D.M. WALLACE. STUDY TOUR

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REPORT ON PLANNING OF NORTH AMERICAN HOSPITALS.

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Between the 16th October and the 9th November 1961, I visited eleven of the most recently built hospitals in Central and North America. Some of these hospitals were suggested by the Ministry of Health, some by the Hospital Division of King Edward's Fund, and some by personal contact. The visits were carried out during the course of a lecture tour to Houston and Mexico City.

The hospitals visited were

1. Ottawa Civic Hospital (new extension) (race track)
2. Ottawa General Hospital
3. Triservices Hospital Ottawa (newly opened) (cruciate)
4. St. Justines Hospital, Montreal (double Y)
5. Cabrini Hospital, Montreal (circular)
6. St. Luke's Hospital, Houston.)
7. Methodist Hospital, Houston.) block and double corridors.
8. M.D. Anderson Hospital, Houston.
9. Social Security New Medical Centre, Mexico City.
10. New York and Memorial Hospitals, New York.
11. St. Vincent's Hospital, New York.

In addition I spent an afternoon with Dr. Eugene Rosenfeld. Dr. Rosenfeld is a Hospital Consultant. There are about 40 of these people in the States - twelve are doctors, the rest architects or administrators. As over a quarter of a million hospital "beds" have been built in new hospitals since the war, and mistakes in policy and design have been made, the new group of advisors in design and hospital policy, has developed in response to a need. Dr. Rosenfeld was keen to get co-operation between British planners and American and suggested an interchange system of plans and ideas. His British co-operator was suggested as Alexander Gray, architect of the new Guy's wing. This has been partly implemented since the House Governor of Thomas's is now working with Gordon Friesser, another Hospital consultant with a Canadian architectural training in New York.

Hospital Policy.

With the exception of numbers four and eight, no special hospitals were visited. Apparently none have been built but specialities have been grouped together so that patients can be treated as a whole. The idea of a specialist hospital as a separate unit geographically and functionally was regarded with pessimism. Within a hospital group, i.e. the Houston Centre, cases were selected - certain cancers going to the M.D. Anderson - urology and children's surgery to St. Luke's, cardiac and thoracic surgery to the Metholdist, but as these were all adjoining they were not regarded as special isolated units. Baylor, the undergraduate hospital, provided interns and residents on a rotating system and some of the clinical material

in the group was available for teaching.

Nursing

This was a constant problem. In Ottawa, the Director of Nursing had insisted in spite of administrative opposition, that a school of nursing be built to establish a source of trained personnel before completion of the new hospital. The feeling was, that now the new extension was working, this policy was right since otherwise the new extension would not have been able to function due to lack of nurses, radiographers, etc.

The Methodist Hospital trained "nursing groups", so that a group of nurses would learn to work as a team. These groups would rotate through various branches of the hospital including the intensive care and recovery units. This prevented any feeling of class distinction between the various parts of the hospital.

There was no pay differentiation between nurses in the intensive care or intermediate care units, but there was a feeling that the intensive care and theatre staff represented a nursing elite, which would attract girls of a special temperament.

In the M.D. Anderson we expected to find difficulty due to nurses not liking to nurse cancer nor advanced cases. This was not so. The standard of nursing was high - any nurse who was incompetent, slovenly or substandard was fired summarily. According to the administrator this raised the level of nursing and the supply of good nurses actually increased. The lowering of nursing standards serves merely to accentuate nursing difficulties.

Part-time nursing.

The standard practise appears to be eight hour shifts. Seven to three in the afternoon, three to eleven at night, and a night shift of eleven to seven in the morning. The seven to three shift was by far the heaviest since operating is usually done in the morning. This shift was freely supplemented by part-time nurses some of whom only did one or two shifts a week. This shift allows married nurses to work without interference with domestic duties. One meal was provided during each shift at a cafeteria.

