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B E S H M E Z Z I N

(ARCHITECTURAL DESIGN)

by:

F A I Z J I H A (B.A.)

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- T H E S I S -

ARCHITECTURAL DESIGN OF A HIGH SCHOOL
BUILDING IN BESHMEZZIN COMPRISING A
CIVIC CENTER

by:

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ENGI. IV

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ADVICE AND INDIRECT HELP OF PROF. C. K. WEIDNER. HE
DIRECTED MY ANALITICAL PROCEDURE AND ADVANCED MY THOUGHTS,
IN HIS VARIOUS LECTURES, TO ACCOMPLISH THIS THESIS.

INTRODUCTION:

BESHMEZZIN is my home-village. I have spent my early youth in it and had my elementary and secondary education in its school.

This school building is fifty yearsold now. It was the school of my father and uncles. They still talk of digging and laying of its foundations, Some half a century ago when they were still kids.

This school building and its surroundings are associated with every social activity of the village and its surrounding community. For this reason people look to it with respect. Many people have graduated from it and built up their way in life. In the time it was built, the school building could accomodate for all the necessary needs of students as well as teachers. Now, like anything out of date, the building can no longer offer its services to the utmost required limit which has changed and diversified.

Through my school education I have felt the need of a new building and new grounds around it. This should be done to parallel the growth of the villages and the rise in the standard of the living of the community.

As a citizen of BESHMEZZIN, and as a final year engineering student who is supposed to do original work on a chosen project, I have chosen the "Design of a HIGH SCHOOL BUILDING IN BESHMEZZIN" to be my project.

In the following pages follow the discussions related to the subject.

F. Jiha.

May 1952.

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C H A P T E R I

1. W H A T ?

a) SCOPE: The object of this thesis, later called project, is to design a plan for a new school building in Bishmezzin that includes an elementary school, a high school and a civic center for the community.

The justification for the undertaking of such a project is that the now existing school building is an obsolete old structure. It is a box like one storey tile roofed building with two big rooms on either end and a large hall in the middle. This building can only hold the five higher classes and the remaining six lower ones occupy near by buildings with galvanized iron roofs built by the British army during the last war.

All these structures are now very awkward, unsightly and unhealthy as well as unconsolidated. They don't give the impression of a school the graduates of which are recognized by this university and others; and they at the same time afford no place for the near-by community to spend the leisure time in a healthy profitable atmosphere.

From this above short description of the present situation, the object of this project is well understood and defined. It is a project for the development of the

social and educational and hygienic standards of the community concerned. It is a project for the service of all people with no distinction as to rank or social standard.

Therefore the main part of this project is the plan for the high school Building with all the rooms' functions indicated. And the other part is this essay showing all the procedures undertaken for the formation of such plans and indicating the arguments for the advantages of such a project.

b) Function:- The function of educational buildings in general is to afford a comfortable place and a hygienic atmosphere where the students can secure an education with the least inconvenience.

This place should give the students of the community space and light and health for the development of not only their minds but of their personalities. It should give also the adults of the community a center for their social activities so as to become a centripetal force binding the community more closely together.

c) Merits:- The merits of educational buildings with such functions as above stated is to develop an educated healthy community with a common goal to work for; It is

a center where cooperation is mostly practiced among students and adults, where ideas may be interchanged and where ideals are discussed and out of all that a person, whether young or adult, may choose a way of life to live which brings to him happiness and to others benefit and profit.

If such educational centers with such functions were available for all communities in all the world, happiness will exist among such communities and, the mutual understanding between them will help in securing peace.

It is Napoleon who once said, " That who opens a school, closes a prison".

As a conclusion, school Buildings represent the symbol of right, knowledge, health and happiness, such elements which are necessary for the well living of a community. Most of our present rural communities exist and do not live. It is only through their schools facilities that they can hope to live.

2. COMMUNITY TO SERVE:

a) What to include for community service?

The facilities which school buildings should offer for the community service are:-

- 1) Educational, THROUGH class-rooms, libraries, laboratories.

- 2) Social through clubs and auditorium.
- 3) Amusement or recreational through auditorium and play fields.
- 4) Hygienic through the doctors' clinic and play field exercises.

All these four items are interrelated and no one can replace the other in fulfilling the complete function of the school building with services to the community. A clock tower with a large clock bell is of a material use to the nearby community.

b) NUMBER OF STUDENTS TO SERVE.

The community which is served by this school is composed of about twenty villages with populations varying from 500 to 1000 each. A population of about 15000 people is served. It is not meant to be the only school in the community since there are government as well as other private schools. These other schools are of an elementary standard except for only one which was till last year following the government system of education and giving a secondary education in french. This year it is changed to follow the English system of secondary education.

The Bishmezzin High School is a private school

ruled by a committee which is annually elected from the members of an educational club in the village. Its purpose is to offer a high standard of education to the students of the community concerned with no draw back as to material profit. For this reason it proved to be the best in that community.

