could not be moved out. It was therefore decided that the occupation of New Guy's House should be carried out in two phases:

Phase I

This was to consist of the move over of the existing surgical wards from old Guy's House, together with sufficient medical patients from Hunt's House to fill the remaining beds. The medical wards which were to go were William Gull and Victoria and certain other medical patients to fill up space. The bed allocation is shown in Annexure A.

Following this the remaining medical wards were to move from Hunt's House to old Guy's House, except Ruth and Barnabus wards on the ground floor, which it was not necessary to move, and Caleb and Diplock wards on the third floor. The latter are the children's wards and are specially constructed as such. The alternative to the prohibitive expense of providing suitable accommodation for children in Old Guy's House was to leave them where they were and provide access to them from the Out-Patients' building. This was done, and, although inconvenient, worked reasonably well. There was no over-all increase of beds in the whole hospital during this phase, the moving out of medical patients merely made possible the commencement of work in Hunt's House which had to be completed before the next phase could start.

Phase II

This was to start after the move back of all medical patients from New Guy's House and old Guy's House to Hunt's House as soon as the work in that building had been finished, and it was ready for re-occupation. Then, subsequently, the move was to take place into New Guy's House of the extra 161 surgical patients, principally orthopaedic and ENT, from New Cross Hospital, where Guy's had had beds since the war to replace those lost by bomb damage.

For the actual planning of all moves, the Superintendent detailed the Medical Records Officer (a doctor) to deal with the patients and medical aspects, and the Clerk to the Governors detailed a Senior Administrative Officer to take care of the administrative side and to be responsible for opening the building, getting it going and to have over-all charge of all moves. An outline plan, by weeks, was produced for both phases. For Phase I it was decided that, in general, one ward should be moved per week, together with relevant operating theatres. During this stage of planning it became apparent that the ward moves must be geared to the opening up of each pair of theatres since a new theatre technique was to be introduced. The theatre superintendent planned on the basis that the staff for each pair of theatres would have a fortnight before undertaking operations. The most highly specialised unit moved first; subsequent units spent a week observing the new theatre technique before working up their own theatres. The moving in of small departments was to be spread out over the weeks of ward movement. The type of patient to move had to be closely tied in with the move of the theatres concerned and the rate at which new work could be taken on in the new building. In order that each Ward Sister could have time to take over her new ward and concentrate on the move it was decided also that all patients from a ward due to move should be first moved from their old ward to a 'transit camp' ward a few days before. This freed the Ward Sister and her staff completely, and allowed the move-over of all medical and nursing equipment without trouble.

After the main plan for the move in Phase I had been decided, it was issued and discussed fully, well in advance, with all the Ward Sisters and the Heads of Departments concerned. They all had ample opportunity of raising queries and having difficult points explained. As a result of these discussions, although the outline plan had been issued it was decided to issue also a detailed 'Movement Order' for the move of every ward and department on the widest circulation and this turned out in practice to be an essential part of the whole movement machinery.

Administrative methods

A fair time before the anticipated completion date the question of prevention of cross-infection in the new building was reviewed by the Control of Infection Committee. It will be appreciated that when New Guy's House was originally designed not as much emphasis was laid upon the risks of cross-infection as now and no attempt was made to differentiate between 'clean' and 'dirty' routes in servicing the wards

and departments other than for traffic to and from the C S S D. However, as a result of the review it was decided that access to and from the wards for the various administrative services should, if possible, be by two different routes. This involved close study of the possible ways and also of the use of all lifts. The building had been planned to allow for one goods lift in each wing to be used for all types of administrative traffic. The study showed that the only way of providing a satisfactory 'clean' route was to use the lifts going up the centre of the building and for the original goods lifts in the wings to be used for 'dirty' traffic only. For this they were particularly appropriate. This allocation of 'clean' and 'dirty' routes was accepted as a principle, and then had to be worked out in detail. This decision had an important effect on the whole administration of the new block.

The lifts were obviously the key to the question of transport to wards and departments, and indeed of all administrative arrangements. Those available were:

Central

4 passenger lifts - not designed for goods, (ie broad side on).

2 bed lifts, very large, and most suitable for patients' beds and trolleys and, if necessary, goods trolleys.

Wings

2 small goods lifts - one in each wing.

It was decided to provide a large goods lift in place of the western ramp for transporting trolleys to and from the ground floor (with access from the outside) and the basement. Although the two bed lifts were eminently suitable for goods trolleys it was thought dangerous to mix this traffic with patients on trolleys or beds and these lifts were accordingly reserved for patients going to and from the operating theatres, and also for patients for the radiotherapy department in the basement. The major part of all administrative traffic, the 'clean' type, had therefore to go up via the four passenger lifts and although this would obviously cause some inconvenience it was appreciated that it would have to be accepted. Another very real inconvenience was the size and shape of the passenger lifts which were quite inappropriate for the normal type of goods trolleys used in hospitals.

There followed the planning of routes and use of lifts in detail. Annexure B attached, which was written sometime before the building was put into full use, gives the solutions arrived at and also the original tentative lift time-tables evolved. It became obvious during detailed planning that if congestion of the four passenger lifts was to be avoided it was absolutely essential to space out the administrative services which had to get into the building, in such a way as to avoid too many of them trying to use the lifts at the same time. The final time-table was eventually compiled after rather long conferences with all the heads of departments concerned. In order to get agreement a good deal of give and take was necessary and some compromise, but the result has worked fairly well. See Appendix C attached which shows the time-table actually put into use.

Also detailed in Appendix B are some of the factors affecting the design of trolleys suitable for use in the lifts and, as a result of this planning and subsequent trials with mock-ups and prototypes, a standard trolley chassis was produced. This was used as the basic design for all trolleys purchased for use in the new building and indeed elsewhere in hospital, as it soon transpired that a good basic trolley would serve equally well anywhere. It naturally followed that thought was given not only to the individual trolleys, but to the whole question of administrative transport to and from the new building. All the servicing, so to speak, had to come from the old hospital. The journey from the Central Stores, is something like a quarter of a mile. Thus there are time and distance factors which inevitably have an effect on the labour requirements. The question of time was even more important to the service of meals, all of which have to come from central kitchens situated under Hunt's House.

In the review of the transport problem it was appreciated that there would be a necessity for towing trolleys with a suitable prime mover. It quickly became apparent that if this method was to be used there were two main types of traffic involved - trolleys going over roads and paths at ground level, and trolleys going underground in hospital tunnels. There are the following administrative services using the two routes:

Overground:
Central stores
Laundry
Dairy (milk, eggs, butter)
Bakery (bread and cakes)
Food stores (until May, 1962, when location of these stores was altered)

Underground:
Central kitchens
Clinical pathology
Dispensary
Food stores (after May, 1962)

It was decided that two separate electric towing tugs should be purchased for the two routes, so that trolley 'trains' could be operated independently.

It was particularly necessary to save time in the delivery of fourteen ward food trolleys to New Guy's House to prevent them getting cold. The method of serving is to have one electrically heated metal trolley for each ward. This holds the food in bulk and all the trolleys for New Guy's House have to be taken a fair distance before they can be plugged in again on reaching their respective wards. The method evolved after a number of trials was to tow seven at a time through the connecting tunnel with a special electric tug. The particular tug now used was selected after many trials. On arrival at the lifts in the basement of New Guy's one lift is taken out of 'group' service and used continuously for taking up two food trolleys at a time. By using one man to push out trolleys on each floor, and another man to take them to the ward entrances, fourteen trolleys could be delivered in something like twenty to thirty minutes. For the overground route it was necessary that the electric tug purchased should be capable of towing at least six trolleys over somewhat rough, open ground in all weathers, and again trials were held before the most suitable make was decided upon.

There were a number of other administrative points dealt with such as refuse collection but it is not thought necessary to enlarge on these in this paper.

Occupation of the building

Preliminary period

New Guy's House was taken over from the contractors by an authorised member of the hospital staff on behalf of the Board of Governors at 7 o'clock on the morning of 2nd January, 1961. The building was, of course, empty except for a few contractors' men left behind to finish off various jobs. On the same day the Senior Administrative Officer moved in and commenced work with his team. It had been decided to use the Casualty department entrance as the only means of entry into the building so that control could be maintained. To facilitate this a uniformed porter was installed at the Casualty reception desk and after consultation with the Security Officer, all personnel who had been authorised to enter the building were issued with an official pass. This was reasonably effective in keeping out most of the rest of the hospital staff, although medical students were sometimes a little trying. This question of security was particularly worrying at this time, and it was necessary to secure all other entrance doors, some with padlocks and chains. The connecting tunnel between the old hospital and the new block was boarded up.

Equipment and furniture of all kinds started to come in immediately in accordance with plan and continued to do so, with only a comparatively small number of late deliveries, until the beginning of March. This is not to say that a good deal of time was not spent in chasing up late comers but on the whole manufacturers co-operated and were reasonably

helpful. The detailed procedure which was followed in dealing with the reception of goods is fully covered in some instructions written at the time which are attached as Appendix D In practice this procedure worked remarkably well. There were some occasions when the reception area was very full but clearance was made in every case, usually by some overtime being worked.