The afternoon shift was less busy - post operative cases were retained in the recovery ward until conscious, and a fully staffed afternoon shift could, when the wards were so designed, look after two nursing units. The night shift, since seriously ill cases were kept in the intensive care section, could look after three nursing units.

Nursing units should be grouped so that in the event of sudden illness of nursing staff the burden can be more evenly spread. Small units unless capable of being grouped are too liable to sudden staff problems.

Private Practise.

The increasing number of people using the Blue Shield has made it

difficult to provide charity patients for student teaching. In (II) the general wards were not filled - some in fact had been modified for semi-private patients. No private cases were operated upon except in hospital. Nursing Homes as we know them were for convalescent or chronic sick. Offices were provided for doctors (though some had consulting rooms elsewhere) to enable them to devote most of their time to hospital. Where consulting room facilities were provided these were on a rental basis.

On Ottawa, a bed in a four bedded ward (Public) costs 23 Dollars a day and this is paid for by the Government. The medical care is free. Private beds cost 29 dollars and semi-private 26 dollars, but the patient pays the difference only plus medical fees. As everybody contributes this seems a fair system since the private patient does not pay twice for everything. Telephones are available to every patient by jack plug system and a comprehensive charge of 50 cents a day is made for local calls.

Parking.

New York Hospital has built a garage adjoining the hospital for accommodation of doctors' and nurses' cars. This is on a rental basis. Otherwise parking lots were available adjoining the hospital. M.D. Anderson are about to build a garage of eight stories with a million square feet of garage space. The roof of this garage will have a swimming pool and is the first helicopter landing port deliberately built for hospital use.

Entrance Halls.

These are not impressive. There are no crowds of relatives and friends but they all had shops. Gift shops, flower shops, and even post offices and banks. As visiting hours are much less restricted than in England there is no need for waiting. Similarly as all consultations are by appointment there is no need for much patient waiting space.

Corridors.

All corridors had flase ceilings with flush lighting. (new Chester Beatty). The ceilings were usually perforated metal - one foot square units. (This made measurement of all spaces easier). Soft tiles were found to crumble and the sound absorbing properties were reduced if they needed painting. The metal squares, either 1 x 1, 1 x 2, or 2 x 2 units, could be lifted out to gain access to all services which ran in the space between the false and real ceiling.

Corridors were all eight feet wide or more, except for a few in which personnel only would be moving. The idea of a six foot corridor filled everyone with horror. The reasons given were as follows:-

1. Nearly everything is delivered by truck, linen, central supply of meals, etc., and two trucks cannot pass unless there is adequate space without damage to walls. Furthermore, as the population is getting taller (this also occurs in the Welfare State) beds are getting longer. Seven foot beds are not uncommon and eight foot beds are not unknown. Beds are all taken to a central room for cleaning after

use and a freshly made up bed delivered to the ward. Six foot corridors may be adequate for people but eight foot is the minimum for the increasing demands of wheeled traffic. Corridor ceilings are low, eight feet, but there are no projections, - pipes lamps etc., because men can wash the entire hospital without closing a single ward every two months.

The surface of the walls of the corridor varied. Ceramic bricks were used in some, vinyl covered fabric in others. In one a trolley had ripped a portion out of the vinyl fabric but in this case the angle between the wall and the floor was sharp. The floor angle may be acute or rounded. In some hospitals there was a wedge shaped block about 8 inches x 4 inches, curved top and bottom. This acted as a buffer for trolleys approaching the wall head on. Trolleys running parallel with the wall were tipped away before they could mark the wall. All the walls where this modification has been used were unscratched even after six years.

Cleaning the corridors.

Several methods were seen including large mobile vacuum cleangrs but it was felt that with the wide angle protection, wash and vacuum dry machines were the cleanest. No example of centralised vacuum system was seen and this system was condemmed as being noisy. It is installed in one or two hospitals in London.

No magic eye doors were seen in any hospital. Their use was considered unnecessary and the expense high. Most airports however have doors operating by pressure on a rubber mat.