The new school building¹⁵ designed for an enrollment of 350 students, 150 students taking secondary education and 200 students in the elementary part. These numbers are taken as the average of yearly enrollments since 6 years when the school first became a high school.

e) NUMBER OF BOYS AND GIRLS:

The community takes the same attitude towards the education of boys as that of girls. For this reason there is no large margin of difference in their number. The students are sent to school according to their potentialities. Since on the average girls are as intelligent as boys, the population of the school is approximately 55% boys to 45% girls.

d) AGES OF STUDENTS:

A boy or girl is first sent to school to attend the kindergarten class. He or she is at least

4 years of age. This is the lowest limit to student ages. A student in the last secondary class who is going to take the high school diploma is at least 16 years old. The ages usually vary from 16 to 20 years depending on how many years the student had lost due to either financial difficulties or lack of intelligence and hard work.

From the above analysis it is seen that all the facilities that the school building should afford to students should be so made to conform with their ages. It can be safely said that the average range of ages is from 5 years to 18 years.

e) STANDARD OF LIVING OF COMMUNITY.

The community we are talking about, called Koura, depends for its living on the olive tree which is the basic natural resource of wealth. Not every year the olive tree gives a good crop. The people as they multiplied found out that the best way to secure a good living for them and their parents is through emigration to cities or to foreign countries mainly to Australia and America; (North and South)

So I can say that the standard of living in our community although medium, is among the best of that of all other rural communities of Lebanon.

A medium standard of living does not necessitate very large recreational halls or music rooms. And for this reason I did not provide the school with such Areas, as gymnasium.

f) STANDARD OF EDUCATION OF COMMUNITY

Our community is well known to be among the best educated communities of rural Lebanon. This is due to the fact that the people feel that only through education they can expect to build a better future life. Most of them have seen or lived good high standard life outside their community. These know the difference between need and prosperity and the natural reaction to that feeling is the willingness and desire to get educated.

g) SOCIAL STATUS OF COMMUNITY

The social status is a function of the standard of education. It is natural therefore that many of our community individuals fill high positions in Lebanon as well as outside Lebanon.

The people have a tendency for cooperation and it is only through cooperation that social maturity exists.

h) ATTITUDE OF COMMUNITY TO EDUCATION OF CHILDREN

As was said under f, the people wish to se-

cure a high living. Old people who were unable to build up a good future depend now on the rising generation of their children for securing it. They believe this can be guaranteed only by education. For this reason many people get indebted or sell their properties for the sake of educating their children.

i) ATTITUDE OF CHILDREN TO EDUCATION:

It is natural that children who see their parents sacrificing every thing for the sake of their education be laborious and hard-workers in school. Besides that the competition between girls and boys on one side and between boys themselves and girls themselves on the other side has a good effect on stimulating their desire for education.

Students feel that only through their education they can secure a good position in the future and thus regard education as a ladder for better future life.

This rather long introduction to the project proper is meant only to show the necessity of having a new modern School Building in our community to meet the requirements of the existing and coming generations.

These discussion facts I have acquired through my own student life of 12 years in the village school, my own discussion with people, my observation of their life and my own interpretations and personal experience.

CHAPTER II

WHY ? I. RAISE THE STANDARD OF EDUCATION.

It has been said previously that the function of the school building is mainly educational. The standard of education can be raised by various means such as good teachers, and well suited text books. The role of the school building in raising the educational standard is through the provision of spaces and means where experiments are made in laboratories for science classes and where outside books may be referred to, library for widening the students general knowledge.

a) LABORATORIES:

The modern method of teaching science courses is to have for every class ~~one~~ hour, $\frac{2}{3}$ a laboratory hour. This means that what is explained in the classroom and what is shown on the black board is demonstrated actually to students in the laboratory. This is the only way to teach how to do things, namely by doing them. In the laboratory the student feels responsible for the completion of something actual. He can see by himself whether the result is right or not, and what are the factors that determine that.

LIBRARY: The library is the study place for students

who need references other than their text books. It is a place where no group study is permitted since noise arises in that cases.

Besides reference books, the library has weekly periodical and magazines and daily newspapers through which the students can contact the outside world for increasing their outside general knowledge which is helpful in building their personality as well as their mind.

The library is used by people from the community, other than students. These may be retired educated people who are working no more and who wish to spend their time in a useful way. A good Encyclopedea is very helpful for the adults using the library.

2) RAISE THE STANDARD OF SOCIAL LIVING OF COMMUNITY.

a) SPENDING LEISURE TIME.

One of the important functions of the school with services to the community is the fact that it can be used as the place where people can spend their leisure time in a useful way. The school building is used by students for 8 hrs. a day. The remaining 6 hrs. from 4 to 10 P.M. can give the community a good variety of activities afforded by the school building.