There was inevitably a large number of various queries regarding equipment and in order to deal with these and also to have a quick way of checking progress on orders, there were the following lists compiled for reference:

List 1 - Alphabetical list of manufacturers' names and reference numbers of orders given to each.

List 2 - List of official orders placed, in numerical and date order with brief particulars and spaces for recording receipt details. (This list was also used for the certification and recording of invoices).

List 3 - Complete individual schedules of equipment of all wards and departments showing what was required in each, both new and existing equipment in use.

Besides questions such as wrong articles either in quantity or type there were some instances of bad quality or inferior workmanship and dealing with these did take up a lot of time; on occasions this was a cause of some anxiety since it was necessary to get things put right well before the time the patients were due to move in.

From the beginning of the occupation of the building there was a steady stream of repairs to be done. These were roughly of two main types:

a) Those due to defects, ie contractors' responsibility.

b) Those due to damage or pilferage (such as electric light bulbs missing) which were the hospital's responsibility.

For (a) the usual method adopted was to inform the Clerk of Works (Mr Sharp) or, in cases or urgency or emergency (such as leaking pipes) the contractors, who still had offices on the site, were informed direct. For rather minor points it was the practice to tell the contractors' foreman concerned. Any major matters were dealt with by the architect and the professional advisers. For (b) the hospital's Works Department stationed an electrician and a carpenter and his mate more or less permanently in the building. These were re-inforced as necessary by other works staff.

Concurrently with the work of taking in and distributing equipment to the various wards and departments a number of other activities were going on, the principle one being the starting up of the Central Sterile Supply department. It will be recalled that this was a completely new activity and had to be started from scratch. Although Mr Newman, the manager, had had a very small pilot scheme going for some time, which was better than nothing, the fact remains that the successful launching of the C S S D was almost vital to the opening of the building for occupation by patients. The working up of the various services, especially steam, which had to come from the existing hospital boiler house, was also proceeding. The central heating was turned on (again supplied from the existing boiler house) and very gradual increases in temperature were made day by day. Some contractors' men were still engaged on various unfinished pieces of work particularly floors, joinery and odd electrical and plumbing faults.

Cleaning inside the block had to start at once as there was a very large amount of dirt, debris and dust to clear, particularly dust. This last is a real enemy in any hospital and to get rid of it in a new building is no easy matter. The Domestic Staff Manager started off with a preliminary clean and then went on to carry out a second good clean of the wards which were to be put into use first. But it was quickly discovered that owing to the numerous comings and goings of the contractors' men still working in the building it was hopeless to get a ward properly clean *and* keep it clean. The labour and time spent were almost completely wasted. Therefore it was decided that preliminary

cleaning only should be done in the first instance. The detailed and thorough cleaning was left until near the time when the wards moved over when each was dealt with in turn.

The distribution of equipment went off very well and every effort was made to get the five wards due to move first (Naaman, Esther, Job, Lydia and Evelyn), fully equipped with essentials such as beds, bedside lockers, chairs, overbed tables, cutlery, crockery, utensils and so on. It will be recalled that five wards were to be fully furnished with wholly new equipment and a sixth nearly so. In fact this was all achieved during the time allowed and these wards were ready by the date laid down, that is to say 9th March, 1961. This was the date the first ward in New Guy's House, Naaman, was due to be occupied.

Moves

A full list of all the moves over from the old hospital into New Guy's House is given in the attached Appendix E It will be noted that some moves from Hunt's House to old Guy's House have been shown as having taken place before those into New Guy's House were completed, namely during the period 15th May to 13th June, 1961. This was due to the need for getting all wards and departments out of Hunt's House as soon as possible owing to the urgent necessity for starting repair work in that building.

Victoria Ward (maternity) had also to be left as long as possible as it was found necessary to make a number of alterations to the two new wards into which the maternity patients were to go - Astley Cooper and Martha. These were standard surgical wards and as such were not quite suitable for obstetric work.

The outline cycle of events relating to the move of each ward was as follows:

a) During the third week before the date of move of patients to the new ward.
The old wards in Guy's House went on to the full central sterile supply system. The timing of this was carefully chosen. It was necessary that every ward should already be on C S S D by the time it arrived in New Guy's House as it was appreciated that making such a big change could scarcely be successful in the wards if it was added to all the other difficulties of settling down in new surroundings. On the other hand every ward had to go on to C S S D in the new block as there were no ward facilities for sterilizing. The change could not be made as far in advance as would have been desirable because the C S S D, being new itself, could not physically take on wards at a faster rate in the time it had at its disposal. In actual fact the change worked extremely well and by the time wards got to New Guy's they were taking central supply in their stride and experienced no real difficulties.

b) During the second week before move of patients
The ward was first given a thorough clean, then the Sister from the old ward arrived to take over her new ward. She carried out a check on equipment against a copy of the ward schedule and any shortages were noted and made up. Extra cleaners provided for the ward staff by the Domestic Staff Manager arrived and commenced detailed cleaning under the Sister's direction. It was found essential for the Sister to have control of her new ward as early as possible since the real work of getting ready for the reception of patients could only proceed with her in a position to supervise. Most Sisters gave a good deal of their time to this from the date they took over their new wards, leaving their staff nurses in charge of the old wards. During this week also the laundry sent in a complete wards 'worth' of main linen items particularly bed linen; also new bed cubicle curtains and window curtains were put up by the contractors concerned.

c) During the first week before move of patients (ie the week of the move)
Patients in the old ward were moved out to the 'transit camp' ward in old Guy's House. This equipment could be moved out of the old ward.

Usually only the medical and nursing equipment and a few special items went from the old ward to the new one; beds, overbed tables, bedside lockers and so on were sent to the next ward being got ready on the 'jump ahead' system. All moves of furniture and other heavy equipment were carried out by the Works Department Personnel. The beds in the new wards were made up with clean linen and new blankets (New Guy's was equipped 100% with new cellular cotton blankets as a precaution against cross-infection); the dispensary delivered a complete set of new drugs and the Works Department demonstrated all new equipment such as dish-washing machines. Finally the whole ward was given a special thorough clean arranged by the Domestic Staff Manager and the next day the patients were moved over from the 'transit camp' ward in old Guy's House by the ward staff assisted by Front Lodge porters. By midday they were all in and had their luncheon meal in their new abode. A sample of the Movement Order issued for each ward move is attached as Appendix F

All ward moves were carried out according to plan and the only difficulty occurred with the first ward, Naaman, when it was discovered that, after the patients were nicely settled in and everyone concerned was breathing sighs of relief, the oxygen pipe for connecting face masks to the piped outlet on the walls was found to be too short to reach the second bed (there are oxygen pipe outlets for every two beds). Some extremely rapid work resulted in the British Oxygen Co kindly delivering more piping within two hours and the situation was saved. The only departure from the original plan was one week's delay in the fifth week, the 3rd to 9th April, when movement for that week had to be postponed until the week following, 10th to 16th April. This was due to trouble with the autoclaves in the C S S D with the consequence that the C S S D could not keep up with its scheduled programme. However, as no actual moves of patients had been planned for the week ending 16th April no holdup of wards occurred and the next move went ahead as scheduled during the seventh week. All the moves of surgical ward patients were completed by 15th May, 1961. This left only maternity patients from Victoria Ward who arrived in the middle of June.

Staff training

The day before patients moved into the new ward the entire ward staff of nurses, ward orderlies and domestic assistants was given a demonstration and explanation by the Works Department of the following:

Bedpan washer
Refrigerators
Gas incinerator
Bunsen burners
Call system
Gas stove
Gas toaster
C S S D lifts
Venetian blinds
Television sets
Calomax boiler
Dishlex washing-up machine
Central heating controls
Bedside locker controls

These are more or less straightforward pieces of ward equipment but nearly all were of a different type from those in use in the old building. In addition the domestic staff of each ward was given one hour's training during the week of the move by the domestic supervisory staff. During this time they were shown how to use the 'Dishlex' washing-up machine, the suction polisher, the Hoover vacuum cleaner and the Dustette. Also at this time they were given a brief explanation of floor sealing and maintenance.

For the Lamson tube system the Lamson Company installed one of their lady demonstrators plus an engineer for the entire period of the move-in of wards and departments. During this time demonstrations were given to all ward staff. In addition whenever a carrier was rejected for some

fault, the ward concerned was informed and the fault pointed out. In fact, the Lamson Company went to considerable lengths to train staff in the correct handling of their equipment. After the move-in period the sales manager of Lamson came down himself on several occasions and gave more demonstrations to ward staffs.

The central sterile supply system was itself the biggest single change in ward procedure compared with the old building. As previously stated all wards were usually put on full C S S D supply some time during the third week before the actual date of moving. It was not always possible to get it started quite so far ahead as then but in every case the time available before the move was used for training ward staff in the correct use of packs. The C S S D manager himself demonstrated to the Ward Sister and her staff nurses the correct method of opening packs and using them. He also explained the C S S D procedure, method of indenting and general routine. The Sister and her staff nurses then explained and demonstrated to the rest of the ward nursing staff. After a ward had moved to New Guy's House the C S S D gave it special attention for about a week in order to help in the settling-in process. There were in fact no particular troubles as far as the wards themselves were concerned and from the start the central sterile supply procedure went very well indeed.

