

The Ericsson Bulletin

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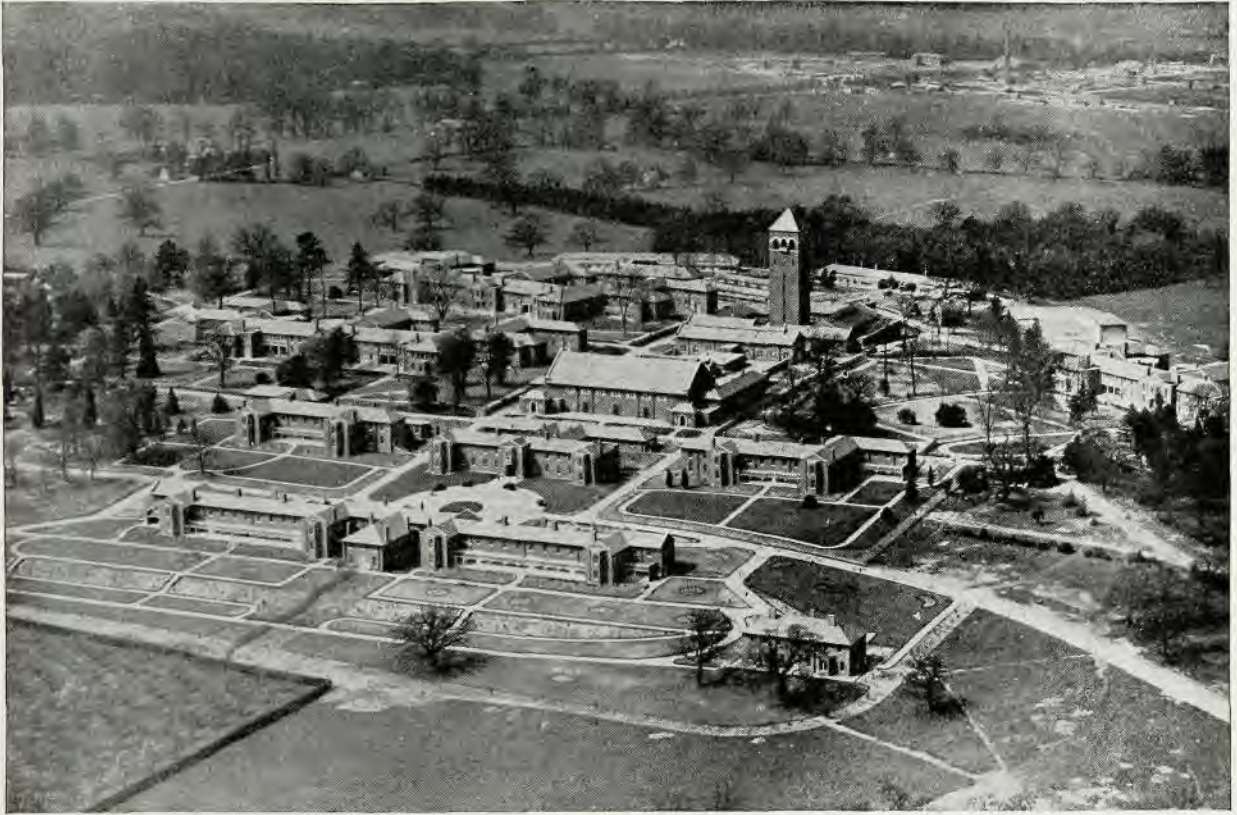
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Middlesex County Hospital, Shenley.



An aerial view of the Middlesex County Hospital, at Shenley, Hertfordshire.



ON May 31st of this year, His Majesty the King accompanied by the Queen inspected and formally opened the newly-erected Middlesex County Council Mental Hospital at Shenley, Hertfordshire, an aerial view of which is above.

The layout, furnishing and scientific equipment makes this magnificent new hospital the most up-to-date institution of its kind in the Country. Erected at the cost of over half-a-million pounds, the buildings, together with extensive grounds, cover 500 acres. The site is 420 feet above

sea-level and is located in the midst of beautiful rural surroundings.

