G/13

THE KING'S FUND MINIATURE HOSPITAL

EXHIBITION

at

THE BUILDING CENTRE

158, NEW BOND STREET, W.1

opened by

H.R.H. THE PRINCE OF WALES K.G.

on

FRIDAY 6TH JANUARY 1933

PRICE SIXPENCE

NO COVER

The King's Fund
Miniature Hospital

King Edward's Hospital Fund *for* London

7 WALBROOK, E.C.4

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Foreword

KING EDWARD'S HOSPITAL FUND FOR LONDON, whose many activities on behalf of the London Voluntary Hospitals during the thirty-five years of its existence have done so much to promote their welfare, has long perceived the need of making more widely known the great work which the hospitals do for the benefit of the community.

A suggestion was made in the autumn of 1929 to the Propaganda Committee of the Fund that a scale Model of a modern hospital, complete as far as practicable in its smallest details, would be likely to arouse the interest of the public, and incidentally bring revenue to the Fund.

The members of the Propaganda Committee were interested, and a sub-committee was accordingly appointed to deal with the proposal under the chairmanship of Mr. H. Saxe Wyndham. The Royal Institute of British Architects was asked to nominate a firm who should be invited to furnish a design and plans, and the choice fell upon the late Mr. Percy Adams, F.R.I.B.A., of the firm of Adams, Holden & Pearson. Mr. Adams from the very first showed the greatest interest in the scheme, and readily undertook the costly and laborious task of preparing the plans. Unhappily, he was stricken with illness, and after much suffering passed away on April 5th, 1930. This was a serious blow to our hopes, but his friend and partner, Mr. Lionel Pearson, F.R.I.B.A., immediately stepped into

his place, and has ever since maintained the same generous interest, while his invaluable help has rendered our task a light and pleasant one. We were unable for some time to obtain the necessary funds for the construction of the shell of the Model, but at a critical juncture the well-known firm of contractors and builders, Messrs. Humphreys, Ltd., of Knightsbridge, generously undertook the responsibility, and from that moment our anxiety was relieved.

It is difficult, where so many have been concerned, to render appropriate thanks. From Her Majesty the Queen, H.R.H. the Princess Royal, H.R.H. the Duchess of York, Lady Hudson, G.B.E., Mr. Alfred Praga, and many others the Committee have received the warmest sympathy and co-operation in their proposals and requests. Great ladies, great artists, well-known commercial houses, individual business men, the London Press, and many private persons have vied with each other to produce in concert an object of unique and enduring value. Special thanks are due to Lord Riddell, who has made himself responsible for the printing of this booklet, the proceeds of which will form a valuable contribution to the King's Fund; and to Sir Harry Hague, whose generous contribution of 100 guineas has defrayed the cost of the miniature figures and other fittings, the expense of which would otherwise have fallen on the Fund.

The unique Model now exhibited has been designed and constructed to a scale of $\frac{3}{4}$ inch to the foot. It presents, in perfect proportion and detail, a three-dimensional picture showing some of the essential parts of a modern hospital, including wards, operating-theatres, balconies, garden, X-ray apparatus, and an electric lift that works, as well as doctors, nurses, and patients.

The Model cannot fail to be a source of delight, as well as instruction, to grown-ups and children alike, and will, it is hoped and believed, leave on the minds of those who see

it a permanent impression that will result in a more general understanding of the hospitals' manifold functions and their importance in the life of every individual, and consequently in a deeper sense of personal responsibility for their maintenance. It should interest, too, those who are closely associated with hospital work.

Hospital construction is being continually improved, and new ideas constantly introduced. The Model contains many new features, as well as alternative methods and types of equipment that have been adopted by different hospitals.

The members of the King's Fund are deeply sensible of the kindness of H.M. The Queen, who graciously presented two lace handkerchiefs to be used as bedspreads. These, together with similar handkerchiefs kindly given by H.R.H. The Princess Royal and H.R.H. The Duchess of York, are shown in the children's ward.