Extra staff

Details of the extra staff engaged as the result of the opening of New Guy's House for both Phases I and II are given in the attached Appendix G

R W Knowland
September, 1962

appendices

A bed allocation

	West wing - male					East wing - female				
9th floor	Naaman - male					Esther - female				
54 beds	Professor Butter-field	10	Dr Mann	3	Dr Mann 12	Professor Butter-field	10	Dr Mann	3	Dr Mann 12
	Office	2				Office	2			
8th floor	Samaritan - male					Patience - female				
54 beds	Mr Lawrie	6	Dr Dow	2	Dr Kauntze 5	Mr Lawrie	6	Medical office	3	Dr Kauntze 5
	Mr Beard	6	Medical office	1	Dr Kauntze (cardiac) 2	Mr Beard	6			Dr Kauntze (cardiac) 2
					ENT 5					ENT 5
7th floor	Christopher - male					Queen - female				
54 beds	GU	12	Professor Atkins	1	Professor Atkins 8	Mr Glover	8	Professor Atkins	3	Professor Atkins 12
			GU	2	Mr Glover 4	GU	4			
6th floor	Luke - male					Dorcas - female				
54 beds	Mr Wass	12	Dr Dow	1	Mr Eckhoff 12	Mr Eckhoff	12	Office	3	Mr Wass 12
			Office	2						
5th floor	Job - male					Lydia - female				
54 beds	Mr Black-burn	12	Sir Russell Brock	3	Mr Brain 6	Mr Brain	6	Sir Russell Brock	1	Mr Black-burn 12
					Sir Russell Brock 6	Sir Russell Brock	6	Office	1	
								Dr Dow	1	
4th floor	Astley Cooper - female					Martha - female				
48 beds	Maternity	24				Maternity	24			
3rd floor	Cornelius - mixed					Evelyn - female				
54 beds	male		female		female	Gynae-cological	25			
	Septic	5	Septic	3	Septic 3	Office	2			
	Skins	4			Skins 6					
	Radio-therapy	2			Radio-therapy 2					
	Dr Grimble	1			Dr Morton 1					

Total beds 372

B access

In general terms administrative traffic is divided into two, 'clean' and 'dirty'. The 'clean' traffic will go up inside the building in the Passenger Lifts (Nos 1 - 4) and come down the same way. 'Dirty' traffic will use the two Goods Lifts (Nos 7 and 8).

Allocation of routes and lifts

Clean traffic

a) Meals/Diets/Cakes/from kitchen area in basement of Hunt's House via connecting tunnel to Passenger Lift No 1.

b) Drugs/Medicines/Gas Bottles (small & medium)/from Dispensary area in basement of Hunt's House via subway and connecting tunnel to Passenger Lift No 2.

Note - no large gas bottles will be required.

c) Laundry (clean)/from Laundry at street level overground to Ramp A or B, down ramp and thence via connecting corridors to Passenger Lift No 1

d) Milk/Fruit/eggs/ice cream/butter/etc/from Dairy at street level overground to Ramp A or B, down ramp and thence via connecting corridors to Passenger Lift No 1

e) Bread/direct delivery from bakery to top of Ramp A, thence by trolley down ramp, via connecting corridors to Passenger Lift No 1

f) Groceries/from Food Stores, overground at street level to Ramp A or B, down ramp and thence via connecting corridors to Passenger Lift No 1

Note - When Food Stores move to Hunt's House access will be via connecting tunnel.

g) Stores/from Central Stores at street level, overground to Ramp A or B, down ramp, thence via connecting corridors to Passenger Lift No 1

h) Fumigation delivery (clean)/from Fumigation room at street level, overground to Ramp A or B, down ramp, thence via connecting corridors to Passenger Lift No 1

i) Clinical Pathology Collections/to and from wards via Passenger Lift No 2, connecting tunnel to subway under Hunt's House, thence to Pathology Dept. block and up on lift to Clinical Pathology.

Dirty traffic

a) Refuse/Dustbins to come down the two Goods Lifts (Nos 7 & 8) and to be emptied into special Bermondsey Borough refuse containers kept in the two Refuse Areas at each end of the building on Lower Ground Floor. These containers to be conveyed to tops of the two Ramps (3 at each end) for emptying into the Bermondsey Borough refuse collection vehicle.

b) Linen (dirty) (including 'tank')/to be brought down from Wards and Departments in the two Goods Lifts to the ground floor and taken out of the building through the escape staircase doors at street level and thence overground to the Laundry.

c) Fumigation collection 'dirty'/to be brought down from wards in the two Goods Lifts to the Ground floor and taken out of building through the escape staircase doors at street level and thence overground to the fumigating room.

Miscellaneous

There will be other more intermittent traffic such as ice deliveries. A decision will be made in each case and the general principle of 'clean' up via Passenger Lifts and 'dirty' down via Goods Lifts will be observed. It should be noted that no 'dirty' traffic or Personnel connected therewith will be allowed into the wards from the Goods Lifts or escape stairs. The only entry into wards will be via the Central Concourse and *only* 'clean' traffic will be allowed to go actually into the wards.

Use and control of Lifts in New Guy's House

A timed programme must be evolved for the use of all lifts by administrative services.
This is not final and the actual programme to be followed will be arrived at after discussions and possibly timed trials. However, when the timed programme has been settled it must be strictly complied with if chaos is to be prevented.

Delivery

It is hoped that exact points of delivery (and collection) will be established for all wards and departments and a procedure to eliminate time wasting during delivery will be agreed upon.

Trolleys

a) Some hospital trolleys are unsuitable for use in the lifts of New Guy's House. While other trolleys can be put into the lifts they are unsuitable in other ways, altogether the question of new and better trolleys for the following is under investigation -
Dispensary
Clinical Pathology
Catering Dept (for cakes, milk, eggs, fruit,etc bread & groceries)
Central Stores

b) The trolley for use in servicing New Guy's House must have the following characteristics:
1) be towable by a 'tug' or tractor
11) be able to go down Ramps A and B by hand pushing
111) be able to go inside Passenger Lifts 1 - 4 and Goods Lifts 7 & 8, and be sufficiently manoeuvrable to get into position in these lifts easily.
1v) be easily pushable round wards and departments by hand
v) be weatherproof and pilferproof

c) It has already been established that to fulfil the characteristics in (b) a trolley must have pneumatic tyres, brakes, and either two fixed wheels and two swivel or two turnable plates interconnected with a diagonal tie-bar. The wheels would have bearings.

d) A prototype trolley is under construction in the Works Department. This trolley is for trials for ascertaining the type of body required - not the undercarriage. Ultimately, it is hoped to be able to evolve a trolley which will suit most departments for the carriage of goods. The prototype trolley will be fully covered in with sliding doors and will have three strong movable shelves thus allowing variations in the height. The prototype is constructed on an existing hospital Slingsby trolley, the outside dimensions of which are 51½" x 27". While these measurements may not be quite the best for use in lifts of New Guy's House they are sufficiently near to be of value in trials. Further trials are necessary in the lifts to make absolutely certain. It is possible that the best size may be something like 48" x 30".

C lift timetable

Passenger lifts. New Guy's house (Nos 1-4)

Time	Service	
	1st lift	2nd lift
8.00 am - 9.30 am		Dispensary (collection)
8.30 am - 9.30 am	Bread - delivery	
9.30 am - 10.30 am	Eggs, fruit, ice-cream, butter,etc	
and up to 11.00 am on Fridays		
9.30 am - 11.00 am		Clinical pathology
11.00 am - 11.45 am	Meals - delivery	
11.45 am - 12.30 pm	Diets - delivery	
12.30 pm - 1.15 pm	Meals - collection	

11.00 am - 1.00 pm		Dispensary (delivery)
1.15 pm - 2.00 pm	Cakes	
1.00 pm - 2.00 pm		1 hour gap
2.00 pm - 3.00 pm	Milk - delivery	Dispensary (Winchesters)
3.00 pm - 4.30 pm	Groceries - Mondays and Tuesdays	
3.00 pm - 4.30 pm	Central stores - Wednesdays and Thursdays	
3.00 pm - 4.00 pm	½ hour gap	Clinical pathology
4.00 pm - 5.00 pm		Fumigation - delivery
5.00 pm - 5.45 pm	Meals - delivery	
5.45 pm - 6.30 pm		Diets - delivery
6.15 pm - 7.00 pm	All day - individual trolley	

Goods lifts No 7 and 8		
7.00 am - 7.30 am	Rubbish collection - from wards	both lifts
7.30 am - 8.00 am	Linen (dirty) - collection from theatres	" "
8.00 am - 9.00 am	Fumigation - collection of 'dirty articles'	" "
9.00 am - 10.00 am	Linen (dirty) - collection from wards and dept	" "
10.00 am - 11.00 am	Rubbish collection - from remainder of block	" "

Notes on lift timetable

Meals (daily)

Times allowed are short, for two reasons:
a) Food has to be kept hot and so minimum time only should elapse between food leaving kitchen and arriving in wards.
b) Because of (a) the time must not be wasted by losing use of lifts and so kitchen porter must keep lift and NOT leave it. Therefore he cannot get out and take each trolley to each ward - the ward orderly must meet the lift on the relevant ward floor and take over the food trolley from kitchen porter, at time to be agreed. The same with collection of empty trolleys.