Glass doors in corridors had etchings or bands to mark the surface - at the end of the corridors. Glass windows all had a protecting bar. It was apparently not uncommon for people or trolleys to break plate glass doors if not clearly marked or protected.

The lighting on the whole was good - recessed strip lighting or cupolas resembling skylights (in some a cupola was a combined light) (natural and artificial). Walls of glass blocks were used in M.D. Anderson to allow light from an outside room to diffuse into a corridor or interior waiting space. Recesses in the corridors were provided at intervals to allow storage of trolleys. These recesses about 3' 6" in height would also take wheel chairs and the space over the recess was used as cupboards.

Doors.

All patients doors were 4 feet wide with exceeding robust hinges. In some the hinge was modified to throw the door clear of the opening. Plastic concertina doors, double layer, were widely used as dividers. It would be difficult to clean inside these doors and the double layer acts as a bellows. A single plastic door (Marley) would appear to be better but wood (8) appeared to be better still.

Wards.

The 10' 6" room was not seen - the minimum size for a single bed was 12' x 14'. The standard wards in all hospitals were either 4, 2 or 1 beds. In the Cabrini hospital two four bedded wards could be joined by opening up a partition. The majority of the wards had showers, basins, W.C. and in service hospitals urinals. These were contained in a sub-utility room between wards, sometimes opeining into both wards, sometimes self contained. In the Cabrini hospital bathrooms were seperate. Bedpan washers were included in the sub-utility room and labelled racks for bedpans and urinals. Each patient was issued with a sterilised pan and urinal on admission, and these were used by nobody else. When they were washed in the machine they were steamed but not regarded as sterilised. Each bedpan had a numbered rack with the patient's name. If no attempt is made to use the sterile pans or bottles every time steam is not necessary - hot water is adequate for cleansing.

Wash handbasins were provided inside the sub-utility and less commonly in the Ward. It was assumed that patients wash after every visit to the W.C. but visiting doctors rarely require to wash, since examinations and dressings are usually done elsewhere. There was one unit of cast aluminium consisting of a W.C. and wash handbasin as a single unit suspended from the wall. This single cantilevered unit facilitates floor clearing. Urinals were all wall fittings and wherever possible the floor was clear of obstruction to mechanical washers. Without exception showers were available to all - baths were usually reserved for single private rooms or semi private rooms. All bed stations were fitted with oxygen wireless and power point for electric razors etc. Television could be hired but we saw only one set in use. Suction was not standard in ordinary wards. Inter-communication systems were usual but of relatively poor quality reproduction. Mechanical tipping beds and mechanical high low beds were standard, electrically driven beds were regarded as somewhat of a luxury. A circular bed (circo-lectric) for cases that required alternate nursing in front and back seemed to give satisfaction. One hospital had the patients locker slung from the wall to give clear space on the floor and allow easier access at bed level. We saw no hinged locker units.

Some private ward had divans for use by patients' relatives - some had communicating doors so that relatives could sleep next door. In all hospitals there were facilities for patients' relatives to sleep and also rooms where they could rest or wait during the day.

Bedside Tables.

These had a central panel that could be tipped one way to act as a book rest, in the opposite direction as a mirror, and a toilet recess below for mirror ablution or cosmetic needs. These tables were all adjustable on a single pedestal. (Hill Rom)

Linen.

M.D. Anderson are about to use all drip dry linen. A linen trolley is sent to the ward every day at 1.Op.m. with packs consisting of pillow case, towel, face flannel, one sheet, one draw sheet per patient. Dirty linen was placed in a nylon bag and sent by shute to the laundry. No checking or ward inventories were attempted. The loss of linen was negligible compared with previous costs of security services and nurses time in checking. No linen rooms as such were seen - large racked trolleys were used to store bundles.

Nursing stations.