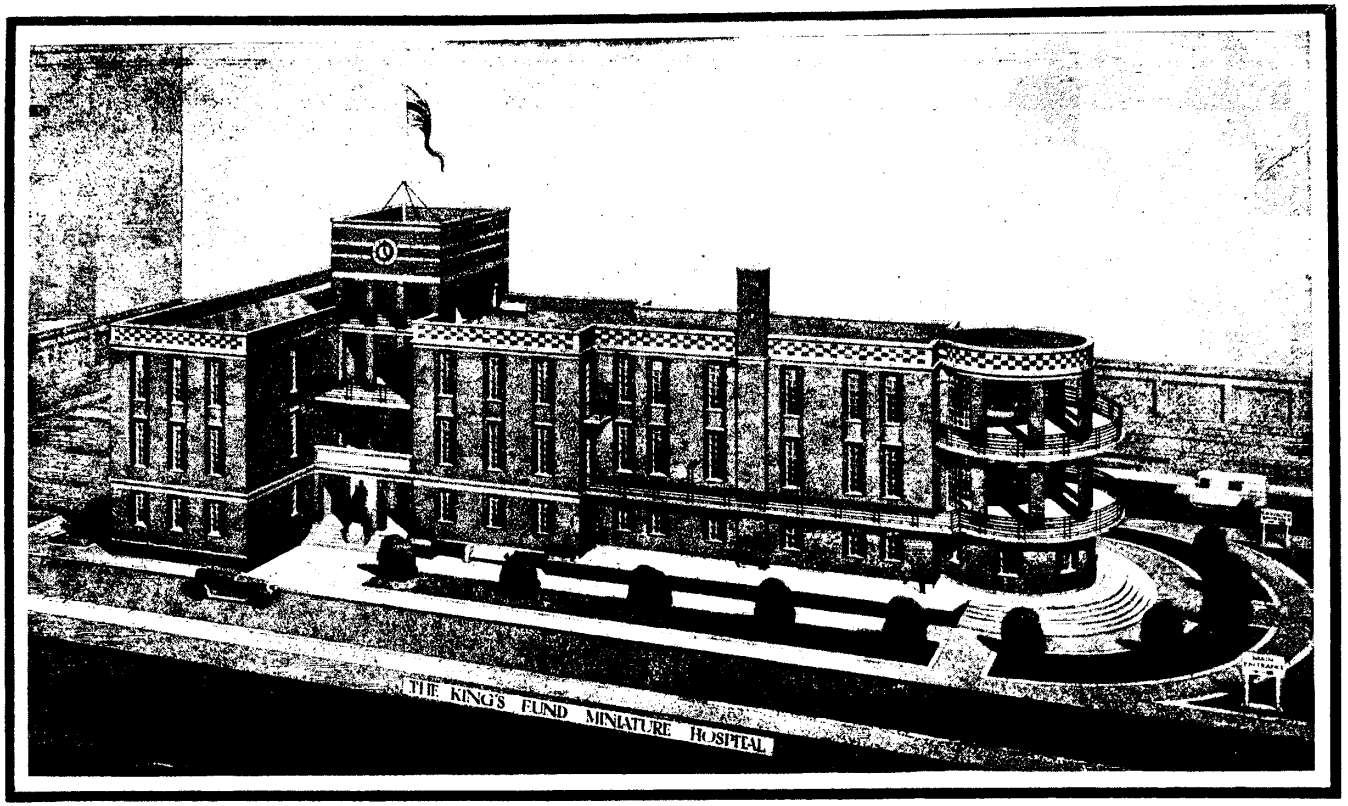
On Monday, November 28th, 1932, Her Majesty graciously visited Terminal House, Grosvenor Gardens, while the Model was still under construction, and showed great interest in the work.

It is our fervent hope that the Model has embarked upon a long career of public interest, and that, both directly and indirectly, the sacred cause of relieving sickness and sorrow may be advanced by its means.

We cannot close without recording our warm appreciation of the untiring efforts and able direction of Mr. H. Saxe Wyndham, to whom the Miniature Hospital owes its inception.

Burnham

Chairman of the Propaganda Committee.



THE KING'S FUND MINIATURE HOSPITAL

The Model Described

IN the days of Florence Nightingale, this country led the world in hospital construction. Since then there has been keen but friendly rivalry among the more advanced countries all over the world, and it must be confessed that sometimes other countries have been more ready to take up new ideas and develop them. The Model has been designed to show that once again this country has realised the importance of adopting new methods in planning and equipment. Many of the leading firms have generously co-operated to produce as nearly as possible an example of an up-to-date hospital fully equipped for modern needs, and it is hoped the result proves conclusively that for skill in workmanship and satisfactory use of materials, British manufacturers cannot be beaten the world over.*

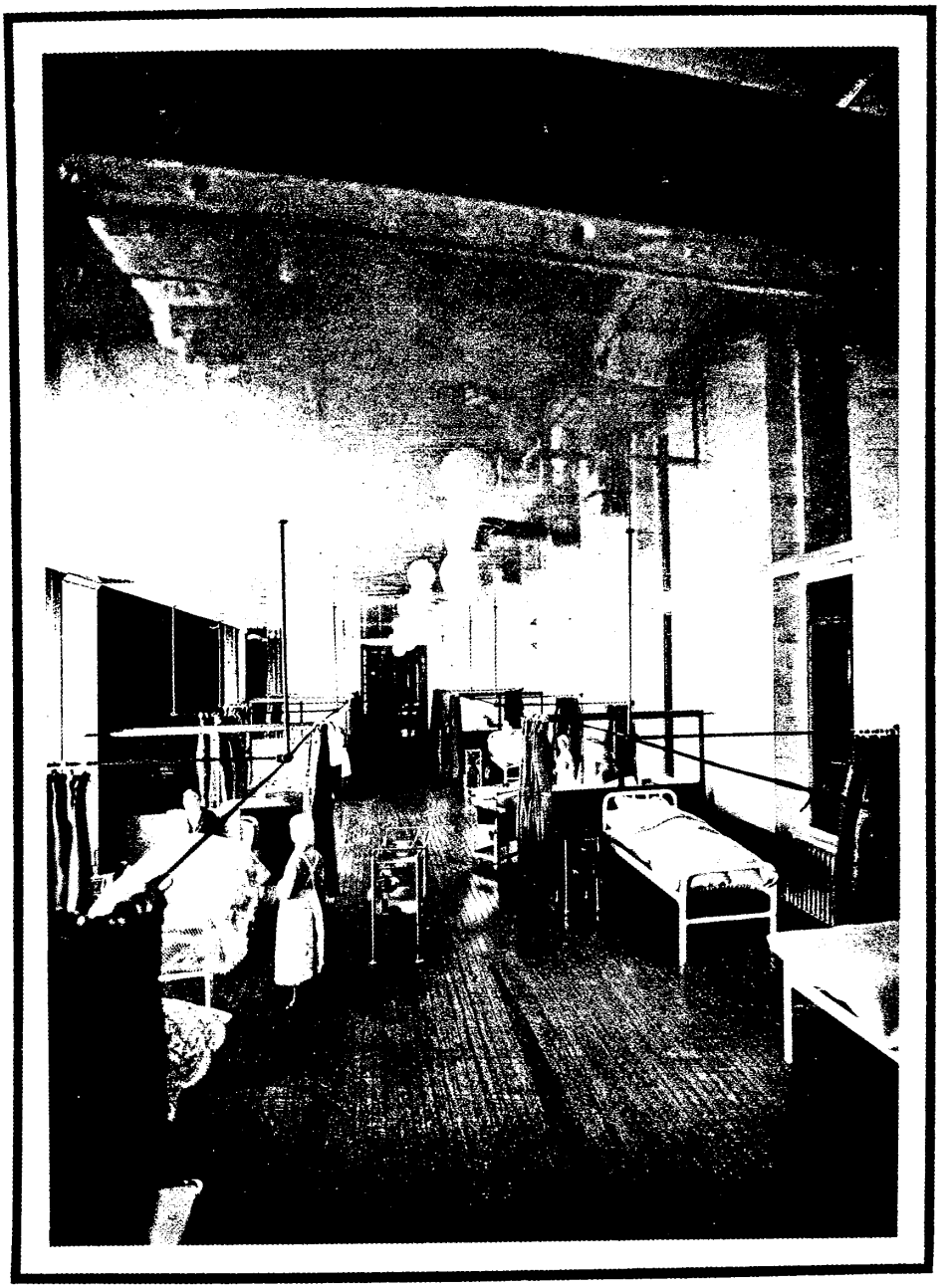
The Miniature Building.