Eggs, fruit, ice cream,etc (daily)

Times: 9.45 - 11.15 am = 1½ hrs
Time for each ward floor including travelling is 13 minutes per floor or, 6½ minutes per ward including travelling.
This is very tight.

Milk (daily)

Times: 3 - 5 pm = 2 hrs
Time for each ward floor including travelling is 17 minutes per floor or, 8½ minutes per ward including travelling
This should be just about adequate, but still tight.

Bread (daily)

Times: 8 - 9.45 am = 1¾ hrs
Time for each ward floor including travelling is 15 minutes per floor or, 7½ minutes per ward including travelling
This is rather tight.

Groceries

Weekly deliveries to each ward on 5 days daily; or 3 wards daily for 4 days and 2 wards on one day.
Times: 1.45 - 3 pm = 1¼ hrs
Time for each ward = 25 minutes (for 3 ward days) or, 37 minutes (for 2 ward days)
This is adequate.

Central stores

Fortnightly deliveries on 4 days or 4 wards daily on 3 days and 2 wards on one day.
Times: 11.45 - 1.15 pm = 1½ hrs
Time for each ward = 22½ minutes (for 4 ward days) or, 45 minutes (for 2 ward days)
This is adequate.

D reception procedure

Unloading and documentation

Goods will be received at Casualty entrance New Guy's House unloaded and taken into the entrance area between the two bed lifts. Packing cases or any other packing will only be opened sufficiently to establish the type of contents. Goods will be received daily (except Saturdays) between 9 am and 2 pm, but not afterwards.

Packing or delivery notes will be extracted and taken immediately to the Goods Reception Clerk (Mr Mobbs) who will be located at Casualty Reception (G 18). During this time the lorry driver should be asked to wait while a check is made to ascertain whether the goods as per delivery note are in fact for New Guy's House and are (or purport to be) what was ordered.

The Receipts Clerk will rapidly check the delivery note first by ascertaining from his alphabetical list of suppliers (List 1) the order involved and secondly by looking up the relevant order (List 2). Against this he will check to see that the goods are as ordered. He will then sign the driver's copy of the delivery note as 'not examined' and hand it back to the driver. He will not accept, *under any circumstances* goods which are not for New Guy's House. If goods certainly appear to be for Guy's Hospital, but are quite definitely not required for New Guy's House, then they will be directed to the Central Stores in Talbot Yard. Cases of doubt will be referred to Mr Knowland or Mr Darby.

After goods have been taken checked and accepted the Receipts Clerk will ascertain from the relevant order to which floor (or floors) goods are to be sent. He will then make out a "Goods Receipt Note", one for each department as under:
a) Wards (counting as one department) by separate floors
b) Departmental floor
c) Theatre floor
d) Casualty floor (all ground floor)
e) Lower ground floor (C S S D DXT, etc)

If goods from one firm are to go to more than one of the above departments then a separate note for each will be made out showing details of the goods relevant to each department.

The Goods Receipt Note is self explanatory.

Four copies of each note will be made out, two will go with the goods to the floor concerned. The person in charge of the particular floor will sign one copy (the pink) of the Receipt Note and return this copy to Reception. This will be for goods unexamined. The other two copies will be kept in Reception, one to act as a file copy and the other for use by Accounts Department or Inventory Section as need arises. To recapitulate, the distribution of the four copies is:
a) Top copy - to department, retained there (white)
b) 2nd copy - to department, signed by recipient and returned to reception (pink)
c) 3rd copy - retained in reception for use by accounts or inventory (yellow)
d) 4th copy - file copy retained in reception (white)

After the Goods Receipt Note has been made out and two copies handed to the porter who is delivering the goods concerned to the relevant department, the Goods Receipt Clerk will *immediately* enter the details in List 2 (list of orders) in the spaces provided to show where the goods have gone to. This must be done whether or not the goods are correct - at this stage it is to be assumed that they are. The up to date position of distribution of goods must always be known otherwise mistakes in later distribution will occur. Any adjustments to entries

owing to goods being incorrect or for return can be made later.

No unpacking of goods is taken place in the Reception Area beyond that necessary for a cursory check of the goods. The reason is that goods must only be held in the Reception Area for the *shortest possible time* to prevent congestion. Therefore it is imperative that Goods Receipt Notes are rapidly made out and goods removed swiftly from the Reception Area to the Department concerned. The whole of the entrance concourse to Casualty Department constitutes the Reception Area and included in this are:

G 14 Concourse
Bed lifts
Casualty reception (G 18) for receipts clerk
Porters (G 25) for porter on duty
Buffet (G 65)
Sisters office (G 62) - office for Mr Knowland
Trolleys (G 26)

When goods arrive at the correct floor they will be unpacked there under the supervision of the person in charge of the department concerned. When unpacked they will be checked in detail for quantity, quality and type. This must normally be done within four days of receipt so that any discrepancies, damage or other irregularities can be reported to Reception. For this purpose each department will keep its own record in duplicate one copy being sent to Reception reporting the irregularity. If goods required to be returned the Departmental report will accompany them.

When reporting irregularities departments must state name of supplier, relevant order number and number of Goods Receipt Note concerned, together with details of the Goods and full information concerning the irregularity.

Goods for return to supplier will be sent down to Reception Area and placed in Trolley Area (G 26) to await disposal. Likewise returnable crates,etc (ie items of packing for which a charge has been made) will be returned for Reception to deal with, and placed either in G 26 or taken to Lower Ground Floor for storage pending return.

All other packing material will be sent down via Goods Lifts to the respective Refuse Areas in each wing for ultimate disposal either as rubbish or burning in boilers in old hospital.

Goods for return to suppliers

Goods will be packed up and a copy of a letter to the suppliers placed inside the package. Goods will be despatched by post, hospital lorry or carrier. In all cases (except post) a receipt will be obtained. The relevant Goods Receipt Note will be clearly marked to indicate return action. Items being returned will also be "deleted" from List 2 by a note in the "remarks" column.

All goods returned will be accompanied by a despatch note, a copy of which will be retained in the office.

The procedure in paragraphs 12 and 13 above will be followed where applicable to packing or containers for which a charge has been made. As and when these articles are returned the relevant column in List 2 will be cross indexed with the appropriate despatch note.

Checking of invoices

When invoices are received they will be checked in detail against List 2 and the relevant order. If correct they will be certified as passed and signed by Mr Knowland and the order concerned will be marked to show that the invoice has been received and passed for payment - this is to prevent paying twice for the same articles.

R W Knowland
9th December, 1960

E list of moves to New Guy's House

Date	Remarks
2.1.61	New Guy's House formally taken over from Contractors.
2.1.61 to 9.3.61	Reception of new equipment and furniture, setting up of wards and departments, positioning equipment, preliminary cleaning, rectification of defects.
9.3.61	Male patients from William Gull moved to Naaman Ward, New Guy's House (9th floor).
10.3.61	Female patients from William Gull moved to Esther Ward, New Guy's House (9th floor).
20.3.61	Theatres 1 and 2 taken over, opened 27.3.61.
22.3.61	Recovery Ward taken over in New Guy's House and opened 27.3.61.
23.3.61	Department of Anaesthetics moved to New Guy's House (2nd floor).
24.3.61	Job Ward patients moved from old Guy's to New Guy's (5th floor).
30.3.61	Lydia Ward patients moved to new ward in New Guy's House (5th floor).
5.4.61	Department of Obstetrics moved to New Guy's House (2nd floor).
14.4.61	Sarah Swift patients transferred to new ward (Evelyn) in New Guy's House (3rd floor). (This move was delayed one week owing to C S S D difficulties).
17.4.61	Theatres 3 and 4 taken over, opened 24.4.61.
21.4.61	Luke patients moved to new ward in New Guy's House (6th floor).
24.4.61	Patience Ward patients moved to New Guy's House (8th floor).
24.4.61	Theatres 5 and 6 taken over, opened 1.5.61.
28.4.61	Dorcas patients moved to new ward in New Guy's House (6th floor).
28.4.61	Take-in Dressers moved to accommodation on 2nd floor of New Guy's House and 'take in' surgery started in new block.
3.5.61	Department of Surgery moved to 2nd floor in New Guy's House.
4.5.61	Queen patients moved to new ward in New Guy's House (7th floor).
8.5.61	Theatres 7 and 8 taken over and opened 15.5.61.
9.5.61	Samaritan patients moved to new ward in New Guy's House (8th floor).
12.5.61	Isolation (old Esther) patients moved to Cornelius Ward in New Guy's House (3rd floor).
14.5.61	Front Surgery in old hospital moved to Casualty on ground floor of New Guy's House.
15.5.61	Christopher patients moved to new ward in New Guy's House (7th floor).
25.5.61	Patients moved from old Wilks Ward, Hunt's House, to new Wilks (old Job) in Guy's House, and old Wilks Balcony patients to new Wilks Annexe (old Esther) in Guy's House.
26.5.61	Patients from old Bright Ward, Hunt's House, moved to new Bright (old Christopher) in Guy's House.
31.5.61	Department of Medicine moved from Hunt's House to old Guy's House (old Department of Surgery).
1.6.61	Physics Laboratory (Radiotherapy Department) moved from Hunt's House to Guy's House (old Department of Surgery Laboratory).
1.6.61	Half of old Addison Ward patients in Hunt's House transferred to new John Ward in Guy's House (old Luke).
2.6.61	Remainder of old Addison Ward patients moved to new Addison in Guy's House (old Queen).
3.6.61	Radiotherapy Department moved from Hunt's House to Lower Ground Floor in New Guy's House.
7.6.61	Cardiac Research Department moved to Guy's House (Recovery Ward) from Hunt's House.
8.6.61	Patients from old Miriam Ward, Hunt's House, moved to new Miriam in old Guy's House (old Lydia).