These are at first large. They include however an office for the doctor to write up notes, an office for the ward clerk to answer telephone and keep the paper work up to date and space for the nurses charting and a room for drugs. In some, one nursing station could be used during slack periods to supervise two nursing units.

The quality of intercommunication was poor. There was no visual contact between nursing station and patient except in the intensive care units and in the circular hospital.

In some nursing stations there was a rest room for nurses, also a small kitchenette for preparing snacks or cup of tea. In only one hospital was there anything approaching a ward kitchen. Separate small rooms were used for drugs; each bed had a corresponding locker in this room with coloured symbols to indicate time of medication. In nearly all hospitals there was a small room for interviewing relatives, and for the use of priests or for the nurses to discuss treatment privately. In addition, nearly every nursing unit had a lecture room to hold 12-20 people with a blackboard but not full projection facilities. A room was available in some units for cleaning beds and in others the beds were sent for cleaning to a central department. The standard nursing unit varied but ranges from 30-55 beds. When doubled up for the evening or night shift the unit would then be 60 beds. In every hospital there was a recovery ward and in many some form of intensive care. Apart from the Triservice hospital there were no self care units - these had been converted to intermediate care units owing to pressure on beds. All the administrators felt that there was a place for self care, since many hospital cases were discharged prematurely partly because of pressure on beds and partly for economic reasons. An intensive care bed cost 50 dollars a day (which is less than the price of three special nurses on 8 hour shifts) while a self care bed costs 12 dollars.

The basic requirement is that no bed should be further than 80 feet from the nursing station.

Recovery and Intensive Care Units.

The role of the recovery ward appears to be well established. This unit runs in co-operation with the theatre suite and shuts down when operating ceases. Occasionally it is kept staffed for emergencies but as

a rule it has its peak period in the afternoon. The majority of patients are transferred to the normal ward or to intensive care unit before nightfall. In some hospitals the recovery ward was being used for intensive care but this was unsatisfactory. The recovery ward is under the direct supervision of the Anaesthetist and is an integral part of the theatre suite. The Anaesthetist's office overlooks the recovery unit. Each patient station is fitted with oxygen suction, power point, lighting point, and is surrounded by a bed curtain. A rail was also supplied with chains for hanging bottles etc., inside the curtain rail. The patients were kept on special recovery ward trolleys - slightly larger than ours fitted with rails, oxygen, and capable of being tilted easily. There were no beds as such in any recovery ward seen. There were no sterilising facilities apart from a flash autoclave but a store of central supply sterile equipment. Each patient station had a blood pressure machine fixed to the central unit. It was suggested that recovery unit stations should be in the centre of the ward, i.e. patients would be head to head separated by the service unit of oxygen, suction etc. This we did not see but was supposed to facilitate service distribution and the patients when coming round would be facing an outer wall rather than patients in a similar plight to themselves. In one unit the ceiling light composed of four tubes could be adjusted for various degrees of illumination. The bedside curtains could restrict the light to the area where it was wanted. When a special case was being treated the trolleys were pushed away sothat a large space was available. The ability to move around a seriously ill patient is essential. Intensive care units appear to be developing but their place is not sharply defined. Some people felt that intensive care should be part of the general ward, specially equipped for the purpose. Others felt that a separate unit was economically worth while both in cost and in use of trained nursing staff. M.D. Anderson had special wings for special cases of differing degrees of severity, but all were proposing to bring in some form of intensive care unit.

The Methodist hospital have been running an intensive care unit for a relatively long time. At first this was an open ward, then it was cubicled to make it sound proof; it is being converted to single and double bedded wards. The staffing is high. For a 24 bedded intensive care unit there were three superivsors and six units of four beds each staffed by three graduate nurses and three assistant nurses per 24 hour period. In addition there was a ward clerk with an assistant and a staff of volunteer ladies to look after relatives. The nursing station was for the supervisor alone. The nurses were expected to be at the bedside all the time. The impression gained of this unit was of a nursing elite - in fact this was one of the few places where active nursing was obvious to anyone entering the unit.