The library, the play-field, the auditorium and the club can be used during this time also.

b) A MEETING PLACE FOR CLUBS AND COUNCILS

The educational clubs and municipal councils in the villages of the community need a meeting place for their activities. Their budget, may not permit for the construction of separate structures for them to occupy. The natural solution is to have the school building comprise a meeting place for them. In this way the link between the community and the school becomes more tightened and the factors leading to the prosperity of the school increase.

c) CENTER FOR PUBLIC LECTURES AND STUDENT PANEL DISCUSSIONS

Many a time during the academic year the school authorities arrange public lectures for the benefit of the whole community. The student's parents are invited to attend. The place for such lectures is the auditorium. In these lectures all the phases of life are discussed and the people of the community acquire new knowledge on new subjects.

Some other times student panel discussions take place. These encourage free thinking and are very essential for the students mind development.

d) CINEMA SHOWS:

One of the modern methods of public education is the cinema shows.

Cinemas give an actual pictorial description of the lessons one wants to communicate to people. Besides being educational, their recreational role should not be underestimated. After a show a person gets his mind fresh and his thinking sharp.

The natural place for the cinema is the auditorium which is equipped with all necessary facilities.

Many a person in the community can not afford to go down town to see a film. A cinema show in the school auditorium once a week is of a great help to the community people.

3) RAISE THE STANDARD OF HEALTH.

a) SANITARY ROOMS:

The school, as was said before, is the symbol of health. The classrooms are healthy in all respects. They are large, well ventilated, well lighted and clean. The corridors are wide and comfortable. The auditorium is large, well located and well lighted. The laboratories have plenty of safety devices and the terraces are well covered and spacious.

b) OPEN SPACE ACTIVITIES.

b) OPEN SPACE ACTIVITIES:

Such activities comprise volley-ball, basket-ball, tennis, gymnastics and body improvement exercises. They are very essential in building up the bodies of students. Besides the raising up of bodies they give a good refreshment for the mind and build up the sportif spirit which is inevitably the basis for cooperation. Tournaments may be arranged between the different groups of the community. These help in giving a useful time for recreation and in harmonizing the efforts of individual players to a group result.

It is through school planning that such areas are provided in the school surroundings in such places that fulfil the conditions of heat and cold, space and light and shade.

c) A PLACE FOR MEDICAL EXAMINATION

Modern theories of health require that a doctor clinic be available for the students, faculty, and parents of students. In such a clinic a general examination is done to every individual. In cases of serious cases of diseases, the patient is notified and sent to a hospital. Some minor cases may be remedied in the clinic. These include wounds, eye inflammation.

Inoculations are done there and on regular intervals. Bruises and dislocations are treated also.

This above discussion of the WHY? of the project is meant to expose the use of such function, which the school building should afford, and which in the present do not exist in our community. This project is meant to give a solution to the present situation by making it possible for every individual in the community to take part in one activity or another.

e) WHERE? HOW?

The where? and How? parts of this project form the two most important studies from the engineering point of view. They should really get the highest credit consideration.

What has already been said is only an introduction to the real project. That introduction contained the reasons for and the results of the project.

The project itself is discussed in the following pages.

CHAPTER III

WHERE?

THE SITE:

The site of the school building is associated with the first thinking of the school.

A school should be located in a residential area; since all the villages related to this school project are of residential qualities, the limitation to the school location is not well defined by this quality.

The qualities that define school location in a rural community similar to our case are of local geographic as well as local climatic order.

1) CENTER OF COMMUNITY, BISHMEZZIN.

Bishmezzin, the village where the school building is to be located, lies quite nearly in the geographical center of the community of 20 villages which the school is designed to serve.

The geographical features of the locality help to make out of Bishmezzin the actual activity center of the community.

It is located in a plain surrounded by hills which rise up gradually as they fade away. On one side these hills gradually drop again to the sea level and

on the opposite side they rise up steeper and steeper to join the mounts of the cedars.

The villages which the school has to serve are on these hills on all the four sides. This makes out of Bishmezzin the geographical center of all the communication facilities which serve the community.

a) MAXIMUM RADIUS ALLOWABLE:

It is quite known today that the school forms the center of interest of a community. Its area of influence lies more or less within a circle the center of which is the school building and the radius of which is of a variable magnitude. This radius varies with different schools of different grades. It also varies with different localities. For a high school the usual limit of radius magnitude is about 6 kilometers.

The reasons for keeping the radius of influence of the school within a certain limit are due mainly to transportation problems to limited lodging accommodation facilities as well as to the economical standard of living of community. The villages which this school has to serve are within the 6 kilometers radius.

b) TRANSPORTATION FACILITIES

In the community concerned the only method of transportation is by cars or busses. The transpor-

tation routes are mainly connecting the city of Tripoli to the different villages. The system of roads start from some of different villages concerned and meet at Bishmezzin where the major route leads to Tripoli. All inter-village roads are asphalted.

Therefore the transportation of students living outside Bishmezzin can be done through the regular transportation service of the community to the center of business, Tripoli. This saves a great deal on the pocket of the students.

c) LODGING ACCOMODATIONS FACILITIES.

As was indicated before, half of our village people are emigrants.