9.6.61 Patients from old Mary Ward, Hunt's House, moved to new Mary in Guy's House (old Astley Cooper).

13.6.61 Patients from half of old Victoria, Hunt's House, moved to Astley Cooper on 4th floor of New Guy's House.

15.6.61 Patients from remainder of old Victoria, Hunt's House, moved to Martha on 4th floor of New Guy's House.

16.6.61 Pre Clinical classroom moved to Guy's House (old Dorcas).

23.6.61 Department of Child Health moved from Hunt's House to old Pre Clinical classroom.

24.6.61 Back Surgery in old hospital moved to Casualty Department in Ground Floor of New Guy's House.

10.8.61 Clinical Microscopy moved from Pathology block to New Guy's House (2nd floor).

F sample movement order

Ward or department		Old Hospital Christopher (21 beds)	New Guy's House Christopher (27) - 7th floor
Day	Date	Remarks	
1 Monday	24.4.61	Christopher goes on full supply from C S S D.	
2 Tuesday	2.5.61	a) Christopher Linen Room, New Guy's House cleaned out ready for clean laundry and shelves marked. b) Ward keys of new ward to be obtained from Clerk of Works by Mr Mobbs.	
3 Wednesday	3.5.61	a) 10.0 am Sister takes over Christopher ward in New Guy's House with Mrs Powell. b) Ward keys handed over to Sister. c) 11.30 am Cleaners report for duty to Sister as arranged by Domestic Staff Manager. (See note (i)). d) 2.0 pm Complete ward laundry as per list already issued to be delivered to Christopher in New Guy's House. Transport and porters provided by Mr Knowland, supervision of delivery to Linen Room by Laundry Manager. e) Articles for marking to be sent to Works Department.	
4 Thursday	11.5.61	a) Completion of move out of patients from old Christopher. b) 10.0 am Deliver 20 containers to old Christopher from New Guy's House and 1 porter. c) 11.0 am Commencement of move of equipment from old Christopher to New Guy's House by Works Department - 4 men required initially, then more as time goes on. 5.0 pm Movement of equipment ceases for the day. d) Dirty linen from Old Christopher to be returned to laundry.	
5 Friday	12.5.61	a) 8.0 am Movement of equipment re-started and continued until completed (including beds and lockers - see notes (iii) (iv) (v)). b) On completion of move, equipment remaining in old Guy's to be checked by Inventory Section and put away in suitable cupboards or rooms, curtains to be sent for washing if applicable and ward locked up. Works Dept, to provide keys of padlocks. c) Furniture to be marked by Works Dept, with Code letter. d) TV sets installed i) Rented set by firm ii) Trolley set by Works Dept. e) Suction units to be installed and tested and oxygen fittings by Works Department. f) Bags for waste paper, swill and dressings delivered. g) 9.30 am Demonstration of all mechanical equipment to Ward Staff by Works Dept (See note (ii)). h) Plugs on Food trolleys to be changed to 13 amp by Works Dept and extension lead fitted if required. k) Sister orders meals required for Monday, 15th May - to Catering Department.	
6 Monday	15.5.61	am Patients moved from Astley Cooper to Christopher, New Guy's House.	

R W Knowland

Notes

1) Each ward will have cleaning staff made up to:
1 Resident domestic
1 Ward orderly
2 Domestic assistants (full time)
1 Evening domestic assistant
1 Evening orderly

11) All mechanical equipment etc includes:
Gas stove
Dishlex washing machine
Bed pan washers
Cleaning equipment
Central heating controls
Lifts to C S S D
Suction units
Calomax boiler
2 refrigerators
Bedside lockers
Venetian blinds
Headphones
Bell system
Gas grill
Bunsen burner
TV sets
Lamson tubes
Incinerator
Telephones

111) 21 beds in Christopher and mattresses to go to:
11 long to Christopher
8 long to Martha
2 short to Astley Cooper
all in New Guy's House

1v) 9 blue overbed tables in old Christopher to go to Christopher in New Guy's House.

v) Bedside lockers in old Christopher to go to Christopher in New Guy's House.

G staff increases

Serial	Departmental details	Nett increases Phase I	Phase II	Total
1	Dietetic department			
	Suggested increases			
	2 assistant dietitians			
	1 diet cook			
	1 diet kitchen porter			
	Not yet implemented owing to increased accommodation required not being available			
2	Catering department			
	Increases authorised for Phase II			
	4 commis cooks			
	6 kitchen porters		4	
	6 dining room maids			
	2 dining room cleaners			
	all actually implemented			
	Totals		4	4
3	Clinical microscopy			
	Increase for Phase II			
	1 senior technician, grade II		1	1

4 Dispensary			
Increases male			
Pharmacist (basic grade)	1		
Assistant in dispensing		1	
Technician	1		
Porters (group III)		2	
Totals	2	3	5
5 Almoners			
Original authorised increases for Phase II			
1 almoner*		2	
1 secretary		1	
*This proved insufficient and 1 extra almoner was engaged			
Totals		3	3
6 Laundry			
6 extra staff were asked for but were not implemented principally owing to bonus payments starting			
7 Gardeners			
1 extra authorised		1	1
8 Domestic staff			
Increases			
Ward orderlies	6	4	
Domestic assistants (full time)	28	8	
Domestic assistants (part time)*	(10)	(4)	
Male cleaners/wardsmen	4		
Totals	38	12	50
*Shown in totals separately	(10)	(4)	(14)
9 Dental department			
1 dental officer 6 sessions per week			
1 dental surgery asst. 6 sessions per week			
1 dental hygienist 5 sessions per week			
Shown in totals separately		(3)	(3)
10 Medical staff			
a) Whole time			
Radiotherapy - 1 senior registrar in place of middle grade registrar (ie not an additional staff member)			
Radiology - senior registrar	1		
ENT - house officer		1	
Orthopaedic - house officers		2	
Orthopaedic and casualty - registrar		1	
Orthopaedic and casualty - house officer		1	
Anaesthetics - consultant		1	
Anaesthetics - senior registrar		1	
Anaesthetics - registrar		1	
Anaesthetics - senior house officer		1	
General surgery - house officers		2	
Thoracic surgery - senior house officer		1	
Totals	1	12	13

b) Part time - sessions	No of sessions			
ENT - consultant	4			
ENT - senior registrar	6			
ENT - registrar	1			
Orthopaedic - consultant	5			
Orthopaedic - senior registrar	4			
Orthopaedic - registrar	4			
Radiology - consultant*	9			
Anaesthetics - consultant	5			
Dental - consultant	4			
All above were given to the existing hospital staff except * for which an additional part-time consultant was appointed			(1)	(1)
11 Radiotherapy department				
Junior physicist	1			
Senior radiographers	2			
Radiographer	1			
Secretaries 2 - one in place of a shorthand typist therefore nett increase of one only	1			
Totals	5			5
12 X-ray department				
Radiographers	1		1	
Clerks	1		1	
Totals	2		2	4
13 Operating theatres				
Operating theatre attendants Class II	4			
Theatre porters	3			
Receptionist	1			
This staff may now have to be increased further				
Totals	8			8
14 Physiotherapy department				
Physiotherapists			3	3
15 Casualty department				
Clerk	1			
Buffet staff. 4 authorised, only partially implemented	2			
Totals	3			3
16 Superintendent's office				
Junior clerk	1			
Receptionist	1			
Totals	2			2
17 Medical secretaries				
Secretaries	3			3
18 Medical records				
Clerk/Receptionists	1		2	3
19 Counting house				
Administrative assistant	1			
Wages clerk	1			
Accounts clerk	1			
Secretary	1			
Totals	4			4

20 Works department			
Stoker - shift duties	1		
Stoker - relief duties	1		
Shift trimmers	3		
Relief trimmer	1		
Chargehands	2		
Totals	8		8
21 Central stores			
Porter class 2	2		
Driver porter 4	1		
Shorthand typist		1	
Totals	3	1	4
22 Telephone exchange			
Telephonist group 9		1	1
23 Porters			
Deputy head porter	1		
Front lodge porters	7		
Gate porters	2		
Casualty porter	1		
P M attendant	1		
Totals	12		12
Total - extra full-time staff	92	45	137
Total - extra part-time staff	10	8	18

Notes

1) The Central Sterile Supply Department did not exist before New Guy's House opened. The department was intended to serve the whole hospital. When the increased number of beds became available in Phase II no increase in the staff of the C S S D was in fact made. It was subsequently found however that two additional staff had to be appointed.

ii) This schedule does not include nursing staff as it is understood that such staff are the subject of a separate study.