Both the Mayo clinic and the new hospital in Copenhagen have electronic registering equipment for monitoring pulse, respiration, temperature and

pressure. The idea of electronic recording may be strange in the era of steam trains, but more understandable in the era of rockets.

People with whom I discussed this seemed favourably impressed but not yet prepared to say that this should be standard for all intensive care units. At least any unit being built should provide ducting for such a system and space for equipment.

Thetype of case seen in these units was cerebral and vascular surgery - intestinal dysfunction, resections, mesenteric thrombosis, cardiac cases, post operative pneumonias in oxygen tents, and cases of entensive pelvic surgery. The average stay in the intensive care units ranged from 3 - 7 days. No cases of leucopenia due to cyto-toxic drugs, extensive irradiation or isotope therapy was seen.

Staffing of Intensive Care Units.

No administrator or doctor admitted to any difficulty with nursing staff. In some the nursing teams rotated through an intensive care unit at regular intervals. In others the staff were selected like theatre staff either because they wished to have special training or because they preferred the tempo of this type of nursing. Private, semi private and public patients went through this unit if the need arose. Cases where the need was anticipated were admitted direct to the intensive care unit. There was always a supervisor (senior sister) on duty and there seemed to be several doctors available as well. The surgeon decided whether or not the case should be transferred to the intensive care unit but the Anaesthetist determined when the patient was able to leave the recovery ward.

In brief, redovery wards for trolley patients recovering from an anaesthetic appear to be essential. Intensive care wards specially equipped and staffed work well in certain hospitals. Where difficulty has been experienced it has been one of temperament - surgeons or nursing staff. Personnel die, retire or change, and I would suggest that provision be made in the new St. Peter's Hospital for a high level nursing unit, i.e. single rooms with adequate floor space and supervision, so that every patient can be seen from a central station. If this is properly designed, the high level unit could be grouped within visual contact of the nursing station - more generous floor space per bed - each bed station fully equipped. The general ward units of 4 bedded units could be grouped at a greater distance and self care wards if part of the nursing units could be placed at the periphery outside the 80 foot limit.

Out Patients and Records.

Out Patient attendances were by appointment; in many cases information had already been supplied by the private doctor and notes were already prepared by the records department. Patient waiting space was small - 3 or 4 patients waiting at any one time. There was, however, no long waiting list for appointments, the majority of patients being seen within 48 hours of the registered appointment. As the consultants attended the

hospital frequently, not merely for out patients weekly, there was no delay. Successful running seemed to depend on careful routing of the patients - reception, records, social service, consultation, examination, path. lab., follow up. M.D. Anderson, after 8 years and one structural modification, are rebuilding their out patients' consultation area as a round unit, so that one clerk and one nurse can superivse 12 examining rooms. One doctor can utilise 3 or 4 rooms. New patients are prepared by the nurse then consultation and examination occur in the single room. Attached to the consultation suite was a room with three cubicles for path specimen taking and also cubicles partitioned by double hatches, self locking for collection of urine specimens. The examination rooms wer small 12 x 12 feet, but the desk was a wall fitting and the couch was a small base unit with drawers and cupboards and a low voltage supply and extending footpiece or lithotomy supports. The G.U. Company are obtaining the drawings for these consulting units and may put them on the British market. There were no sterilising facilities, all equipment being supplied from central supply in plastic or cloth packs.

The addressograph machine was widely used. A plate was punched (by one girl in a sound proofed room - it was not a really noisy procedure) and the plate was used to stamp all forms, to prepare lists of clinics, to act as follow up marker, to write to patients etc. As this system seemed to be used universally it would appear to be worth developing. The administrator of the M.D. Anderson said this system was desirable for attendances of 200 a day but was essential if the attendances rose to 300 daily including follow up. Possibly such a system would pay if the service were shared between hospitals. The criticism of this machine is the capital outlay on stamping machines and the noise when the plates are made. Hand stamps can be used for sub-stations and the noise is not a major disadvantage. It is probably less wasteful than the label method eventually.