Some of the houses are empty, others are holding only half of what they actually are designed for.

For this reason, students coming from the farther villages find no difficulty in securing lodging accomodation at a very low rate of payment for rent. Students usually have their mothers or relatives with them for their service at home.

d) SOCIAL ATMOSPHERE:

The social atmosphere in Beshmezzin is well favorable for the location of the school. The people are

almost 90% educated. There is no serious political nor religious division of opinions. People feel the school belongs to every one of them and try to help in every way possible. The existence of educational and recreational women and men clubs and societies in Bishmezzin helps in maintaining a high standard of social atmosphere. The arranging of lectures and social meetings helps also in this respect.

In a word, the social atmosphere ruling in the village in that of cooperation for the accomplishment of useful right things. Educated people as our people don't believe in "Might is Right" but in "Right is Might". It is only in social atmospheres as above described that a school may hope to prosper.

e) CLIMATE:

Our climate is in general similar to any other locality in Lebanon of an elevation of 300 meters.

Because of the hills surrounding the village, the cold winds in winter are not severe as in other exposed places. During summer, the reverse is expected and we have some hot days.

Since the school does not run in the summer months except for special cases, the climate suits the activities of students. No heating equipment is needed

during winter nor cooling equipments during summer. This saves a lot on the budget of the school.

Our winter days mornings are cold because of the cold wind coming from the snowy mountains to the East and South East. The best way for students to get warm is by running and making other physical exercises at their free time. This is well practiced in the present.

2) PLOT WHERE THE NOW EXISTING SCHOOL IS.

The now existing school building is about 50 years old. The plot on which it is built has become very familiar to people. The villagers look to it with respect. This old heritage is well preserved to the advantage of the school. For this reason and for the following other ones the new school building is to be located on the same plot after demolishing the now existing old structure. Some of the present building materials may be used again.

a) PUBLIC LAND:

The plot where the present school is, in a semi-public property. It is owned by the church of the village. Since the school is meant to belong the whole village, with no private interest, it is to the

advantage of the *Site* of the school building to be located on this plot. This emphasizes the public spirit of the project.

On the other hand the money necessary for the construction of the new school is to be collected through contributions. A lot which can be used as a school site free of charge will save few thousand pounds which may be used in securing good equipment for the school or in offering some scholarships to deserving students.

b) SIZE OF PLOT:

The area of the plot where the school is to be built upon is about four acres. This is not enough for the expansion of the school facilities. Some more area may be added to it from the surroundings plots where no houses are present. The land is relatively cheap and a square meter does not cost more than one Lebanese pound.

The shape of the plot is similar to the plan of the school. This is helpful in eliminating narrow corners which are of no valuable use to outside activities.

c) LOCATION WITH RESPECT TO VILLAGE:

The plot we are speaking about lies in the out-

skirts of the village. It is not surrounded by houses and the nearest house is about 100 meter away. The plot is located to the Eastern side of the village. There is a small increase of elevation as one approaches it. The school building site is on the top of a flattened hill. It is well seen from any other part of the village.

The eastern part of the village is actually its face, and the building front is expanding towards that side.

There is no noise to interrupt the school classes and the road which leads to the school site is a private road.

a) ORIENTATION OF SCHOOL:

The orientation of the school follows that of the plot. It is to the East and South East. This orientation helps in allowing for the best day lighting of the classroom. Besides that the natural pleasant views of the surrounding that meet the eye are helpful in relieving the minds of pupils from ugliness. The Mounts of the Cedars to the East are very helpful in this respect.

Besides the above, stated description and arguments, this orientation helps in eliminating the effect

of the cold north winds during winter.

Another advantage of this orientation is the way the clock tower faces the village. The hands of the clock are well seen from the populated section of the village.

e) ROADS TRAFFIC:

The plot of the school is readily accessible to the main road system. As was mentioned previously the school plot is accessible through a private road. Although in the present this road is not asphalted, it is wide enough and smooth for the traffic leading to the school. Regular service transportation does not pass through this road except very rarely. This fact eliminates the danger of traffic in hindering the ready access of students.

A car parking area is reserved to one side of the school entrance near the auditorium. This is designed to take not less than 40 cars.

f) SOIL NATURE:

The soil of the plot and surrounding areas is a *soft clayey loam*: It is suitable for the plantation of trees for shade as well as fruitful trees like olives. The soil is readily and naturally drained, since, as was indicated before, the plot lies at the top of a flattened hill.

The soil as it is now is not suitable for playfields. A cover of 3-4cms. of sand mixed with soil is a good means for improving its texture. This can be done at a low expense, Since the transportation distance ^{of sand} is about 15 kilometers.

g) SUB-SOIL NATURE

The soil is underlaid by a layer of sedimentary rock. The depth varies from places to places at different rates. The minimum depth is about 3 meters.