37 Number and grading of staff

Radiotherapy dept (lower ground floor) total 17

Radiotherapists (9)
1 Superintendent - graded Supt Radiographer 1
4 Radiotherapists - graded Senior Radiographer
4 Radiotherapists - graded Radiographer

Nursing (3)
2 Staff nurses
1 Student nurse

Clerical (4)
3 Secretaries - graded Personal secretaries
1 Clerk - graded Clerical

Ancillary
1 Ward orderly - graded ASC Group III (= 2 part-time orderlies to cover whole day)

NB Cleaning by contract.

Cardiac and Neuro-surgical X-ray (lower ground floor) total 8

Nursing staff (6)
1 Sister in charge - graded Ward sister
4 Staff nurses
1 Student nurse

Technical staff (2)
1 Superintendent radiographer - graded Supt radiographer II
1 Radiographer - Radiographer-basic grade

Ancillary staff
Domestic cleaner - about 1½ hours per day.

CSSD (lower ground floor) total 28

Administrative and clerical (3)
1 Manager - graded Senior administrator
1 Deputy manager - graded General administrator
1 Clerk - graded Clerical

Ancillary (25)
2 Supervisors - graded ASC group VII
9 Senior CSSD assistants - graded ASC group V
13 CSSD assistants - graded ASC group IV
1 Cleaner - graded ASC group II

Casualty department (ground floor) total 33½

Nursing (24)
1 Sister in charge - graded Dept sister Cat."B"
1 Sister - graded Ward sister
4 Staff nurses
2 SRN
16 Students

Clerical (3)
3 Clerk/Receptionists - graded Clerical grade

Ancillary (4)
3 Porters - graded ASC group IV
1 Porter - graded ASC group II

Domestic (2½)
1 Ward orderly - graded ASC group III
1½ Domestic cleaners - graded ASC group I

Cleaning by contract

Theatres (1st floor) total 67

Nursing (48)
1 Superintendent - graded as Assistant matron
9 Sisters - graded as Ward sisters
11 Staff nurses
4 SRN
23 Students

Clerical theatre receptionist (1)
1 Secretary - graded Personal secretary

Domestic service (5)
1 Whole-time ward orderly - graded ASC group III
4 Whole-time domestic cleaners - graded ASC group I

Note: There are 6 domestic cleaners working in the theatres. 3 are whole-time and 3 part-time. Hours of the three part-time are equivalent to approximately 1 whole-time worker.

Theatre attendants and porters (13)
3 are graded ASC group X
5 are graded ASC group VIII
5 are graded ASC group III

Clinical microscopy (2nd floor) total 4

Technical (4)
1 Chief technician - graded Chief technician I
2 Senior technicians - graded 1 Senior technician II graded 1 Senior technician I
1 Student technician - graded Student technician

Ancillary
Domestic cleaning - About one hour a day

Wards - nursing service (total 196)

Wards	Ward sister	Staff nurse	SRN	Students	Total
Naaman	1	2	1	10	14
Esther	1	1	2	9	13
Samaritan	1	1	2	9	13
Patience	1	1	2	8	12
Christopher	1	2	2	9	14
Queen	1	1	2	9	13
Luke	1	2	1	9	13
Dorcas	1	1	2	8	12
Job	1	3	1	9	14
Lydia	1	1	2	8	12
Astley Cooper	1	1	2	9	13
Martha	1	1	2	8	12
Cornelius	1		2	9	12
Evelyn	1	1	2	9	13
Recovery	1	1		2	4
	15	19	25	125	184
Add: Night staff	3	3		6	12
Total for wards	18	22	25	131	196

Wards - domestic service (total 5 per ward = 75)

Ward orderly 1½ - graded ASC group III per ward
Domestic cleaner 3½ - graded ASC group I per ward
(1 Domestic is normally resident (W/T)
Equivalent to ½ Domestic and ½ Ward orderly are evening workers from 5 pm to 8 pm)

Miscellaneous areas

Buffet - casualty waiting area - total 2½

Canteen manageress 1 ASC Canteen manageress special grade
Buffet assistant 1 graded ASC group IV
Domestic assistant ½ graded ASC group I

Concourses, take-in dressers room and kitchen - total 3

Cleaner 2 - graded ASC group I
Doctors maid 1 - graded ASC group II

Front entrance - total 2

Gate porters 2 - graded ASC group VII

General portering services (including bin room and food trolleys, incinerators and general services) - total 2

Wardsman 2 - graded ASC group III

Servicing cleaning equipment,etc total 1

1 graded ASC group III

Summary - by department

Radiotherapy department	17
Cardiac and neuro-surgical X-ray	8
CSSD	28
Casualty department	33½
Theatres	67
Clinical microscopy	4
Wards (nursing)	196
Wards (domestic)	75
Buffet in casualty waiting area	2½
Concourse, etc	3
Front entrance	2
General portering services	2
Servicing and cleaning equipment	1
	439

Summary - by category

Nursing	277
Ancillary	123
Theatre attendants	13
Clerical	11
Radiotherapists and radiographers	11
Technical	4
	439

September, 1962

38 The pattern of nursing care: Guy's Hospital 1962

In the morning a full report on all patients is given by Sister to all nurses.

Each nurse in the ward team, with the exception of the Staff Nurse, has "her" quota of patients. The number varies between 2 and 8. The junior nurse may have quite seriously ill patients as it is usual for her to work with Sister, Staff Nurse or Head Nurse.

Each nurse is responsible for blanket bathing her own patient and taking his temperature in the morning and charting all details on chart. Whilst she is on duty, according to her capabilities she either watches, assists at or carries out treatments for her own patients, for example, dressings. As a junior she does not usually give drugs to her own patient (except a premedication and antibiotics) but may assist in witnessing the administration of drugs to any of the patients.

When a nurse goes off duty she ensures that her patients' charts are up-to-date and tells another nurse about her patients' treatments and informs Sister as to whom she has handed her patients. When a nurse has 'days off' Sister may either arrange for a 4th year nurse to deputize for senior nurses 'days off' and a 1st or 2nd year nurse for juniors (always 2 nurses off each day).

It will be appreciated that owing to the shortage of staff on the wards at certain times, ie, at nurses' meal times, it is sometimes impossible to carry out really adequate patient assignment throughout the day, but Sisters manage to let the nurse deal with her own patients in the mornings.

It requires really hard work on the part of the Senior Staff to let each nurse do the maximum amount for her patient, and since the introduction of the 44 hour week and the additional week's annual leave for 3rd and 4th year student nurses, without this hard work and careful planning, patients would undoubtedly suffer through lack of continuity of care when their nurse is off.

24th July, 1962

39 The patient's day: Guy's Hospital 1962

6 am routine ward work commences as the patients awake
Recording 4 hourly temperature, pulse, respirations.
Essential treatments only.
Bedpan round, care of pressure areas.
Mouth washes distributed.
Administration ac drugs and medicines.
Preparation for breakfast.

6.45 am Breakfast served.

7.15 am pc drugs and medicines.
Bedpan round.
Further essential treatments. Preparations for early operations.
Ward tidy - all patients comfortable.

8 am Day staff on duty.
Recording bd temperature, pulse, respirations.
Blanket baths.
Bedmaking.

9.30 am Coffee time. Ward tidy.

10 am Treatments, dressings.

Doctors' rounds.

11.30 am Administration ac drugs and medicines.
Preparation patients' lunches.

12 midday Patients' lunches served.

12.45 pm pc drugs.
Bedpan round, pressure areas cared for.
Treatments, dressings.

1.30 pm All patients in bed.
Ward tidy.
Doctors' rounds, preparation for TDS treatments, recording 4 hourly temperatures, pulse and respirations.

3.30 pm Preparations for patients' teas.

4 pm Patients' teas served.

4.30 pm Evening washing of bed patients.
Bedmaking.

5.30 pm Recording temperatures, pulse, respirations.
Administration of drugs and medicines.
Treatments, dressings, preparation for patients' suppers.

6.30 pm Patients' evening meal.

7 pm Visitors.

7.30 pm Administration drugs and medicines.

7.30 pm Further treatments and dressings.
Patients settled for the night.

8.15 pm Ward prayers.

8.30 pm Main ward lights out.

8.30 pm Night nurses on duty.
Breakfast lists.
Recording 4 hourly temperature, pulse, respirations.

8.45 pm Up patients allowed to lavatory.

9 pm All patients in bed.

9.30 pm Locker lights out unless a patient wishes to read until 10 pm.
Final treatments.
Sedatives given as necessary.

25th July, 1962

40 Administration of drugs procedure: Guy's Hospital 1962

1 All State Registered Nurses are allowed to check drugs at the discretion of the Ward Sister.

2 Drugs are checked at the time of measuring in the drug rooms.

3 Two nurses witness the giving of drugs to the patients. (The above procedure may have to be modified in special circumstances ie Night duty)

4 Certain drugs affecting the temperature or pulse or respiration rate may be charted on the temperature charts. All other drugs, with the exception of "Dangerous Drugs" are charted on the drug charts. Dangerous drugs are recorded as being given on the bed-letter, where it has been ordered by the doctor.