M.D. Anderson are also installing a Teleautograph. This machine will reproduce the written message at any station through out the hospital. For example, a prescription written on the ward would reproduce in the dispensary immediately and would be a permanent record. Similarly out patient appointments are made between wards and records.

Records were variable but the M.D. Anderson once again appeared to have put a lot of thought into detailed planning. The records took the form of a binder composed of two parts with double clips at the top. The upper part had the patients' records piled in complete chronological order but with the earliest information at the back. This allowed additions and progress notes to be made without disturbing the earlier records. At the back of the folder is a similar system for doctors'letters and replies, once again in chronological order, the latest letter being on top of the file. Path and x-ray reports were filed on a separate sheet prominently coloured and again

in order. All doctors' letters, discharge letters etc. were despatched the same day. In order to do this a night shift of clerks worked until 11.0. p.m. or sooner if the work was finished. A central dictating pool (Ediswan plastic disc) was used but one girl was employed to monitor all discs, to find the patients name and number and then to obtain the notes for the typing pool. This central dictating system did not work for the path or x-ray services, where a special unit with 3 or 4 extension phones was in use. Doctors had their notes placed in a pigeon hole after typing and there they stayed until the doctor concerned had initialled his note as being correct or signed his letters. This again was possible because the consultant staff were in the hospital daily.

Team Work.

The principle of three consultants working as a team was studied by discussing this matter firstly with the junior then with the senior member of the team. At the Memorial Hospital this works well - it is not senior surgeon and assistant but three people trying to work in harmony. Here it worked well but the members were all based on the one hospital and paid by the Harvard scheme for hospital and private practice. Whether it would work amongst surgeons serving numerous hospitals is debatable; but is also shows that a hospital or team's reputation will bring the patients, and it is not necessary to have numerous peripheral connections to obtain a supply of patients.

Bed Curtains.

These were universal. However, in one hospital the rail was built into the ceiling as a recessed fitting. In the next hospital it was pendant since the first hospital was said to have difficulty in getting at the rails if they stuck. In the third hospital pendant rails were condemned as being dust collectors and the rails were attached and easily accessible to the surface of the ceiling. On the average the ceiling heights were about 9 feet. The curtains had the upper 2 - 3 feet of a wide mesh nylon net. This lets in light and prevents that shut in feeling while preserving privacy.

Water Supplies.

In two hospitals examples of constant temperature water supplies were seen. In the Mexican Medical centre wash hand basins had a single spout which delivered constant warm water at the touch of a foot pedal. In the accident ward at the Cabrini Hospital there was a washing base for traumatised patients (looking like a post mortem slab) where saline was delivered as a shower at a fixed temperature for washing. No bidets were seen in any hospital although one was found in an old Spanish hotel. Bidets are about to be installed in the new wing of the Royal Northern London.

in use in Philadelphia and some hospitals in California. Unlike lifts, when they stop they can be used as stairs. For the lower two or three floors depending on the passenger load, several administrators would like to install them as additional to lifts where there is a heavy passenger load in either direction at peak periods.