The villagers have a tradition that a structure not built on rock is not safe to live in. This they have acquired from the old days when cement was not yet introduced. Due to this tradition one frequently finds an owner willing to have the foundation of his house on soil. The natural reaction is to dig the foundation until the rock is reached. Fortunately enough, the rock is relatively shallow in most place. When the rock is not shallow enough, the owner does not build his house. In short the subsoil of the plot helps to save on area of footings and bearing wall foundation since its bearing power is ample.

h) ENVIRONMENT, TREES AND PLANTATION

As was mentioned before the plot where the school building is, lies on the outskirts of the village. To its West, South and north are groves of olive trees. To the East is the road leading to school. Three hundred meters away to the south west is a pine forest

which is connected to the school plot with a private road. This pine forest is the natural present place of amusement for students in their free time and in nice weather. When the new project is done, the road to the forest is widened and special equipment for amusement may be provided to students in the forest. In this way the noise may be eliminated near the school during the class periods.

The environment of trees is very healthy and by locating the school in such a place a good step is achieved for providing a healthy place for the students.

Nice beds of flowers on the sides of walks give a nice variety and in the same time confine the passage ways within certain limits.

i) WATER SUPPLY TO PLOT:

Running water is not available in our community. The water for drinking is served from wells having pumps. The water for house service and irrigation is available through a private water system which leads this water from about a distance of 10 kilometers. The water pipe serving the homes nearest to the school is about 100 meters away and can be very easily and cheaply

extended to serve the school and school lot: five cubic meters of water per day are enough for the school and they only cost about 1000 Lebanese pounds for forty years service.

j) ELECTRICITY TRANSMISSION LINES.

The electric power for lighting is readily available in our village. The transmission lines pass near the school at a distance of 50 meters. Electricity power for laboratories or machines can be obtained by special arrangement with the company. The voltage is 220 and the power is ample. During olive cropping, the ten present presses are turned by electric motors and a special arrangement for their running is arranged so as not to affect the lighting. Electricity for lighting is sold at the rate of 23 piasters for a kilowatt and for power at the rate of 8 piasters.

k) NATURAL BARRIERS, FLOODS, STREAMS, ETC...

There are no serious natural barriers that hinder the access of students to the school. During the winter season the streams overflow occasionally and cover the roads for some time after which they settle down. This overflow occurs after a heavy rain storm and does not take more than two hours.

The rain itself forms some hindrance for the

coming of the students to or going from the school. They have to wait, as in any other locality, until the rain ceases. Another consideration to the access hindrance to the school is the following:-

Not all the villages which the school serve are connected to Bishmezzin directly with good roads. The students of these villages have to follow the shortest distance to school and so have to cross short cuts which are not properly paved and which are muddy during winter. This *ms.* be eliminated by having these students lodge in Bishmezzin.

C H A P T E R I V

HOW?

1. THE DESIGN:

Since the school is being more generally recognized as a community center, it should reflect the cultural standards of the community and the most cherished traditions of the locality, giving expression to its purpose in a composition that is dignified yet friendly based on an honest and logical use of materials; in my design the outside wall are of stone masonry plastered in stucco and the inside ones are of concrete blocks.

THE WORLD BOOK ENCYCLOPEDEA: gives a discussion which is well suited to indicate what the general design should include: " A true definition of school is that it is an institution set up for the purpose of teaching. But in order to teach a school may have to do other things also. For example in cold weather it may have to operate a furnace and during summer it may have to make repairs on equipment. But these functions are only to promote the main purpose which is teaching."

The stair ways are a menace to the health of students. They not only aid the spread of fire, but also serve as a source of accidents and take up va-

luable space. Newer buildings are kept down to one or two stories for reasons of health, safety and convenience.

New buildings are constructed to protect the health of the students. They provide living conditions at least as good and sometimes better than those found at home. To do this they provide sufficient floor space, airspace and window space. The windows are placed close together and to the left of the pupils. If windows are to be placed on two sides, they are placed on the left of pupils and behind them. The buildings are well lighted by day. Buildings do not grow with the changing needs of children and society. They should not be built to last forever.

A health unit usually is provided to have a waiting room and an examination room for eyes, ears, teeth and general medical examination.

Outdoors there are playground for students. The indoor facilities may include a library with reading room to accommodate at least one third of students at one time. There are also manual training shops for industrial arts such as wood working.

The old school was a collection of classrooms connected by stair ways and corridors. The new one is

a functional building with many varied facilities. All the parts are fitted together to promote the bodily, mental and moral health and growth of pupils.

The auditorium, gymnasium, athletic field and other equipments are used in the interest of all the people."

THE ENCYCLOPEDEA BRITANNICA.

Gives still a more concise treatment for the designs problem: "In designing a school, consideration should be given to the following factors in the order named. 1) Orientation. (2) Natural light and natural ventilation of classrooms. (3) Expansiveness. (4) Flexibility. (5) Light corridors. (6) Effective supervision, 7) Reduction of vertical travel."

These cited discussions give a good idea about and explain the reasons for the arrangement of the different units in my project.