While the miniature fittings, figures and internal furniture of a model of this nature make the picture which is impressed upon the observer, it is necessary to bear in

* The exhibition of the model must not be taken to imply the special recommendation by the King's Fund of any particular types of hospital design, construction, fitting or equipment, or of any individual firm.

mind that by far the most important part is the miniature building in which they are housed. This part of the work, besides forming the necessary background, must provide an efficient protection for a valuable collection of miniature models, and must have the quality of permanence.

To the complex task of constructing this shell, which entailed the organisation of the work to be placed in and upon it, Messrs. Humphreys, Ltd., of Knightsbridge, brought a wide experience of general building work which enabled them to reproduce in tiny, but faithful detail a building such as would be used for a hospital of this description. Messrs. Humphreys, Ltd., have from the first treated the task in a manner similar to an everyday building contract. The initial work of testing many types of material was carried out by their technical staff, and lasted over a period of three months. During this time 150 detail drawings were produced, and the selection of materials necessitated the testing of some fifty different substances, including paints, plasters, cements, glues, and ply-woods of every description. The first consideration, which was to ensure easy transport, has necessitated the construction in five separate parts ; each part is a complete unit, and of a size suitable for easy handling. Special secret joints have been constructed to run up certain of the internal walls, thus giving the model the appearance of a single unit when mounted, and providing a dust-proof cover on all sides. The question of portability also necessitated the fixing of every object firmly to the floors and walls, so that should any part of the model be accidentally upset, no displacement of furniture or figures would occur.



IN ONE OF THE WARDS.

THE BOARD ROOM.

Every piece of structural work has also the useful attribute of being proof against warping, shrinking, or splitting.

Its Construction.

The construction occupied a period of ten months, during which the work was supervised as strictly as the largest building contract, and was carried out by a staff of men with the highest skill in craftsmanship. Every window opening is fitted with an independent wooden frame to take the metal windows. Each door has a rebated wood frame or lining fitted to the opening to which the door is hinged. All floors are constructed with cavities in which the electric wiring is run as in a full-size building. The teak-boarded floors to the wards and other rooms were laid in the actual wood. This work entailed the cutting of 2,000 feet of these battens.

The internal decoration of the model called for much greater skill and attention than normal building practice, because of the minute scale of the work. All paint work has received no less than five coats of the materials supplied, and has absorbed approximately 130 lbs. of paint.

The external brickwork has perhaps received the greatest attention. It will be realised that the use of actual miniature bricks was out of the question. A method was evolved, however, after months of experiment, whereby the whole of the exterior has been coated with a bricklike face, on which it has been possible to indicate every brick and stone which would be used in the normal construction of these walls. This work has involved the indication of

approximately 1,000,000 separate bricks and 7,000 separate stones, all of which have been set out by experienced men.