It may be of interest to mention that the whole contract was completed within twenty-two months and that it involved the laying of thirteen million bricks, two miles of reinforced concrete subways, over nine acres of suspended concrete floors and roofs, thirty-seven thousand super yards of reinforced concrete roads, and seven and a half acres of reinforced concrete pavements and areas together with the excavation of fifty thousand cubic yards of earth. The general contractors were Messrs. John

Laing & Son, Ltd., and the Architect,
W. T. Curtis, Esq., F.R.I.B.A.

The hospital has accommodation for two thousand patients and five hundred staff, and apart from the main buildings it is laid out on the "villa" system, with small nursing units each housing from twenty to forty-five patients. The units are more or less self-contained with wards, dining and day rooms, sun galleries, duty rooms, clinics, stores, ward kitchens, and electric service lifts. This arrangement allows a careful grading of patients.

The administrative buildings, kitchen, stores, boiler house, water tower and laundry are arranged on a central north and south axis, the infirmaries and convalescent villas for male and female patients being situated on the east and west sides respectively. The accommodation for nurses, doctors and general staff is somewhat removed from the general scheme. All the buildings are connected by sub-ways conveying heating, water, electric light, and other services from the central portion of the layout. In the patients' quarters an approach to communal comfort has been the first consideration, the element of strangeness being eliminated as far as possible.

A notable feature is the magnificent recreation hall, with seating accommodation for one thousand people, a fully-appointed stage, and an operating box for the projection of talking pictures. The seats are designed so that they are easily removed for storage in the space underneath the stage, enabling the hall to be used for dancing or social functions. Adjacent is a very fine club room with servery recess in direct contact with the main central kitchen, and it is here that visitors may meet the inmates on visiting days.

In the enormous kitchens, with their modern labour-saving equipment, meals can be cooked for two thousand five hundred people at one time by means of steam and electricity. In the proximity of the central kitchen provision has been made for cold storage with separate refrigeration rooms for milk, fish, etc.; steward's stores; a central boiler house block incorporating an all-electric bakery equipped to do any type of baking required; and a large laundry capable of dealing efficiently with forty thousand articles per week.

The nurses' home is completely self-contained and has its own electrically-controlled kitchen.

The water tower, rising from the group of buildings which represent the power centre of the whole hospital, forms the central feature of the scheme. It is one hundred and forty feet high and dominates the surrounding buildings and district. It accommodates a storage of seventy-five thousand gallons of both hard and soft water which is pumped from the storage reservoirs, some three hundred yards away, for distribution to all buildings. The reservoirs, with which is incorporated a water treatment plant, receive their supply by pumping from a well.

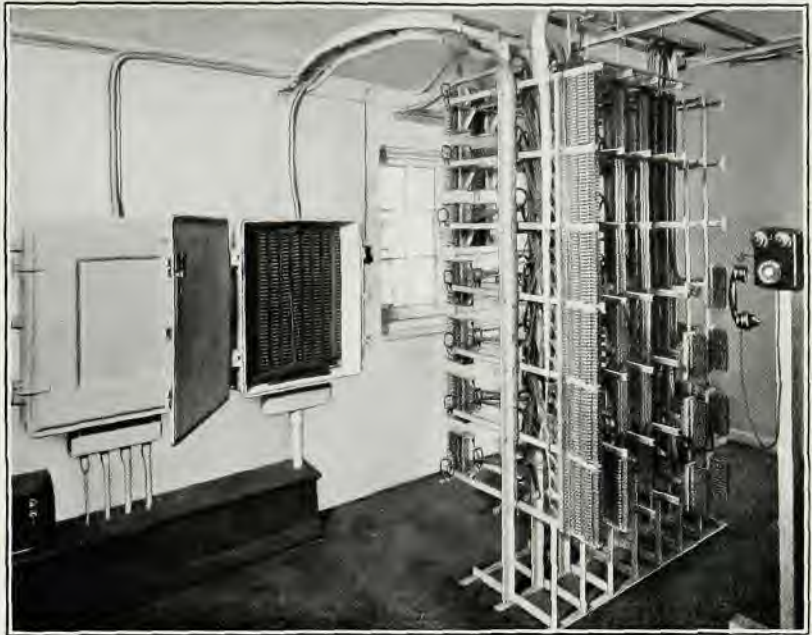
The heating is a low pressure hot water accelerated system, distributed to surface heat panels, which form the dados in the hospital buildings, and are almost entirely unnoticeable.