2) GENERAL ASPECTS OF EDUCATIONAL BUILDINGS:

a) The function of school building has changed, is still changing, growing and diversifying.

The school must now prepare each individual to live as happily as possible in his world at the peak of his productivity.

But the job of the school today -- because it

is centered around the development of the individual -- necessary goes further. It extends to all the other people, of all ages in that child's community. The improvement of the quality of living is the chief goal or purpose of education. The plant has several special functions.

1) To provide facilities needed by the entire community, meeting places facilities for luncheons and dinners, library materials, recreational facilities, demonstration plots and laboratories.

2) It should provide facilities particularly planned and designed for the full time use of a particular age-segment of the community, i.e. for very young children or nursery school, for 6-12 years age children and for children of early adolescence.

3) It should provide facilities for the types and kinds of activities necessary for the instructional program which is carried on.

4) It should provide facilities for services which the community needs from its schools, physical examination, meeting place, etc...

5) Physical comfort.

6) It adds to emotional stability and growth, by being esthetically comfortable.

The use of the school plant as a community center is an ever growing reality, and the need for more and better school facilities is a fact that every community must face or fade from.

b) EXPANSIBILITY : One way⁵ to plan for the specific school's increase in school population over the expected life of the building; then build to meet it all at once.

A newer way is to plan for expansion, but build only for immediately forceable needs.

Buildings should be oriented so that as the expansion develops, there will be no interference with proper sun light and ventilation.

5. TECHNICAL ASPECTS OF DESIGN OF DIFFERENT UNITS.

a) CLASS*ROOM UNIT : School planning starts with the class-room. In the old days buildings might have come first, the ground and glorious edifice which could be pointed to with pride, and into this structure were fitted the class-rooms falling as chips where they might. Now fortunately, the building evolves from the class-room or from a series of class rooms each designed specifically for its specific jobs. The reason is that the class-room engages most of of the pupils' time.

The class room unit is the place where the students spend most of their time . when they are at school. The

main function of this unit is for teaching and learning. The different items which are included in the class room unit and which deserve important consideration are the following:

1) SIZE : The width and length of the room depend on the number of students which are to be served. The height is fixed due to architectural as well as functional reason. Experience has shown that the best arrangement is not to have more than 35 students in the same class. If the class were bigger than that, the last row will be far away from the teacher and the teacher won't be able to control the class. Another drawback is that in a big class the students do not have the chance to ask personal questions and there is no time for the teacher to ask questions to every student becomes smaller as their number increases.

For a class room the allowable area per student is 1.8 m^2 in the secondary school and 1.5 m^2 in the elementary part. These are the numbers which I have designed for in my project.

The height of the room is governed by the volume of air per person. A height of about 4 meters, as in my project, gives about 7 m^3 per person, which is quite big since the allowable volume is 5 m^3 per person. Heights bigger than that are wasteful and do not look nice architec-

turally ; and heights lower than that do not give the volume of air needed per person and in the same time limit the height of the windows which is important in day lighting.

Thus the size of the classroom should be limited to a maximum area and a minimum height.

2) WINDOWS BLACKBOARDS.

The function of windows in a room is to give light and ventilation. Both of these functions are vital to the success of the school.

The area of the windows should be at least one sixth of that of the room. The height of the window from the floor is about 0.80 m. This is determined from practice to give the students the impressions that there is no real curtain which separates the inside of the class from the outside scenery.

The orientation of the students seating is towards the black board. The windows should be to the left of the students and if windows are on two sides of the room, they should be behind the students. Windows should be kept near each other so as not to have shadows which injure the eye.

The reason for having the windows to the left of the students is to have no interference of shadow when the students are writing. This assumes that all students are right-handed.

To prevent the shining of the black-board, the

seats should be placed so that the direct light reflected by the blackboard does not hit the eyes of students.

For ventilation, high windows are used on the opposite side of the wall of main windows. These windows are low and long. They are not meant to give light.

3) WALLS PLASTER AND COLOR. The inside walls of the classroom are plastered in a rough way so as not to have shining.

The color of the ceiling is white, that of the walls is yellow or light blue. These colors give life and refresh the students minds. The color of the wall to the height of the window sill is made of a darker yellow or blue color to give contrast.

4) FLOOR: The floor of all the school building is made of terrazo tile. These have a nice looking finish, resist abraisive forces and are easy to repair if broken. It is also an easy job to clean terrazo tiled floor.

5) Lighting: During day time when the weather is not cloudy, the natural lighting from the windows is enough. In winter, artificial lighting is needed. This is provided by⁴ one hundred watt lamps in each room.

6) SEATING. The seats of students are in pairs. Two students sit on the same bench and have their books in book bases in front of them. The top of these book cases may be

used as a writing plane.

The seats are 110cms long each which is quite ample for two students in the secondary school. Seats in the elementary part are 90 cms long -- The teacher seat is an armed chair behind a table 110cms long and 80 cms wide.