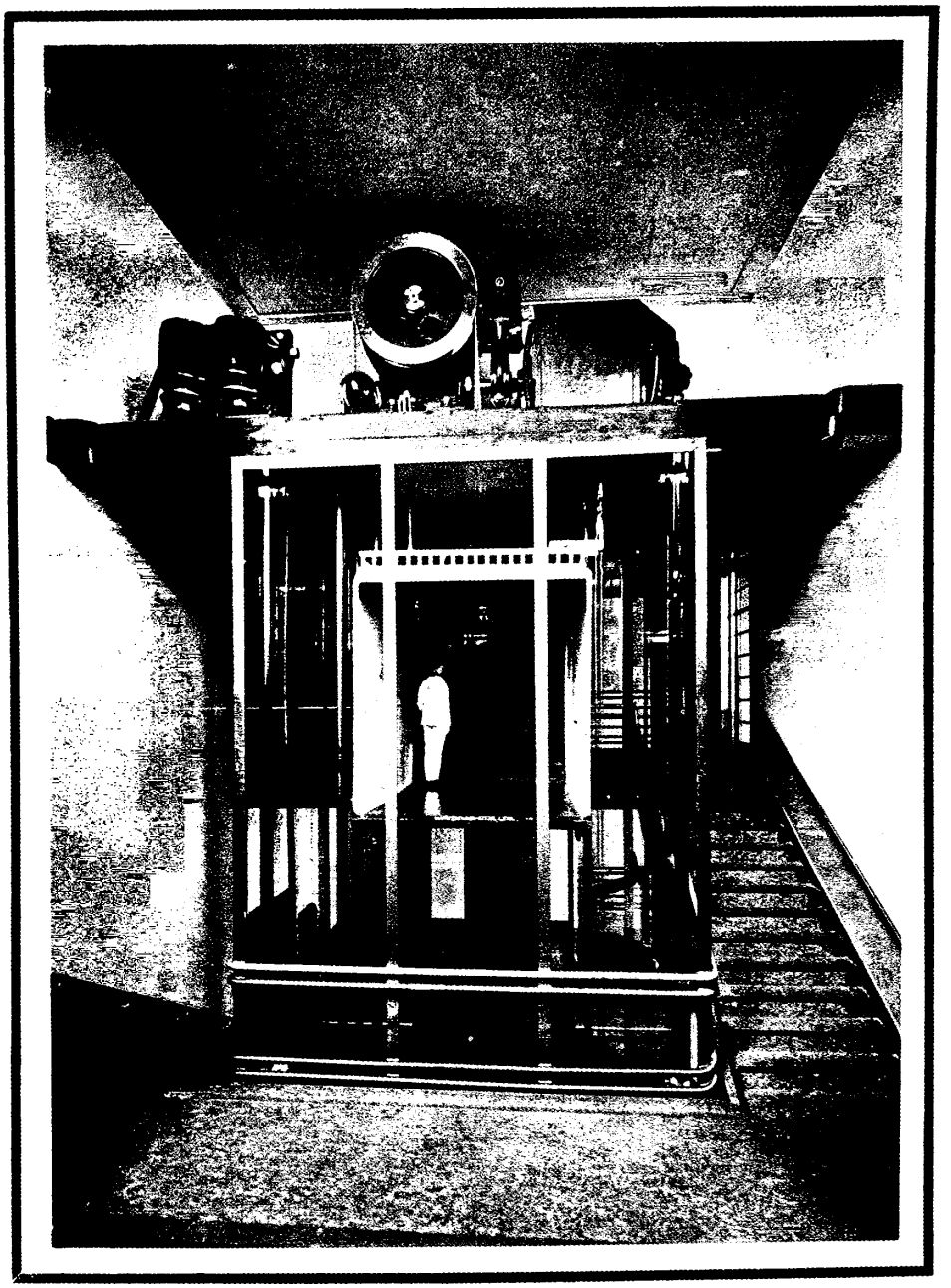
The following woods have been used in the construction of the model :—

Fir	Basswood
Pine	Oak
Alder	Columbian Pine
Birch	Walnut
Mahogany	Sycamore
Teak	Ebony

Coming now to the interior, it was not practicable in the space at our disposal to show a complete hospital building, but the model contains typical wards and some of the most important departments. Consequently we must imagine a corridor connecting the top ends of the T with other wards, and with such buildings as the Nurses' Home, Laundry, Out-patients' Department, Laboratories, etc., all of which are necessary to complete a modern hospital. There is also an ambulance entrance, with a sloping way for the use of stretcher cases.

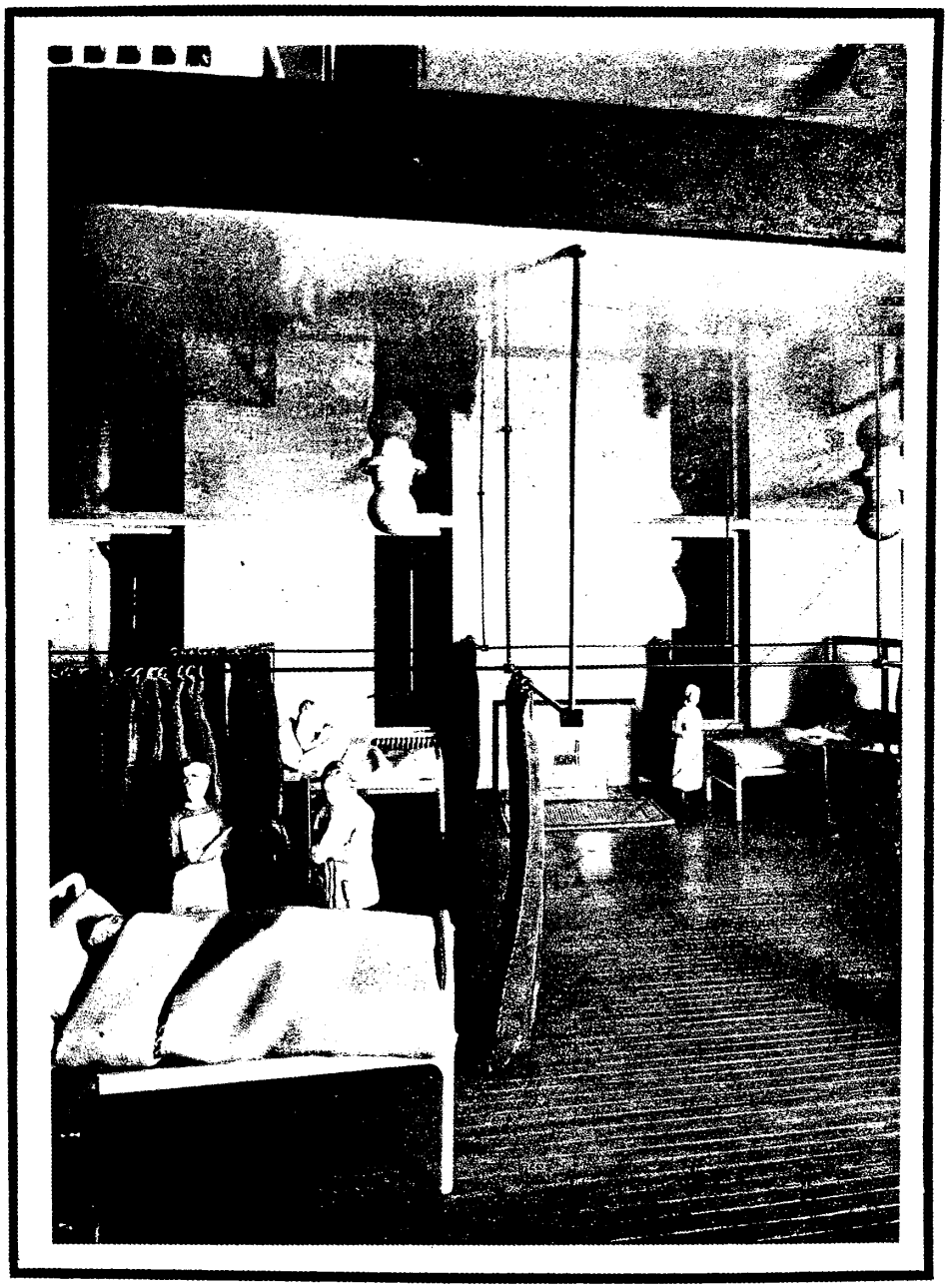
Ground Floor Departments.