Vertical conveyor belts were used extensively, either by electronic or automatic control. Baskets (hard fibre boxes) were used to deliver notes, x-rays, central supply path. specimens. Similar belts were used in the Triservices hospital to deliver and return meal trays between the ward units and kitchens. Horizontal conveyor belts were used extensively in the kitchens, dispensary and central supply. With this system of distribution 400 meals could be served in half an hour and only 3 minutes elapsed between the meal leaving the kitchen and delivery at the bedsides. Meals were served according to a menu. In St. Justine's the service utilised twin conveyor belts one for cold, one for hot. The Triservice hospital used magnesium pellets and the horizontal and vertical conveyor. M.D. Anderson had a special pre-heated unit which heated plates and covers and fed the hot (180°) plates to a conveyor belt for filling. Here too the dietetic staff delivered the meal trays in a heated trolley to the nursing staff, who were responsible for presenting the meal as part of the therapy to the patient. Cabrini had a conveyor belt but fed the trays into hot or cold sections of electric trolleys. At all the hospitals the food seen was attractively served, hot and appetising. Institutional feeding as we know it does not exist. Cafeteria service was available at all hospitals, but in Mexico it was not working owing to administrative misunderstanding. Elsewhere members of the staff and up patients used the cafeteria. In the Triservices hospital areas were officially set aside for commissioned or non-commissioned ranks. In the Cabrini a special room was allocated to the priest. Otherwise there seemed to be a tacit division between the various disciplines in the hospital.

Washing Up.

No washing up was attempted in the wards. All dishes were returned direct to the washing up section of the kitchen. Cafeteria service was adjoining the kitchen and also fed the dirty dishes by conveyor belt to the washing up area. Dishes when dry were placed in counter balanced trolleys, levelators, and stored at the end of the conveyor belt ready for the next meal.

Call System.

In most hospitals the loud speaker system was still in use. However, in M.D. Anderson the Motorola equipment was being used but is already out of date. This system allows each doctor a small flat receiver, smaller than the MRC deaf aid. Five pips are given by the operator, the doctor presses a button and the operator can then give

the message in clear to the doctor. The new system which is available allows anyone within reach of a telephone to dial the doctor's number, wait for the five pips, then give the message. This is the best system I have seen, since a message can be delivered without disturbance in the middle of a ward round or conference.

Negative Findings.

No Nurses' Homes were seen - the nuns naturally had their own quarters.

No wheeled commode chairs were seen, either the patients had bed pans or used the W.C.

No stilotto heels or outdoor shoes were worn by the nursing staff. Vinyl tiles were the usual floor covering but linoleum was also freely used in some hospitals.

Central (S.S.D.) supply service was in use in all hospital . Apart from a flash autoclave in some hospitals no sterilising equipment was seen in the wards. Standard packs appeared to work well but the personnel had to get used to the standard equipment. There are books available detailing all the contents of each pack. Packs were held in the ward for a week then re-autoclaved. They were replenished daily. Every nurse went through the central supply for a month's training in the content of the packs.

As a beginning we might consider preparing packs to obtain some consensus of opinion about contents.

Pneumatic Tube System.

All these systems examined were German in construction. They were of the 3" - 4" type with fused heads. They were used for requisitions, diet sheets and inter-departmental communication. No notes were sent by this method, alth ugh the shells were big enough, as they were said to be spoilt by the rolling up. No x-rays were sent either.

Drugs were not sent, since as one dispenser stated, tablets were pulverised to a powder by the speed of the tube and on one occasion a bottle of collodium burst in the tube literally wrecking the lining of the tube. No pathologist would agree to specimens being sent this way.

Before installing one of these systems (British) these criticisms should be examined closely. It may well be that the electronic Matthews conveyor belt system, which has been developed and fitted in over 25 Canadian hospitals is a betterproposition, slower but safer.

Theatres:

All theatres were built without windows. The equipment was naturally very good. In Mexico a new type of table was seen but not of value to the urologists. The Ritter tables were almost standard for cystoscopic procedures. In Mexico a room between two theatres had been set aside for television and film services. A zoom lens was fitted to the television camera and directed through a

hole in the theatre lamp. Twin separate articulated lamps have an advantage if two sites are to be operated on at once. Viewing galleries were not common. St. Justine's had a viewing gallery from the ward above so that the ward staff could follow the progress of their case. Changing discipline was strict; nobody entered the theatre corridor unchanged.

All theatres were grouped on one floor with the recovery ward and all offices. In many hospitals x-ray and path. lab. were also adjoining on the same floor but separated by the clean corridor.