ARCHITECTURAL PLAN FOR A PRIVATE HOSPITAL IN BEIRUT

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T H E S I S

ARCHITECTURAL ~~DESIGN~~ FOR A ~~MATERNITY CENTER~~ Plan Private Hospital

IN BEIRUT

by

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C O N T E N T S

C O N T E N T S (cont'd)

INTRODUCTION

I find when I think of hospitals and their erection and their investigation for the different things that would help to its perfection and idealization, I realize that it is but the best of all the thoughts and deeds that could be done for mankind and the best of all historical monuments that could be offered to the coming generations.

What could be better for mankind than the perfectioning of these hospitals, their construction according to the best ideals so as to make it a refuge for rest and happiness, where the sick man is offered quietness and all that he needs until he is cured and recovered. Besides this place - this maternity center - where the babies open their eyes for the first time to see this world, they should really see something that is worth being looked at, yes these babies that one day will be the active people of this world. Besides these women that are coming to accomplish that sacred mission - the continuation of the race - they should really be offered the best services that could be given to them and should be put in the most ideal conditions that could be procured.

Choice of the problem:

Besides the increasing demand for hospitals and the need for modern installations, I found and I was advised by many doctors to work on the design of this Maternity Center; for even in Beirut this city that is growing with an unbelievable rate of expansion and attaining a high degree of civilization there is not a proper Maternity Center - and by proper I mean a center that was built according to the modern ideas and serving with up to date instruments and technique - there is not except one which is the French Maternité .

There is another reason that led me to the choice of this problem and that is something deep in my own character that pushed me to work on these things both necessary and useful for an accepted standard of civilization.

Outlines - Maternity Center:

Due to the lack of a proper Maternity Center - as I mentioned it before - those that are accomodated with up to date equipment and built according to the modern science and technique, I was given by my friend doctors the following specifications and outlines that will serve best the city of Beirut.

I. Two stories Buildings
II. Twenty eight beds (3 classes)
III Two out patient clinics
IV Maternity - Surgery ward
V Service quarter
VI Doctors and Nurses quarter
VII Central heating

Layout of the steps followed in this problem:

Collecting Specifications: To have a clear idea and to understand thoroughly a certain problem one should study it the best he can specially by reading reference books dealing with that subject. In this study I have added to the references some very useful ideas and directions from doctors specially those advices dealing with the local conditions.

Many advices given by Professor Yeremian specially those dealing with the Architecture and construction helped me a good deal to clear the difficulties that hindered me.

Both Architectural and functional designs were given the proper weights in the study as well as in the design of the problem and I hope I succeeded in satisfying both of them.

Analysis of the Problem:

It is very interesting to note that every thing in a hospital depends on the community it is serving - that is to say the patients who have to pay on entering the hospital for receiving the necessary cares - for besides the contributions that are collected - sometimes you do not have to expect much of that - the hospital has to depend on its patients.

Now as this Maternity Center is meant to be a private one and that in the near future many other doctors will find it necessary to build other centers, the competition between the doctors and the efforts in attracting patients will result in the competition in offering to the patients the best cares and in equiping the hospital

with the best and the latest scientific equipments, thus this competition will lead to the improvement and to the progress in the modern Maternity Centers. This hospital though it will be the first of its kind in Beirut will be meant to sefve according to the best of all the existing scientific methods.

It is a well known fact that the planning of a hospital requires a special way and procedure and that it is not as the other ordinary buildings; in my case one restriction only is made and it is the financial one, as to the site and surroundings this Maternity Center will be built on the Sand - South of Beirut - thus on an unlimited piece of land.

There are only few architecs who understand that there exist a difference in the management of hospitals, and that which is considered as excellent in one institution may be held excreable in another. In consequence these instituions should be built with the proper understanding between the Architect and the management.

The Architect should pay a ~~great~~ care ~~in~~ his sketches to the criticism of the doctors so as not to be led to an irrecoverable damage when the building is progressed.