The staircase opens off the hall with a floor of Manu-Marble, and in the centre is a bed lift by Waygood-Otis, Ltd., which is an actual working model. The machine and controller are at the top of the lift well, the whole forming one complete unit, actual practice being followed as closely as reduced sizes permit. The lift is, of course, a model of

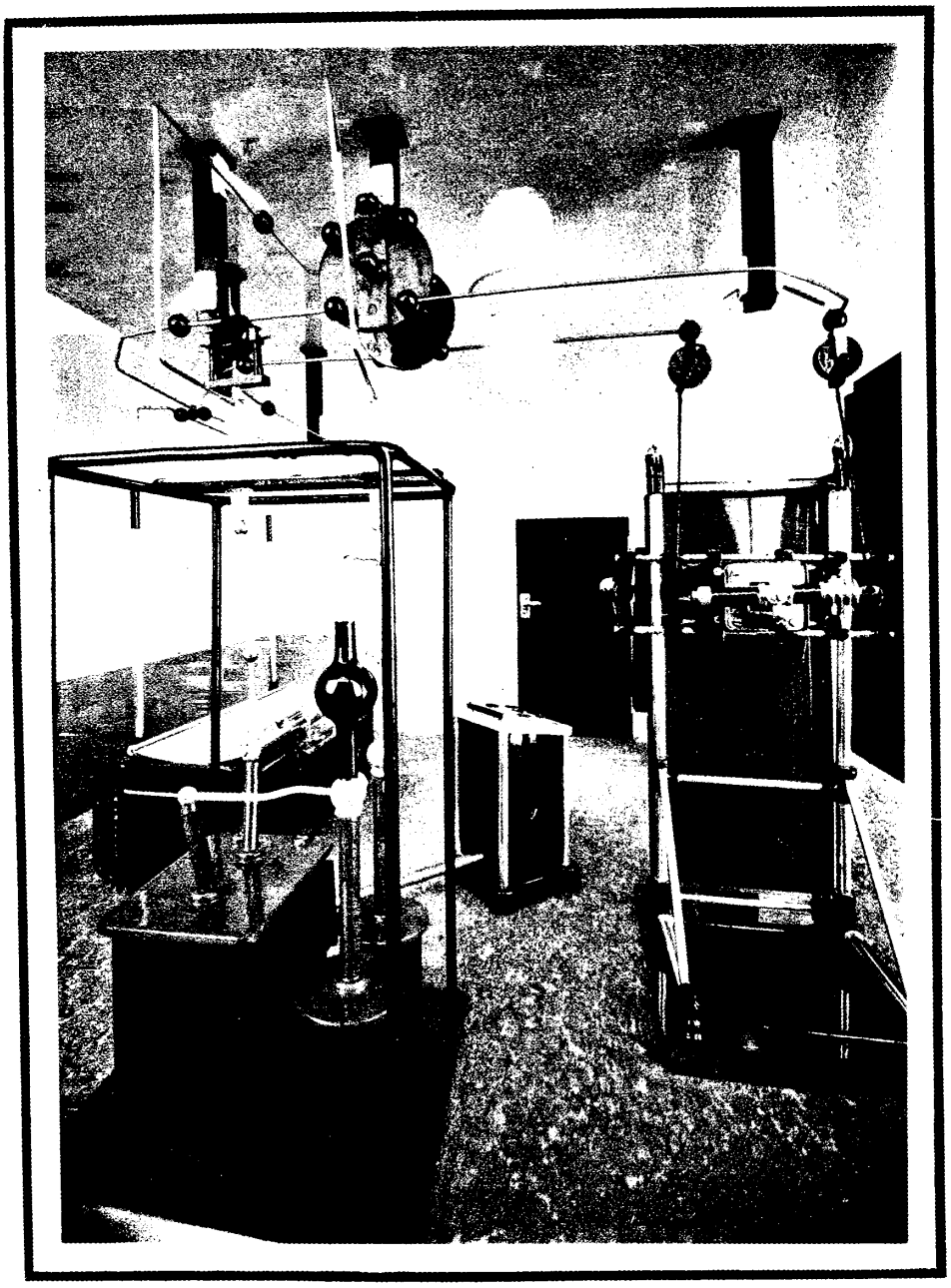


THE LIFT.