Patients can find a suitable outlet for their constructive abilities in the occupational buildings which are fitted up to allow various trades and crafts to be pursued.

Abundant provision has also been made for recreation, as, in addition to the large

entertainment hall, special facilities are provided for participating in outdoor games such as cricket, football, hockey and tennis. A "re-diffusion" wireless service, with the main set located in the hospital itself, is also provided in all the main rooms.

Before concluding this brief outline of the appointments in this modern institution, one cannot but mention the beautiful gardens which are interspersed over the whole plan and add to the surroundings that touch of beauty and peace which is so restful and curative.



Test Boxes and the combined Main and Intermediate Distributing Frame

It will be realised from the foregoing that every aid to efficiency has been employed in the equipment of this hospital, but it would naturally be incomplete without an equally up-to-date communication system. In order therefore to ensure the highest grade of telephone equipment, the Middlesex County Council entrusted the Ericsson Company with the entire arrangement to manufacture, provide and install a private automatic exchange, lines and instruments which would best meet the telephone requirements. The whole of the installation work on site was carried out by the Company's installation staffs, and some idea of the magnitude of this work will be appreciated when it is realised that the total weight of cable was eighteen and a half tons, and consisted of ten miles of internal twin lead covered cable, multiple paper insulated lead covered cable laid in ducts, and multiple lead covered armoured and jute served cable laid direct in the ground. If the separate twins were laid end to end the

total length used on site would be one hundred and fifty miles.

The paper insulated multiple cables are terminated in cast iron test boxes with wiped joints at the entrance glands. The total number of soldered connections made at the test boxes and on the line side of the main frame amounted to approximately twelve thousand five hundred. A feature of the internal wiring of the various buildings is the inconspicuous way in which the wiring has been executed; great care and discretion were used in determining the location of the numerous runs.

Regarding the exchange equipment, the site allotted will accommodate a maximum of four hundred lines although the initial requirements are only one hundred and forty lines. The initial switching equipment provides for a maximum of fifteen simultaneous conversations.

Two 100-line units are fitted and the system is extendible by means of additional units to a maximum of one thousand lines. A view of these units together with the power board is illustrated.

A three-digit numbering scheme is employed. The apparatus utilized conforms to British Post Office standards and comprises fifty-point rotary line switches as line finders, and two-motion switches of the heavy duty 100-outlet type as group and final selectors. Relays with twin gold-silver contacts have been used throughout in order to cut down to a minimum the troubles which might arise from dust.

The apparatus racks consist of complete units for serving one hundred lines, and accommodate the line and switching equipment together with the necessary alarms; they are of the single sided, open type.

A combined main and intermediate distribution frame is fitted, thus providing a central terminating point for incoming cables and also a means of protecting the exchange apparatus. This frame is shown in the illustration together with the jointing boxes.

Standard British Post Office tones are given, and there is a comprehensive alarm scheme which can be extended as desired to a position remote from the exchange.

A small portable tester allows a quick routine of all the switching and line equipment to be made.