I believe that in such designs there should be a very clear understanding and interchanging of ideas between the designer and the proprietor for there are always some points that are to be pointed out and agreed upon in relation with the kind of institution to be designed and in relation with the doctor who is in charge - for even the doctor will present a special case by himself.

This hospital with the given dimensions is believed to serve best the present requirements of this District; this judgement is not founded on good minute statistics - for till now there is not such a careful study but anyhow it is believed to be as such by the doctors I have consulted.

Character of the Hospital:

As it is given by its name this hospital is meant exclusively to be as a Maternity Center and not for any other disease whatsoever.

But as it is given in the specifications there are two out patients clinics that are sefving outside patients coming for medical exams or for advices from the Doctors in charge, but these clinics though they are in the body of the hospital itself they form a separate unit and do not add anything new to the character of the hospital.

One of these clinics could be used exclusively for pregnant women (exams and advices) and for mothers who need advices and help, the other could be used as a General Clinic for the poor patients of the District.

Hospital Architecture

As given in the Specifications this is a small private Maternity Center - 28 beds in all - but any how the principles of hospital designs apply to this hospital as well as to the larger ones; though we must account to the proportions concerning the

different units in accordance with the number of patients these units are serving. Dealing with the question of Central heating, air conditioning and light we should not expect to have expensive arrangements as it is the case in the large hospitals, for as it can be seen these luxuries will not pay.

In this hospital I tried to afford all these requirements by all the economical means that are possible, thus giving to the economical question the prime importance; the style that was given to it is more or less modern so as to come in line with the buildings constructed on the sand - new Beirut.

As to the planning it should be a good Architectural Composition not simply to be one, but because a good composition will afford all the desirable qualities of Ventilation, Illumination easy observation and good circulation from section to section, and a proper interrelation between the different parts.

Although it is a small hospital it should contain the same units as a large one but with the proper proportioning, and offering easy transportation from unit to unit and specially to the operation center.

Speaking from the purely Architectural point of view, in such construction the functional design is given the bigger weight, as the building is meant to give easy services and comfort; but I tried while designing it to afford as much as possible the good look and a pleasant Architectural view.

The Site:

The hospital will be built in such a place so as to have both

the sun and the prevailing wind entering the different patients quarters thus appealing to natural means of Ventilation and disinfection.

A sandy hill will be chosen so as to intensify the action of the wind and to prevent future blocking, also to afford for easy and natural drainage.

Specifications

table

Kind of Room	Min. Sq. ft. of floor per person			Min. cubic ft. of air space per person.		
	Adult	Child	Babies	Adult	Child	Babies
Private Rooms	90	75	55	900	675	500
Ward	80	65	45	800	600	400

With the above table of specifications we should take in account the cubic content of air required per patient. This condition will determine the height of the stories. As calculated for this case the height will be taken as 4ms. which will give higher values of cubic content of air per patient.

First Floor

The different unit in this floor will be taken according to their respective positions.

Service Quarter: This quarter was given a special wing by itself isolated from the other units thus avoiding the noise that will disturb the patients as well as the visitors. Another important matter was considered in the choice of this wing, was chosen in such a way as to have the prevailing wind - which is south west in my case - driving out the smell instead of blowing it into the patient's quarters.

The two important units in the Service Quarter are the Kitchen and the Laundry.

The Kitchen was designed so as to serve the full capacity of the hospital - 28 patients -, the staff (doctors and nurses) and the workers. It is supplied with a distribution room and a store. A small dining room is in front of it for the use of the workers.

The Laundry unit is composed of the washing room, the ironing room and a store. Near the washing room there is a room for the machines that will supply the hot water for the whole building. A place for the lines on which to hang the washings is near it. There is also a bed room for the workers it is meant for three persons, for not all the workers sleep at night in the hospital. The sanitary annexe for the Service Quarter consists of a W.C. and a bath and it is placed near the bed room.

Ward's Unit: The position of this unit was chosen to be in the center of the first floor so as to have it the nearest posible to the stair case - lift - leading to the Operation Center, in case there is a sudden need of an operation. As it is given in the specifications a patient requires from 8 - 9 m. sq. of area and thus the Wards were designed accordingly with an excess of area so as an addition of a bed to each ward on necessity could be done.