CHILDREN'S WARD (PERSPECTIVE).



CORNER OF ADULT WARD.



X-RAY DEPARTMENT.

the full automatic type of hospital lift, large enough to accommodate a stretcher and attendants.

The car is constructed in steel, finished with cellulose, and is supported on a frame with safety gear below. The balance weight and car travel between 3/16 inch diameter round steel guides fixed to the lift structure. The speed is approximately 90 inches to the minute, the gunmetal worm-wheel is a little over 3 inches in diameter, and has 112 machine-cut teeth around the rim, the four suspension ropes are of specially fine cord, as this was found to be more flexible than a metal rope of equivalent diameter. In conclusion, the equipment of this marvel of miniature machine construction is designed to operate on a supply of 6 to 8 volts, the necessary power being obtained from a battery of accumulators.

On the ground floor are the Matron's Office, Secretary's Office and Visitors' Room, for which Maple & Co., Ltd., have provided furniture in different hard woods. This has been designed to avoid unnecessary ornament, and facilitate cleaning, and is, therefore, specially suitable for a hospital.

The Board Room is panelled in sycamore, and the furniture is in walnut, the whole being carried out by John P. White & Sons, Ltd., of the Pyghtle Works, Bedford, in Empire woods. The carpets, curtains and chair coverings were specially made by the Royal School of Needlework. The electric fire is by the General Electric Company, and the floors are in teak, which is a very hard timber much used in hospital construction. The four miniature portraits of Florence Nightingale, Lord Lister, Lord Dawson of Penn and Lord Moynihan are

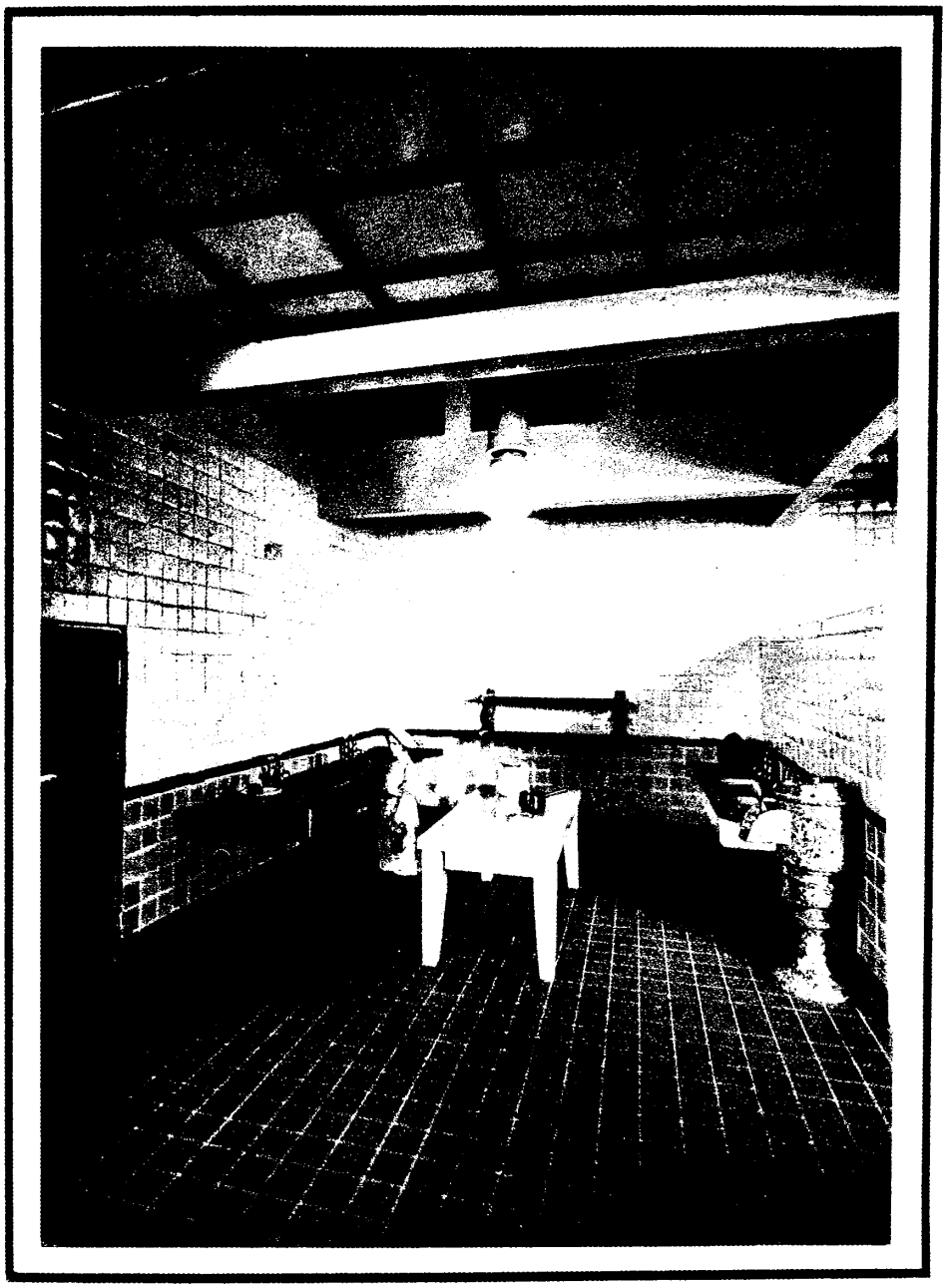
by Mr. Alfred Praga, R.B.A., President of the Society of Miniaturists.

X-Ray Department.