7) HANGERS: Are located on blank walls. They are used for hanging coats, overcoats and umbrellas:

8) CLOSET: A small closet to one side of the black board about one meter in width is used for keeping books, chalk and home-works or quizzes of students. This is a rough detailed description of the class room unit which should provide the necessary means for students to learn.

B) LABORATORY UNIT:

The laboratory comes in the second place of importance in a school. The first is the class room.

The items relating to the class room apply also to the laboratory with the exception of space. A laboratory has the area of one class room unit and a half. This is obvious from the fact that in the laboratory students have to move while working on their experiments.

The laboratory is provided with tables and drawers, and shelves which are used for the different equipment. The laboratory in the high school is a general unit.

It is a place for chemistry, physics and biology experiments. It is to be used by the highest three classes in the secondary school.

In my design, I have a small half room unit besides the main laboratory. This accommodates for about 15 students which have physics laboratory while the other one is occupied.

I have placed the laboratory in the second floor because this unit is not used all the day long. And so rooms of more frequent use are very easily accessible in the first floor. And rooms of less frequent use are in the second floor.

Another reason for that is that the noise which comes out of a laboratory does not cause trouble to class rooms which are in the first floor. A still important reason is that when chemistry experiments are done, bad odors do not interfere with class-rooms.

The main laboratory unit is designed to hold the same number of students found a class-rooms. The other half unit is meant to hold only half the class for physics lab. or biology lab.

C) STAIR-WAYS & CORRIDORS: THE stair ways and corridors have the primary function of connecting rooms to

each other under conditions protected from the weather.

Students have the habit of rushing all at once to their destination. They don't wait for others to lead them. All want to come first. For this reason, the stairways and corridors should be wide enough to accommodate for the above requirement of giving enough space to a large number of students to arrive at their destination, at the same time.

Corridors should be called on to complete still another function than mere communication. The corridor is place where lockers are installed on both sides and where picture exhibit is installed above the lockers.

These lockers are very essential for students where clothing or books may be kept. Water fountains may be installed in corridors for the service of students.

Corridors are lighted through glass openings at the top part of the doors of rooms on either side. The light in corridors gives a good impression of life in it.

From the above mentioned functions of corridors, my design contains corridors three and four meters wide, which are very ample for the students circulation.

The stair case is a source of accidents and troubles in the school. Students may knock each other when rushing up or down. Others may slip while using the stair

and still others while trying to jump up three or four steps at a time may tumble down. For these reasons, the staircase should be wide, well lighted, and have its steps not higher than 17 cms for ease of ascending and not narrower than 30 cms for safety in stepping.

In my school I have installed two stair cases to serve the second floor, and one stair case to serve the gallery of the auditorium.

The reason for that is to give the students more than one choice in following their way up to the second floor; depending on the direction they want to follow. The stair steps are designed partly as cantilever and partly as slabs. They are cast in place. The steps are covered with terrazo slabs 3 cms thick to look sightly and protect them against abraisi^{ve} forces.

The stair cases get their light from openings which extend from the first landing floor to the ceiling. These strips give the stair cases a distinction from the other units.

D) LIBRARY: The library is a place designed for the storage of books. Its function is to allow these books to be read in a pleasant atmosphere. Thus the library should be centrally located so as to give service equally in all directions of the school building.

Here is how the noted San Francisco Architect, Frank Wynkoop visualizes the new library for the new school.

" The ideal library would be a one storey structure, semidetached and centrally located. It is difficult to explain why certain interiors are pleasing -- why they have what is called atmosphere. It is possible to analyse the reasons, however, and to design atmosphere. The library should be envisioned as a quiet spot for contemplation and study just as it would be in a home. It should provide surroundings in which the mind is instinctively conditioned to respond to the subject matter. The library interior need not be a large and lofty room with tables crowded into regimental rows. Rather, treatment should be intimate and light. Adequate day lighting will insure a light and colorful interior.

For the enrolment of 500 students, a library will accommodate 70 students in a space of 40X80 feet.

Noise reduction treatment should be provided according to the specific noise problems of the school. Sound deadening may be achieved by combining acoustical treatment with thermal insulation.

The floor should be resilient material, preferably a light colored linoleum for ease of maintenance. Doors, wood shelves, and furniture should be of natural wood

with a light stain.

The ideal library may be achieved by utilizing the ideas suggested here, or its particular problems may be solved in another way. Planning, however, should put emphasis on space and more space, as well as simplicity of arrangement and detail."⁽¹⁾

For smaller schools, twenty five square foot per student are more than enough. The library in my school project is to serve the community of Beshmezzin besides serving the students. for this reason, its hours of use are kept till 10 o'clock for all school days and it opens on saturday after noon and Monday before noon of every week.

During day the light is provided thru the windows. At night artificial lighting is used. Semi-indirect lighting is used in the same way it is done in Jafet Memorial Library.

(1) School management, June 1948. Condensed from the Bulletin of school library Association of California.