Each ward was designed to contain 6 beds and the arrangement of these beds in the ward was done in such a way so as to fulfill the requirement of having the beds 8 ft. center to center.

The sanitary annexes were placed for these wards according to the modern idea of having them at the end of the ward. They are composed of lavatory basins and a W.C.

The position of these annexes as required by the British Societies should be adjoining but not directly opening on one of the wards, and if it is done with improved fittings and plumbing it is generally unnecessary to provide a ventilated cut-off passage.

The divisions or screens between bed heads should be solid, partially glazed of wood or metal. Usually the upper part of the screens are glazed in order to assist supervision. The screens are often kept 10 - 15 cms. clear of the floor to assist floor cleaning and to prevent stagnation of air.

The walls of wards are sometimes tiled to a height of 5 ft. above which it is usual to paint or enamel on hard plaster.

Staircase and Lift: Situated in the center of the hospital thus it will afford easy service and will be in immediate reach both from the service quarter, the ward's Unit and the main entrance. Near the stairs that were designed with a width of a meter and a half, there is a lift that will help to complete the services.

The Elevator is a very useful machine in the hospital and its position in the main body of the building is very important, it adds to the efficiency of services and helps the sick and weak persons to move without large efforts.

Administration Block: This block is situated directly in front of the Main Entrance. It is composed of two rooms: the Waiting Room and the Director's Room.

These rooms besides being near the entrance they were put as centrally as possible in relation to all departments of the Hospital. The Director's Room was made somewhat large so as to contain a small Archive for the Hospital.

Out Patient's Department: These rooms are required to be easily and directly accessible from a special entrance. Besides it is required to have them separated and isolated from the main body of the Hospital.

These clinics are also called Consulting Rooms they are provided with all the necessary instruments for examining; they are also divided into a waiting place, office and a small drug store outside and a small room for medical exams inside.

The waiting place for these clinics is outside the building in the garden, it is formed of a beautiful colonnade covered on top and partly covered on the sides. These clinics are semi free clinics for the poor inhabitants of the locality where they can come for medical examinations, treatment and advices.

Second Floor

Private and Semi Private Rooms: This Patient Quarter was given the best wing of the hospital. The different rooms are subject to the necessary disinfecting sun rays most of the day hours and they are also subject to the prevailing wind - the gentle breeze coming from the sea - which is a very important factor in Beirut during summer. The 1st. Class six rooms have their own Sanitary Annexe composed of the wash basins and the W.C. The 2nd. Class six rooms have also similar annexes.

The 1st. Class the 2nd. Class and the Wards are provided with a 3 ms. wide balcony used as a Solaria. The balcony wall is 1 m. high and the covering balcony is projecting some 75 cms. down thus leaving 2.25 ms. of open space that will be covered with glass during winter and windy days, and which will be left open in summer days.

Babies Ward: It is situated in a central place and it is also near the balcony - Solaria. The Babies bath room is adjoining

the nursery, which does not need to be large as it has only to accomodate one special bath fitting.

The wards, the patient rooms and the Babies room were placed as far as possible - in the given piece of land - from the roads so as to eliminate the noise and the disturbances resulting from the cars and the passengers.

Night Watching Room: A small room is provided for a night nurse in which she can stay and wait for calls from the patients. This room is situated in the center of the Patient's Quarter leading to easy and immediate services.

Linen Store Room: This room should be fitted with cupboards having slatted shelves with the slats at right angles to the walls. Theoratically all cupboards should be ventilated and the doors are of the sliding type.

Operating Theatre: This unit should have easy access from all the patient rooms. The aspect should provide the maximum of North light - as it is the case in my building. As it is given in the English specifications the Operation Room should be from 225-250ft. square and in addition to the normal large North windows the Operating Theatre is provided with top light for night operations and even to assist during the hours of day light.

The floor and walls should be of impervious materials such as tiles and with the surfaces as continuous as possible. Instrument cases with clear glazed doors should be built into and flush with the walls and should be airtight.