The long arm of the T on the ground floor contains the X-ray Department. This department is of the greatest importance to the modern hospital, and it is essential that it should be placed in a central position, as it is used by all classes of patients at all times of the day and night The equipment is of the most up-to-date type, and is made by Schall & Son, Ltd.

The design of X-ray apparatus is constantly changing to meet the developments in what is a comparatively new science, but English manufacturers are keeping abreast of the times. Schall & Son have supplied the examples shown in the model, and the perfection of workmanship on so small a scale cannot fail to arouse admiration.

The X-ray Department consists of three sections. For the examination of patients the rays pass through the body of the patient lying on a table, or standing in front of a framework; the tube which generates the rays when energised by a current of 100,000 volts is placed below the table. In the right-hand room the rays cast shadows on a screen, and these are examined by direct vision. In the centre room photographic records are taken, and these are developed in the dark room. The room on the left is for the curative use of the X-rays with a current of 200,000 volts carried from the apparatus at the back by way of an aerial to the tube, while the operating control board is screened off in the corner of the room; there is also a small window of ray-proof glass through which the



A CORNER OF THE KITCHEN.

THE X-RAY INSTALLATION FOR DEEP THERAPY.

operator can observe the patient. The circular room at the end is devoted to remedial exercises, and is provided with swings, bars, etc.

First Floor.

On the first floor are the Ward and First Floor Operating Theatres. The ward is, of course, the most important part of the hospital, and as the tendency nowadays is to reduce the size of the ward, which used to be from twenty to thirty beds, a twelve-bed ward has been shown. In this the beds are placed parallel to the walls, divided by glazed screens. These screens are specially designed and made by the Crittall Manufacturing Company, and are connected by rods, so that at any time curtains may be drawn and greater privacy obtained for the patient. The purpose of the system of parallel beds is to save the patient from being compelled to face the light, and the radiator, which is usually placed under the window, is near the patient's feet instead of his head. The windows, also made by Crittalls, are specially designed for hospital use. They are provided with hoppers for use in cold weather, or can be opened to full extent in hot weather. The radiators, made by the National Radiator Company, are actual models of the type in use in many hospitals.

The circular solarium at the end of the ward is designed to obtain the maximum amount of sunlight, and the fireplace on the side wall of the ward is for the use of convalescent patients in the winter. The sanitary fittings in the bath rooms, lavatory, sink room, etc., which open off the ward corridor, are made by Doulton & Co., Ltd., the famous firm of potters whose works have been established

at Lambeth for over 100 years. The number of fittings they have supplied to this Model is thirty-seven in all, including baths, sinks, lavatories, etc., and these are supplied with taps, chains, cisterns and traps, all of which are beautiful examples of workmanship to a small scale, and are specially designed for hospital use. The surgeons' lavatory has special chromium-plated elbow-action taps, and the sink rooms are provided with white glazed sinks and slabs for scalding bed-pans and scrubbing mackintoshes.

The Operating Theatres.

The Operating Theatres are on the " dual " plan, with a combined sterilising and wash-up room between them, as the modern theatre is kept as free as possible from fittings.

The patient is brought in from the main corridor to the anæsthetic room, and then to the operating theatre. The operating table is a model of an actual table, and is supplied by Down Bros., Ltd.

The shadowless light suspended above the table is by the General Electric Company, while the sinks, etc., are by Doulton & Co. The receptacles for sterilising the instruments, gloves, etc., are made to represent stainless steel, and are mounted on ball supports to give a clear floor-space below. They are designed by James Slater & Co., Ltd., on the most modern hygienic lines, and represent two 12-gallon water sterilisers, one bowl, and one instrument steriliser. The floors and walls of the operating theatres are covered with a jointless non-absorbing material, " Biancola," supplied by Art Pavements, Ltd.

The main corridors and the landings, staircase, etc., are

covered with a material supplied by Korkoid, Ltd., which has the advantage of being easy to clean, quiet and non-slippery.

The Children's Ward.

The top floor shows the Children's Ward and the Kitchen. This ward, though the same size as the ward below, is rather differently arranged to suit the needs of childhood. The walls are tiled by W. B. Simpson & Sons, Ltd., and are decorated with nursery rhymes adapted from the original cartoons by Thomas Derrick: "Dick Whittington," "Ride-a-Cock Horse," "Tom, Tom the Piper's Son," "Little Miss Muffet," "Jack and Jill," are among the subjects. The tiles are actual miniature tiles, and in all, including kitchen, etc., 13,000 have been specially made for the Model, and have been through the same process of manufacture as a full-glazed tile.

A Modern Kitchen.

The Kitchen shows a complete equipment for steam, gas or electricity, the apparatus being sufficient to provide for 300 patients and staff. Everything is designed to ensure cleanliness; enamel and chromium-plated finish, as well as stainless steel, being used for this purpose. On the extreme right are the steaming and boiling apparatus, one double and one single steamer, three steam-jacketed boiling pans with draw-off cocks of an easily cleanable pattern. On the back wall are the roasting and baking ovens, and grill. In the centre of the kitchen is a gas-heated hot-plate (all small boiling and frying operations would be done on this). There are two examples of tables, one with a stainless steel top. There is also a hot-closet and serving table, with

steam-heated top. The scullery on the left is fitted with glazed earthenware sinks, with an electric paring machine, a pair of pot-washing sinks, with teak and stainless steel draining boards. The whole of the above work has been carried out by James Slater & Co. (Engineers), Ltd. In the larder is a model of a refrigerator made by the International Refrigerator Co., Ltd.

The Gas, Light & Coke Co. have kindly provided the cookers for ward kitchens and fires for wards.