5 "Dangerous Drugs" and Schedule 1 Poisons are recorded and checked when being dispensed, administered and re-ordered, special books being kept for this purpose.

6 All drugs are kept in locked cupboards, the keys being held by the nurse in charge of the ward.

7 Bottles or boxes of "Dangerous Drugs" or Schedule 1 Poisons must be empty when they are placed in the dispensary basket, otherwise they are

taken to the dispensary by a nurse.

8 "Dangerous Drugs" and Schedule 1 Poisons are delivered from the dispensary by messenger. The seal must be unbroken on the container and the Schedule 1 Poisons must be counted before the receipt is signed by the nurse in charge of the ward or her deputy.

9 When ordering "Dangerous Drugs" the order is signed by a State Registered Nurse.

10 Telephone messages from the Doctor regarding drugs may only be taken by the Ward Sister or Staff Nurse.

11 No drug may be given unless it has been prescribed on the bed-letter.

12 For times of administration of drugs see attached slip.

25th July, 1962

(Note: The hospital has a printed booklet "Regulations with regard to the Ordering, Custody and Administration of Dangerous Drugs and Poisons - for the Information of House Officers, Sisters and Nurses". Revised July, 1954).

Injections of drugs into intravenous infusions

A notice relating to the above has been circulated by the Superintendent (GHS 14/61, April 25th, 1961). Will Sisters please retain this notice in the Procedure file so that it is available for all nurses to see.

1 The existing ruling that no nurse may administer any drug directly into a vein remains unaltered.

2 No nurse may administer a Dangerous Drug into the lumen of tubing whilst an intravenous infusion is being given.

3 A nurse may, however, administer other drugs into the tubing whilst an intravenous infusion is being given or place them in a vacolitre of fluid, as prescribed on the bed-letter.

NB The Nursing Staff are reminded that such drugs must be checked immediately prior to administration and giving witnessed by a State Registered Nurse.

4 If, during the night, or at any other time, a house officer wishes to prescribe a new drug to be so administered, *he must go to the ward and prescribe it on the bed-letter.*

12th July, 1961

Times for administration of drugs and solutions

Oral drugs

Daily
11 am or 1 pm

BD
After breakfast 7 pm

TDS
After breakfast 1 pm 7 pm

6 hourly
6 am 11.30 am 6 pm 10 pm

4 hourly
6 am 10 am 2 pm 10 pm (6 am to be given with milk or tea)

Drugs by injection

11 am or 1 pm

Surgical wards
Before breakfast 6 pm

Medical wards
6 am 6 pm

Before breakfast
1 pm 6 pm

6 am 11.30 am 6 pm 10 pm

6 am 10 am 2 pm 6 pm 10 pm

Medicines

Daily
As instructed

BD
After breakfast 7 pm

TDS
After breakfast 1 pm 7 pm

Re-considered and approved by the Medical Committee June, 1962.

41 Schedule of room sizes and finishes

The following pages give schedules of the areas and finishes in the Wards, Operating Theatres and Central Sterile Supply Department. Below is shown a key to the code letters used to describe the specifications indicated in the columns headed "Spec. code" in the schedules.

Floors

A - Paropa roofing on 3" average cement and sand screed to falls and currents
B - Insitu anti-static terrazzo paving to finish 4" thick to falls
C - As B, but not anti-static
D - 1½" granolithic paving on 1½" cement and sand screed
E - As D, but on 2½" screed
F - 1"x12"x12" precast terrazzo floor tiles on 2" cement and sand screed
G - ½"x6"x6" heather brown floor tiling on 2½" cement and sand screed
H - As G, but on 3½" screed
I - $\frac{1}{8}$"x12"x12" accotile paving, colour group "C" on 2$\frac{7}{8}$" cement and sand screed
J - As I, but on 3$\frac{7}{8}$" screed
K - Semtex "Fleximer" insitu paving on 2$\frac{7}{8}$" cement and sand screed

Walls and ceilings

L - Hyrib False Soffits
M - Travertone slabs
N - Plaster margins
O - Facing bricks - hand made rustics
P - $\frac{3}{16}$"x6"x6" cushion edged, eggshell, glazed wall tiles
Q - $\frac{1}{8}$" mosaic on $\frac{5}{8}$" backing of cement and sand with guard rail at top
R - Render and set in Carlite
S - Keenes cement plain face
T - Glazement on cement and sand face
U - Priming coat
V - Clearcolle coat
W - Three coats oil colour (gloss finish)
X - Three coats oil colour (eggshell finish)
Y - Two coats emulsion paint

Each of the seven ward floors contains two 27-bed wards. Each ward has a total floor area of just under 10,000 square feet apportioned as follows:
Ward area 150 sq ft per bed
Ancillary areas 129 sq ft per bed
Corridors, stairs and lifts 92 sq ft per bed
Total 371 sq ft per bed

Below is shown a schedule of areas and finishes for a typical 27-bed ward

	Area sq ft	Floor	Spec code	Dado	Spec code	Wall	Spec code	Ceiling	Spec code
12 bed wards (2)	1,590 ea	⅛"x12"x12" Accotile	I			Plaster and emulsion paint	RUY	Plaster and emulsion paint	RUY
Nurses area	437	"	"			"	"	Travertone and emulsion paint	MVY
Single bed wards (3)	147 ea	"	"			"	FUY	Plaster and emulsion paint	RUY
Day rooms (2)	289 ea	"	"			"	RUY	"	"
Balconies	212 ea	Paropa roofing	A			Facing bricks	O	"	"
Ward corridors and trolley space	734	⅛"x12"x12" Accotile	I			Plaster and emulsion paint	RUY	Plaster, Travertone emulsion paint	RMUY
Sisters room	159	"	"			"	"	Plaster and emulsion paint	RUY
Clean linen room	128	"	"			"	"	"	"
Cleaners and flowers	120	½"x6"x6" floor tiles	G			Cement and Glazement	T	Plaster and oil paint	SUX
Ward store	75	⅛"x12"x12" Accotile	I			Plaster and emulsion paint	RUY	"	RUY
Treatment room	263	1"x12"x12" Terrazzo tiles	F	¼"x6"x6" glazed tiles to 7'0"	P	Plaster and oil paint	SUX	Plaster, Travertone, oil paint	MLSX
Sterilizing and preparation room	172	"	"	"	"	"	"	"	"
Medicine room	54	"	"	"	"	"	"	Plaster and oil paint	LSX
Ward kitchen	236	½"x6"x6" floor tiles	G	Cement and Glazement 7'0"	T	"	"	Plaster and emulsion paint	LSY
Soiled linen store	61	½"x6"x6" floor tiles	"			"	"	Plaster and oil paint	LSUX
Incinerator room and bin storage	64	"	"			Cement and Glazement	T	"	SUX

Bowls room	52	"	"			"	"	"	LSUX
Test room	52	"	"			"	"	"	"
Sluice room	138	"	"			"	"	Plaster and emulsion paint	LRMY
Bathrooms (2)	35 ea	"	"	¼"x6"x6" glazed tiles to 7' 0"	P	Plaster and oil paint	SUX	Plaster and oil paint	LSX
Assisted bathroom	81	"	"	"	"	"	"	"	"
Toilets and approach corridors	477	"		"		Cement and Glazement	T	"	"
Escape stairs and approach corridors	369	1½" Granolithic paving	D			Facing bricks	0	Plaster and emulsion paint	LFY

The following accommodation is also provided in the central area between the wards on each floor

Concourse area	1,185	1"x12"x12" precast Terrazzo tiles	F		RY	Plaster and emulsion paint	RY	Plaster, Travertone, emulsion paint	RMY
Lift hall, main stairs, lifts	1,441	"	"		Q	Mosaic full height	Q	Plaster and emulsion paint	RUY
Nurses changing room	191	⅜" Accotile	I			Plaster and emulsion paint	RY	"	"
Nurses and visitors toilets	122	"	"			"	"	"	"
Visitors room	170	"	"			"	"	"	"
Doctors room	128	"	"			"	"	"	"
Store	130	"	"			"	"	"	"

The theatre floor contains four sets of two theatres, each pair with two anaesthetising rooms, one sterilizing room and wash-up. Each set of two theatres covers a floor area of 2,309 square feet