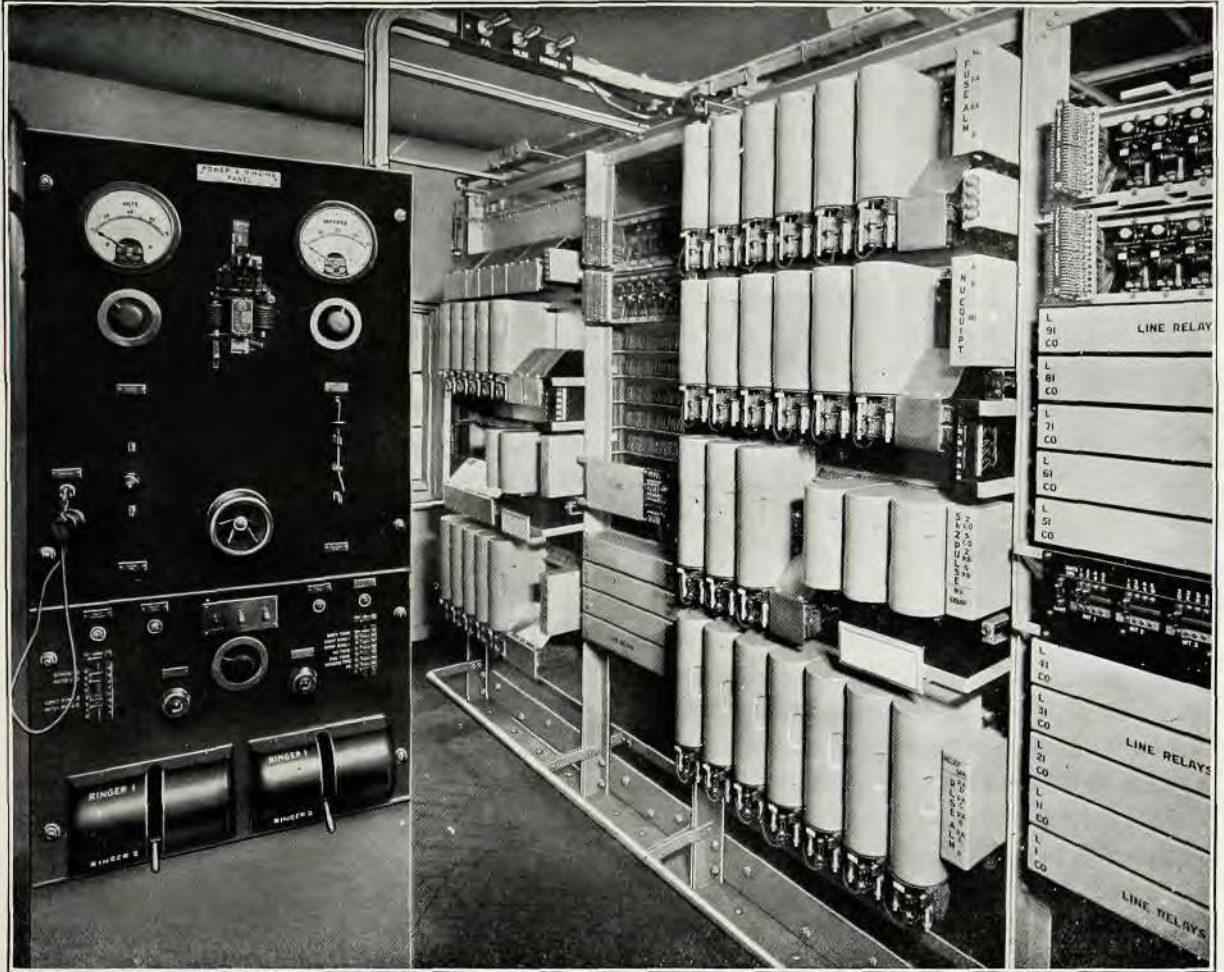
The exchange is served by duplicate fifty-volt secondary batteries, each having a capacity of two hundred ampere hours at the ten hour rate of discharge.

The batteries, accommodated in an adjoining room as shown in the illustration, are charged by means of a motor generator set; the motor, which is run from a four hundred and fifteen volt, fifty-cycle, three-phase supply, being controlled by a starting pillar mounted adjacent to the machine.

Ring current and tones are supplied by duplicate machines, the machine which normally serves the exchange being run from the single-phase main supply and the other from the battery serving the exchange. Automatic change-over equipment is fitted to bring the battery-driven ringer into service in the event of failure on either the primary or secondary side of the mains-driven ringer.



The Battery Room



The Power Control Panel and Automatic Equipment

The power control panel is equipped with the necessary meters to read voltages and current in either the charging or discharging circuits, generator control gear, switches for battery selection, tone test equipment and the ringer automatic change-over apparatus. The two ringing machines are also mounted on the power control panel.

The following special operating features are incorporated on this installation :—

- (a) Either party release after a period of 30 seconds.
- (b) Automatic release of the connection if a subscriber seizes a switch but does not dial after a period of between 30-60 seconds.
- (c) Automatic release of the connection if the subscriber takes more than 30-60 seconds between the digit impulse trains.

The whole of the telephone equipment was manufactured and installed within sixteen weeks from the date of order, and was cut into service on the 22nd December, 1933. The installation has given entire satisfaction, thus conforming to the traditional Ericsson standard.