The electric lighting equipment throughout has been specially designed by the General Electric Co., Ltd., Magnet House, London, and is representative of the most modern practice in hospital lighting.

The main lighting throughout the various wards, corridors, landings and staircases is carried out by spherical ceiling fixtures, measuring 15/16 inch in diameter, representative in the wards of 16-inch diameter fittings in G. E. C. Superlux glassware. In effect these are 14-volt 7-watt Osram lamps specially made to simulate a ceiling fitting. These are fixed into porcelain holders.

The Board Room is illuminated by similar fittings to those in the wards, but the metal work of these is of real bronze and of special ornamental design and finish. Special "Sunrae" lighting fittings are a feature of the Solaria, these having been designed according to the most modern clinic practice. The lighting equipment in the operating theatres has been scientifically designed, and is representative of the actual G. E. C. Shadowless Operating Theatre Fittings employed in many hospitals. These miniature fittings measure only 3 inches overall, but are replicas of the actual operating fittings used.

The electric wiring throughout the hospital is concealed in the floors and ceilings, and is quite invisible—a tribute to the skill of Messrs. Troughton & Young, Ltd., the well-known electrical contractors, who carried out the installation.

The exterior represents a simple brick and stone treatment with balconies for the use of patients. The roof is flat, and can be used as a roof garden in hot weather by the patients and staff, the lift and staircase being taken up to this level. The tower contains the working parts of the lift and the clock. The flagstaff, without which no hospital would be complete, flies the Union Jack.

No model could illustrate every kind of hospital requirement, but this miniature building should convince all who see it of the countless services an up-to-date hospital performs for the community, and the great cost which such services entail.

The Hospital Model

Architects : MESSRS. ADAMS, HOLDEN & PEARSON, LONDON

Surveyors : MESSRS. WIDNELL & TROLLOPE, LONDON

Builders of the Model : MESSRS. HUMPHREYS LTD., KNIGHTSBRIDGE, LONDON

Firms collaborating in the Construction and Equipment of the Model :—

Messrs. General Electric Co. Ltd.	London.	Electric lighting, heating and violet-ray equipment.
Messrs. Waygood-Otis Ltd. .	London.	Lift.
Messrs. Troughton & Young Ltd.	London.	Electrical installation. (In collaboration with General Electric Co.)
Messrs. Crittall Mfg. Co. Ltd. .	London.	Metal windows and ward screens.
Messrs. John P. White & Sons Ltd.	Bedford.	Doors and Board Room panelling and furniture.
Messrs. Doulton & Co. Ltd. .	London.	Sanitary fittings.
Messrs. Art Pavements & Decorations Ltd.	London.	Terrazzo and Biancola paving.
Messrs. Manu-Marble Co. . .	Gloucester.	Manu-Marble floors.
Messrs. Korkoid Decorative Floors	Glasgow.	" Korkoid " floor covering.
Messrs. W. B. Simpson & Sons Ltd.	London.	Wall tiling and wall panels to Children's Ward.
Messrs. F. Knight & Co. Ltd. .	London.	Door fittings, handrails and railings.
Messrs. Merryweather & Sons Ltd.	London.	Fire appliances.
Messrs. National Fire Protection Co.	Richmond.	Fire appliances.
Messrs. The Gas, Light & Coke Co.	London.	Cookers for Ward Kitchens and Fires for Wards.
Messrs. National Radiator Co. Ltd.	London.	Radiators.
Messrs. Liquid Measurements Ltd.	Willesden.	Petrol Pump.

Messrs. Mander Bros. Ltd. . .	Wolverhampton.	Paints and enamels.
Messrs. Schall & Son Ltd. .	London.	X-ray equipment.
Messrs. James Slater & Co. (Engineers) Ltd.	London.	Sterilising equipment and kitchen fittings.
Messrs. Down Bros. Ltd. . .	London.	Surgical equipment and ward lockers.
Mr. Donald Rose . . .	London.	Surgical instruments, instrument cabinets, and ward dressing trollies.
Messrs. Estler Bros. Ltd. . .	London.	Steel lockers for patients' clothing.
Messrs. International Refrigerators Co. Ltd.	London.	Refrigerators.
Messrs. Hotlock Ltd. . .	London.	Electric food trolley.
Messrs. Maple & Co. Ltd. . .	London.	Furniture for wards and rooms (except Board Room).
Messrs. Hoskins & Sewell Ltd. .	Birmingham.	Beds and cots.
Messrs. Britannia Tube Co. Ltd. .	Birmingham.	Tubes for beds and cots.
Messrs. British Castors Ltd.. .	London.	Castors for beds and cots.
Messrs. Midland Spring Co. Ltd. .	London.	Springs for beds and cots.
Messrs. Eastman & Son . .	London.	Mattresses for beds and cots.
Messrs. Kodak Ltd. . . .	London.	Dark Room equipment.
Messrs. Chappell Piano Co. Ltd. .	London.	Grand piano.
Messrs. Austin Motor Co. Ltd. .	Birmingham.	Chassis of motor ambulance.
Messrs. Strachans (Acton) Ltd. .	London.	Bodywork of motor ambulance.
Messrs. F. Sangorski and G. Sutcliffe.	London.	Minute Book for Board Room.
Messrs. " Country Life " Ltd. .	London.	Descriptive Brochure and Photographs.

Our thanks are also due to :

The Royal School of Needlework	Carpets and curtains.
Lady Hudson	Carpets and curtains.
Mr. Alfred Praga . . .	Portraits in Board Room.
Mrs. Power	Bed Linen and Blankets
Miss Wyndham . . .	Coverlets.

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