Below is shown a schedule of areas and finishes for this floor

	Area sq ft	Floor	Spec code	Dado	Spec code	Wall	Spec code	Ceiling	Spec code
Theatres (2)	465 ea	Insitu anti-static Terrazzo	B			6"x6" wall tiling	P	Plaster and oil paint	LSUW
Anaesthetising rooms (2)	270 ea	"	"			Plaster and oil paint	SUW	"	"
Sterilizing room	450	Insitu Terrazzo	C			6"x6" wall tiling	P	"	"
Wash-up	225	"	"			"	"	"	"
Scrub-up rooms (2)	82 ea	"	"			"	"	"	"
Plaster room	343	Insitu anti-static Terrazzo	"			"	"	"	"
X-ray and dark room	175	Semtex Fleximer	K	6"x6" tiling	P	Plaster and oil paint	SUW	"	"
Cystoscopy theatre and anaesthetising room	500	Insitu anti-static Terrazzo	B			6"x6" wall tiling	P	"	"
Sterile store	345	Insitu Terrazzo	C			Cement and Glazement	T	"	SUW
Autoclave room	303	"	"			"	"	"	"
Instrument room	338	"	"			Plaster and oil paint	SUW	"	"
Dispensary	175	"	"			"	"	"	"
Theatre superintendent	175	$\frac{1}{8}$"x12"x12" Accotile	J			Plaster and emulsion paint	RUY	Plaster and emulsion paint	RUY
Surgeons' room	271	"	"			"	"	"	"
Tea room	257	"	"			"	"	"	"
Recovery ward	700	"	"			"	"	"	"
Service bay	142	"	"			"	"	"	"
Sisters' office	130	"	"			"	"	"	"
Sluice room	75	$\frac{1}{2}$"x6"x6" floor tiles	G			Cement and Glazement	T	Plaster and oil paint	SUX
Specimen room and cylinder store	263	12"x12" precast Terrazzo	F			"	"	"	"
Stock room	235	"	"			Plaster and emulsion paint	RY	"	"

Patients' waiting room (clinical theatre)	305	$\frac{1}{8}$"x12"x12" Accotile	J
Clean linen	90	"	"
Soiled linen (2)	51 ea	1½" Granolithic paving	E
Bins (2)	49 ea	"	"
Stores, cupboards, etc	553	"	"
Theatre reception	124	$\frac{1}{8}$"x12"x12" Accotile	J
Toilets and changing rooms	2,700	½"x6"x6" floor tiles	G
Corridors, stairs and lifts	8,886	1"x12"x12" Terrazzo tiles	F

"	RUY	Plaster and emulsion paint	RUY
Plaster and oil paint	SUX	Plaster and oil paint	SUW
"	"	"	"
Cement and Glazement	T	"	"
"	"	"	"
Plaster and emulsion paint	RUY	Plaster and emulsion paint	RUY
Plaster and oil paint	SUX	Plaster and oil paint	SUX
Cement and Glazement	T	Plaster and emulsion paint	LRUY

The C S S D covers a total floor area of 5,797 square feet

Below is shown a schedule of areas and finishes for this department

	Area sq ft	Floor	Spec code	Wall	Spec code	Ceiling	Spec code
Wash-up area	634	Precast 1"x12"x12" Terrazzo tiles	F	Cement and Glazement	T	Plaster and oil paint	SUX
Syringe and needle room	352	"	"	"	"	"	"
Solution room	380	"	"	"	"	"	"
Make-up area (including autoclave bank)	1,381	"	"	"	"	"	"
Glove-marking room	78	"	"	"	"	"	"
Laboratory	79	"	"	"	"	"	"
Sterile pack store	923	"	"	"	"	"	"
Office accommodation	126	"	"	"	"	"	"
Linen store and sewing bay	260	"	"	"	"	"	"
Store room and storage bays	392	"	"	"	"	"	"
Cloakroom, toilets and rest room	760	"	"	"	"	"	"
Trolley bays (2)	216 ea	"	"	"	"	"	"

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Additional material relative to Chapter 10

Experiments on air movement in New Guy's House 17/5/63

On this day the weather was fine and dry but cloudy with a moderate to fresh north westerly wind. The shape of the block with its long E - W axis results, generally, in a pressure difference developing across the width of the building, on this day from north to south. The resulting air flow pattern on any one floor will depend on the number and disposition of any opened windows. The movement of air between the wards and the concourse can be substantial with frequent reversals of direction if, as on this occasion, the wind pressures developed are appreciable and a fair number of windows are open or partly open. The stairs in the lift hall provide a route by which a considerable vertical air movement is generated from the heating of the block.

The dominant air movements were as shown in the figure.

Quantitative studies were carried out by liberating nitrous oxide as a tracer gas and estimating the quantities reaching various points in the building. The results of these experiments are given in the table.

Discussion

Any precise evaluation of air transfer in a large building is a very complex proceeding in which both weather conditions, especially wind, and use eg opening of windows and doors, are involved.

It is clear from the figures in the table that considerable air exchange takes place, under some conditions, between the air of wards on the same floor. This is also apparent from simple observation with smoke or the feel of air movement.

In both these experiments and those carried out by Dr Thomas with a bacterial tracer in October 1960, there is a small amount of vertical exchange between floors both upwards and downwards. The exact route involved is not apparent. It does not seem to be primarily by way of the stairs (through the lift hall) since no increased transfer resulted from liberating the tracer in the lift hall itself, expt. III. Some thermal currents would seem to have been involved in the May 1963 experiments, however, in view of the somewhat larger amounts reaching the top floor.

Both sets of experiments lead to comparable estimates of the magnitude of the vertical exchange, between 1/100 and 1/1000 of the source exposure. This is a small fraction, approaching the sensitivity limit of the experimental technique. The mechanism of this air transport between floors may perhaps involve the pumping action of lifts and hoists. It seems unlikely that this amount of air exchange could be of any great epidemiological significance in spreading infection between the wards although it does point to one difficulty in attaining rigorous isolation in a large building without special ventilation arrangements should there be any compelling reasons for requiring this.

D M Lidwell
7th June 1963

Table

Approximately 120 cubic feet of nitrous oxide was liberated in each experiment over a period of 15 minutes. The sampling period extended up to 40 minutes after liberation of gas was begun.

Values of the transfer index (minutes/cu ft x 10^{-6})

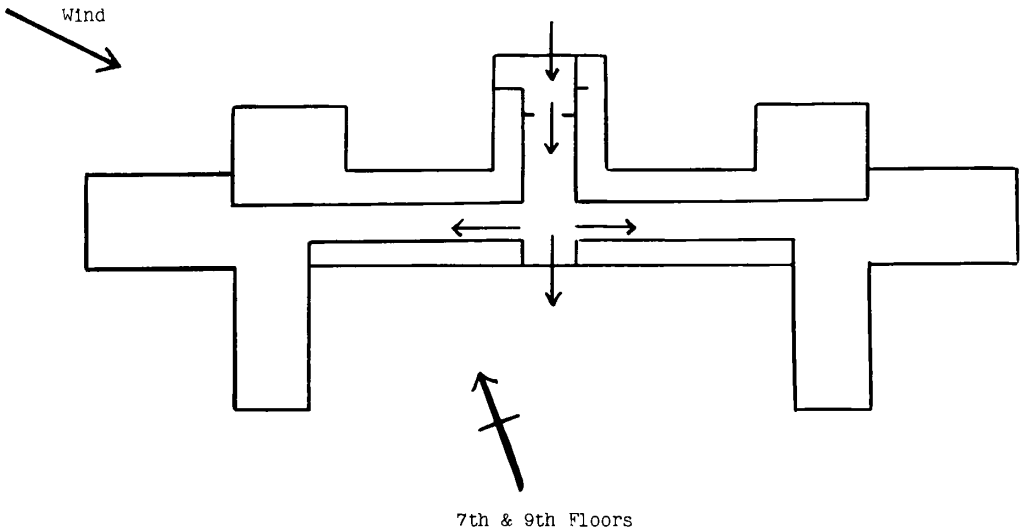
Gas liberated on 4th floor	I E ward	II Concourse	III Lift Hall
Site of sample			
3rd floor E ward	1.2	1.1	<0.4
" W "	1.3	1.5	0.4
4th floor E ward	220		7.5
" Concourse	6.2	700	>18
" W ward	2.6	220	6.1
7th floor E ward	1.2	<0.4	0.6
" W "	0.8	1.1	1.2
9th floor E ward	1.5	5.1	8.0
" W "	<0.4	3.3	0.4

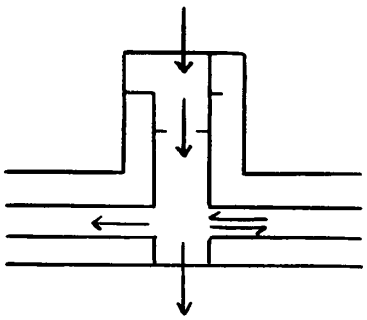
The transfer index, given here in parts per million minutes per cubic foot of gas liberated, represents the overall exposure to the tracer recorded from the sampling point. Its quantitative significance can be assessed by noting that its reciprocal corresponds to the volume of clean ventilating air which, if introduced into and mixed with the air of the space receiving the tracer gas, would lead to the same overall exposure.

For example in experiment I the gas was liberated into Martha ward (4th floor E) and the recorded value of the transfer index is 220 x 10^{-6} minutes per cubic foot. This result would be obtained, with complete air mixing, from a ventilating volume of $(1/220 \times 10^{-6}) \simeq 4{,}500$ cu ft per minute. As the total ward volume, including the entrance passage but not the ancillary rooms, is approximately 40,000 cu ft this corresponds to a ventilation rate of $\frac{4{,}500 \times 60}{40{,}000} = 7.5$ air changes per hour.

Similar calculations for the concourse in experiment II give a ventilating volume of approximately 1400 cu ft per minute corresponding to a ventilation rate of 7.0 air changes per hour. A direct estimate gave a figure just over 5 for this quantity.

Figure: Dominant direction of air currents





3rd & 4th Floors