Anæsthetic Room: This room should be adjoining the operation room and the general practice is to make this room open directly into the operation Theatre. Good ventilation is essential and also good natural light.

X - Ray and Dark Room: This room should be near the Operating Theatre. The main Apparatus is generally fixed to the ceiling. Efficient ventilation by means of fans is essential. The windows should be ample for the day light operation of X - Ray photography, but they must be capable of being darkened. The Dark Room is connected to the X - Ray Room through a light lock lobby without doors.

Drug Store: A small Drug Store is situated near the Operating Theatre. Usually it is kept in it all the necessary drugs and instruments that could be used in the operations and for the use of the patients.

Nurses Quarter: As it is a small hospital the nurses home is not detached from the main building, but anyhow it is occupying a separate wing by itself. In my case I have two bed rooms for four nurses and a separate bed room for a head nurse. These rooms have their own sanitary annexe.

Doctor's Rooms: These rooms should be somewhat separate from the main body of the hospital so as to provide quietness that is necessary for the study. As the doctors in this Maternity Center will be Women Doctors, the same wing in which the Nurse's Rooms are placed will be given to the Doctor's Rooms. A special bath

and W.C. is provided for the Doctors.

Dining Rooms: A small Dining Room is provided for the Doctors and for the Nurses it is placed near their quarter and has an easy access to both of them.

Details of Construction

Foundation: The type of foundation that will be used in the construction of this Maternity Center is the footing type of foundation. The footings should rest on solid sound rock and this is an important condition in my case, for in this sandy region there will be always perculations of water and this will cause dangerous settlements and giving down in the sand. A rich concrete will be used in the foundations, thus preventing any future danger caused by having rain water in contact with the footings.

Damp Proofing of the Ground Floor: As it was stated before a sandy hill was chosen to be the place on which this hospital will be erected, thus providing natural drainage and getting rid of any accumulation of rain water.

But as there is always some dampness due to excessive rain water and capillary action a special method of construction will be followed in building up the Ground Floor: The Ground Floor will be raised one meter in height from the surface of the ground

and a 15 cms. of good blockage followed by two layers of concrete between which there is a layer of asphalt. This arrangement is considered to be the most effective in preventing dampness which is a very bad factor in hospital construction.

Walls:

Exterior Walls: White lime stone will be used for the outside walls for two reasons: first because it will give a pleasant effect with the somewhat yellow sand in the neighbourhood, second because of its durability, water proofing qualities and its pleasant look after dressing.

Interior Walls: Brick partitions will be used in all the different places of the building. They are preferred to cement blocks though they are a bit expensive, for their superior qualities of insolation of dampness and sound.

All corners should be rounded so as to avoid the accumulations of dirt and dust and to make it easy for cleaning.

Tiling and Floor Construction: In my case ordinary tiles will not be used, for though they are good insulators of heat and sound, they have not attained a degree of perfection that is proper to a hospital, specially in their look. I propose in my case the use of marble tiles that have been used successfully in this country and nearly in every hospital due to their general qualities as tiles, also for their nice look and ease of cleaning.

I did not use any Linoleum though it is very recommended by doctors for the fact that it did not give good results in warm countries. There is a special kind of Linoleum for the warm countries, it is more expensive than the ordinary one but it is not used yet and tested.

Plastering and Painting: The Interior plastering in all the different parts of the building will consist of sand - cement only, lime will not be used because it will weaken the mixture specially in some places like the bath rooms, kitchen and operating center where they will have to stand water action.

For painting the walls, the Private and Semi Private rooms and the Babies Room a white-slightly yellow - color will be used the plastering so as to make it ready to receive the painting must be done with a steel Trowel.

Wood Work: For windows, double sash windows will be used, because of their good properties concerning ventilation, besides it is easier to clean it from the inside and from the outside if the proper means are used.

Doors for the inside as well as for the outside will consist of two parts: the big moving part and a small upper part of 30 cms. that can be opened independently.

In all the wood work that will be used no recessing or projecting parts will be allowed, as they will form collecting places of dirt and dust such doors are called flush doors.

