ROYAL HAMADRYAD SEAMEN'S HOSPITAL, CARDIFF.

By E. W. M. CORBETT, F.R.I.B.A., F.S.I.

FOR nearly forty years previous to the opening of the New Seamen's Hospital at Cardiff, an old wooden man-of-war, The Hamadryad, moored in a creek or pill close to the site of the present building, had been used as a hospital for the seamen frequenting the port, and in spite of its being unsuitable for the purpose in every way, most excellent and successful work was done on the old ship, and when the new hospital was opened it was thought fitting to preserve the name and so continue the prestige and association of the old establishment.

It had long been the desire of those connected with The Hamadryad, a desire in which the late Marquis of Bute sympathised, to provide more suitable premises for this hospital, and when the year of the Diamond Jubilee, 1897, came it was decided that an effort should be made by the town to raise a fund to celebrate the year and to give a large part of it to the hospital; by this means, and by other subscriptions, sufficient funds became available to warrant the committee in preparing a definite scheme.

The Marquis of Bute gave a site in every way suitable as regards position, but rather a difficult one to deal with as it was overflowed by high tides, and thus required a great deal of filling.

Besides giving the site, the Marquis made a provision in his will for a sufficient sum to complete and equip the hospital; it thus became possible for the committee to push on with the new building and the work was placed in my hands.

The foundation stone was laid by the present Marquis of Bute, on August 7th, 1902, and the building was opened by him 29th June, 1905.

The ground consisted of about 19 feet of soft clay under which was good hard gravel. Much consideration was given as to the best and cheapest mode of making the foundation; eventually it was decided to carry piers of concrete down to the gravel, and to put a concrete lintel on those piers on which the walls were built. The foundation was necessarily very costly, and it was clearly desirable to have as little as possible, hence it became necessary to put the wards one over the other on three floors.

The piers, which vary in size, were arranged so that there should not be more than from three to four tons per square foot on the gravel foundation, or on the concrete in the piers. They were composed of cement concrete for the lowest 4 feet, and of lias lime concrete 5 to 1 for the remainder. The lintel was 4 feet deep by 3 feet 6 inches wide, composed of cement concrete 5 to 1. Where the openings between the piers exceeded 8 feet some iron rails were embedded in the lower part; under the side walls of the wards a continuous wall of concrete was put in.

The only material available for filling the site was clay from a new graving dock; this was rather soft and was troublesome, as it took a very long time to consolidate. The outer face which received the wash of the tide was partly pitched with stone and partly with cement concrete which is standing very well.

The walls of the superstructure are generally of rubble masonry faced with pressed Ruabon bricks for the street front, and cemented for the back portions.

The buildings consist of a doctor's house separated from the hospital, but with a covered passage leading to it; an out-patients' room, consulting room, dispensary, splint room, etc.; a small receiving room for the preliminary inspection of cases, and a room quite shut off from the rest of the premises for retaining infectious cases till they can be taken to the town hospitals for such. Kitchens, larders, stores, laundry, mortuary, operating theatre, Rontgen ray rooms, rooms for nurses, servants, and other officials are provided.

There are three main wards, each containing 16 beds, and three small ones adjoining, each containing two beds. At the entrance to the wards are the duty rooms or ward kitchens, linen stores, and general stores, and at the further end bath rooms, sink rooms, water-closets, large day rooms, 27 feet by 16 feet, and emergency stairs. There are 13 bedrooms, one sitting room, and a large general room for the staff.

A space of about four feet is left between the ground and the floor of the ground-floor ward, with a number of arched openings, to allow of a free circulation of air between the ground and the floor.

The ward floors are of concrete and iron, with a surface of terrazzo, the interior of the walls are rendered with Portland cement plaster, finished with Keene's cement, and painted with Gay's enamel.

The main wards are each 65 feet 6 inches long by 26 feet wide, and 12 feet high, and contain 16 beds each; there is thus 1,277 cubic feet per bed. The small wards are 21 by 16 feet by 12 feet high, and contain two beds, giving 2,016 cubic feet per bed. The wards are warmed by

low-pressure hot-water ventilating radiators, placed under each window, and fresh air is admitted through them, and there are also air inlets under each bed.

There are eight 18 by 9 inch flues built in buttresses to the outer walls for each of the main wards on the ground and first floor with entrances close below the ceiling for the extraction of the vitiated air, and for the ward on the second floor there are turret ventilators in the roof.

The corridors are also warmed by radiators.

The lighting is by electricity throughout, the current being obtained from the Cardiff Corporation.

The kitchen is fitted with gas and steam-cooking apparatus. An electric lift works from the corridor close to the kitchen to the duty rooms on each floor.

A bed-lift is provided in the well of the staircase; but this, as it is worked by hand at present, is too slow to be of much use, and should be fitted with electric machinery.

The operating theatre is detached from the other buildings, but is connected to them by a corridor. The block contains an anæsthetic or recovery room, 10 by 10 feet; an operating room, 15 by 15 ft.; a doctor's changing room, and small sterilising chamber. The walls are lined with glazed brick, and the ceiling of the operating theatre is of glass and enamelled slate. The doors are of teak covered with zinc, and the windows have iron frames. The whole of the operating room is constructed so that it can be washed down with a hose without injury.

A small mortuary, with *post mortem* room and viewing chamber is provided. The laundry is separate from the main building, but is connected thereto by a covered way. It is operated by hand. The fittings were supplied by Messrs. Bradford.

The cost of the building was as follows:—

Filling site	£1,693	4	3
Foundations	3,812	12	3
Superstructure, including heating, cooking, and laundry plant, lifts, architect's commission, &c. ...	22,106	12	5
Furniture	1,292	15	1
Surgical instruments, &c.	306	7	6
TOTAL	£29,211	11	6

Taking the cost of the superstructure, only £22,106, which includes

turfing the site, forming paths, fencing, and concrete pitching, this gives a cost of about 9·7d. per cubic foot and about £409 per bed.

MR. LUKE M. HILL (British Guiana) asked why the openings for the extraction of vitiated air should be placed under the ceiling, when we were led to believe that vitiated air, containing large proportion of carbonic acid gas, was heavier than ordinary or pure air, and would therefore materially gravitate towards the floor level?

MR. H. A. GARRATT (Torquay) being concerned in the construction of piles and piers under water, inquired if any means had been provided for examination of the foundation of the structure, especially in connection with the use of *lias* lime concrete in the piers, and what had been the result of such examination: also, had any settlements become apparent in the walls of the building?

MR. E. W. M. CORBETT (Cardiff) said that before adopting terrazzo floors to wards inquiries were made at many institutions where it had been used, as to its being cold, tiring for the nurses, etc., and the answers were so favourable that it was adopted, and proved very satisfactory, bright and cheerful in appearance, and easily kept clean.

He had been asked if the lime concrete piers were standing well, as salt water was injurious to lime concrete, and replied that these piers were surrounded by solid impervious clay and that the salt water could not affect them; that he had no reason to doubt they would last, that much lime concrete had been used for foundations in the dock walls at Cardiff in the past and had stood well, and that the lime there was of a very fine hydraulic quality.

The position of air outlets had been discussed and fought over for very many years, and though he had no doubt the ceiling was the right place, he felt nothing he could say would affect the opinions of those who held the contrary view, and therefore he had put the outlets near the ceiling. The windows were constructed with double hung sashes in the lower part, and with sashes hinged to the transom and opening inwards, with side hoppers in the upper part.

MR. J. OSBORNE SMITH, MR. C. H. COOPER, and MR. J. S. BRODIE also took part in the discussion.