Heating System: There is a general boiler for the whole Hospital located in the first floor near the Washing Room. The location of this room is very advantageous being neat the Patient's Quarter thus leading to the use of short pipes to direct the hot water into the radiators. Although there is not a big need of central heating in Beirut, but it will be always advisable to have that system working if needed specially in the Babies Room.

The system will have to be perfect i.e. good regulation, no leakage and simplicity of operation.

Lighting: In hospitals as well as in any other modern institutions indirect lighting is becoming extensively used. This tendency rised from the fact that the indirect lighting will not hurt the eyes, and it is not tiresome as the ordinary light. The light is not given directly to the room it is cast at the ceiling and then reflected to the room. Side wall lights are also used in the Patient rooms and they proved to be necessary.

Lighting in the Operating Theatre is done with special lenses placed in front of the lamps to converge the light on the desired spot thus they are able to obtain the necessary intensity of light for the operations.

Ventilation: Ventilation is rather expensive for this small hospital if the proper means are to be used. Besides the use of fans and small economic ways, natural ventilation is the most economical if considered while designing the building.

The building was placed in such a way so as to have the prevailing wind blowing in the patient's Quarter to push out the filthy air changing it with the fresh air coming from the sea cool and healthy.

Sash windows were used so as to help ventilation in the sense they can be opened both from the upper part and from the lower part thus leading to a speady ventilation. Special doors are used so as to permit an easy ventilation by having the door closed and its upper part only opened.

Discussion on the Architecture of the Maternity Center

Having all the different units and quarters and their respective approximate dimensions according to the specifications, I tried always to take into consideration while grouping them to obtain a satisfactory combination, the important question of ventilation, air conditioning and light; because as I stated it before one should not rely on expensive means specially in my case of a small hospital where it does not pay.

So taking all these considerations in mind I decided on the form of the building that will satisfy all these conditions, I found at last that the L shape is the most satisfactory. It is better than the one strip building - though this shape is obviously better for ventilation and illumination - in the sense that this last one will result in the presence of long corridors and the scattering of the different units from one another; besides

the one strip shape is rather ugly and monotonous considering it from an architectural point of view.

I also found that the H shape is not the right solution for the reason that we should expect in such a building ventilation and light systems to assist the natural means that are reduced by the concentration of the units. On the other hand from the architectural point of view the H shape is rather an old fashioned form and as I mentioned it before the buildings on the New Beirut are modern and thus it will not come in line with them.

So I decided on the L shape giving the building the right position so as to intensify both the action of the prevailing wind and that of the sun. I found after grooping the different units that the main elevations - facades - will give rather a monotonous effect, due to the fact that I have avoided as much as possible the presence of corners, so I decided to make in these two facades a break in the continuity nearly at the middle with a recess of 20 cms. This recess is not showing a big importance on the facades due to the projection of the covering balconies but they are in fact necessary and helping in giving the desired effect.

The building having a main facade of about 40 ms. amd a height of 10 ms. is somewhat a strip that has nothing but an exagerated repulsing horizontal effect, so when designing the balconies - solaria - I tried to counter balance the horizontal effect by a vertical effect formed by the presence of the columns which start from the surface of the ground and go way up till the top of the parapet wall. A beautiful Pergola is placed on the terrace to help in counter balancing the horizontal effect and to form

a pleasant resting place.

As to the garden in front of the hospital it was designed with a rather rectangular way, the small paths and alleys are paved with stones between which a three to four cms. is left for green grass to be planted. The strips on the sides of the alleys are planted with green grass - Gazon - and in the middle orchards are planted. A beautiful pool is constructed near the Western corner helping in the watering of the orchards and the green grass.

In conclusion the design of this Maternity Center was done according to some definite specifications dealing with the dimensions of the different rooms and the required units, and on the other hand another important condition was considered and that is the local condition.

As it is a hospital the functional design was given the prime importance as to the purely architectural effect it was considered when possible. The building is of the modern type as it is to be erected in the New City of Beirut on the Sand.

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Assutah, Tel-Aviv

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