OFFICES: An office has a greater function than merely a place in which to shuffle papers and coordinate records. True it has that one. But it is a point of contact between the school and its central administration, between the school and parents - and if it is to be good at either of these, it must be a contact between the whole school and each of its parts - each student.

So it must be centrally located in the school and pleasant looking. Its location near the main entrance where all students pass has a good effect on their conduct.

TEACHERS' ROOMS: There is one room which is not generally considered a part of administration, but in a highest sense it is the principal instrument in terms of physical plant of democratic administration. This room is the teachers living room, their place of gathering perhaps for lunch with a kitchen adjoining it.

THE AUDITORIUM: The location of the auditorium with respect to the school building leads to some vital discussions. The function of the auditorium is to give a seating for the whole students body when announcements or lectures are to be done, by the principal of the school. Yet it is impossible to design a space for the whole student body without having it wasted. The secondary school enrollment is about 150 students and the elementary enrollment is 200 students. It is

not practical nor advisable to mix these two parts in one lecture. So the whole student body does not govern the design for the space of the auditorium.

In my project I meant the auditorium to be used for the community around; for this reasons I have it detached from the school building with a main entrance seperate from that of the school.

It is impossible or rather unpractical to design the auditorium to accomodate for the assembly at commencement days. If done its size will be quite big and all the other activities during the year would be done in a so called half empty space. For this reason I kept the area in front of the school and the main road for the commencement day.

The lighting and ventilation are two important problems in the auditorium design. The auditorium is two storey high. Windows are opened at the first floor level and at the second floor level. This gives a nice architectural effect besides giving light and ventilation to the auditorium.

Flat floor has proved of deficient consequence in an auditorium when cinema show is operated. For this reason the floor should be pitched.

The stage in the auditorium is an important item to consider. It should be spacious well oriented and well lighted. It is spacious to affect the attention of the audience and well lighted to give effectiveness.

Acoustical elements should be installed in the au-

ditorium for noise and sounds.

TYPING ROOM: In the high school there arises a new need of typing practice. Many students are unable to afford for their university study after graduation from the high school. The way to make up a living is by being employed in companies or commercial centers. A knowledge of typing is essential for their successful employment.

The characteristics of a typing room are those of a traditional laboratory. These square meters per person are quite adequate. Practice is the only path toward achieving this skill, so a rigid room layout designed primarily for the instructor's convenience is perfectly appropriate. The unique feature of this room is the handling of noise. It almost goes without saying that the ceiling should be treated with acoustical material. For the reason of noise, I kept the typing room in the second floor as far as possible from class rooms.

SHOPS: The new method of developing the student's skill is through hand work. In a high school the wood work shop^{is important}. For this reason, and for the fact that it does not require a high technical man to supervise it, the wood work shop is adopted in my project.

The structure that contains the shop is far from the school. Besides the shop, it comprises the athletic yard and body improvement facilities. It is meant to be far so as it won't interfere with class rooms quietness.

OUT DOOR FACILITIES FOR ACTIVITIES:

During free periods students spend their time outside the school building when the weather permits. Play activities are available for useful time spending. Volley ball, basket-ball and tennis courts are available for the students as well as teachers. Through such activities students gain health, learn cooperation and feel responsibility, such items which are very fundamental for a successful future.

ARRANGEMENT OF ROADS AND FLOWER GARDENS:

The arrangement of roads and flower gardens has a great influence on the esthetics of the school building. Concrete paved roads bordered with flower beds to confine the trading of students are necessary for maintaining the cleanliness of the school as well as the beauty of the landscape. A small pool to water these garden beds is essential.

C H A P T E R VW H E N ?1. WHEN MONEY IS AVAILABLE:

Nothing can be done without the direct or indirect expenditure of money . Money is the potential measure of work or of usefulness of material. It is natural therefore to have the necessary amount of money to undertake the construction of the high school project in BeshmiZzin.

SOURCES OF MONEY FUNDS

a) GOVERNMENT GIFT: Our government is encouraging education by expenditure on schools. In Beshmezzin we have no government school and we do not need one. The money which the government has to spend on education is given to the committee for the school construction project. In this way the Beshmezzin high school will be able to take the place of more than two government schools which lack behind in their educational standard.

b) PERSONAL CONTRIBUTIONS: The present high school is financed by personal contributions from people here and abroad. The feeling of common property helps in securing such material sources for running it. The school is meant for the benefit of the whole community without regard as to religion, political parties or sects. The fact that it is run by a committee elected from an educational club in the village gives it the opportunity of becoming prosperous in a democratic rule. People like to contribute material aid to educational projects. This gives them

in return indirect benefit to their children. The situation that a group of people directs the policy of the school gives the community confidence in the project and helps in increasing their contributions.

The people in our community feel now that the present school building is obsolete and that a new building is needed to accommodate for the necessary physical facilities of their children. Having seen nice comfortable school buildings rising in the different parts of the cities in Lebanon, the people feel they don't lack anything behind in enthusiasm and intelligence and so the natural reaction is to try to contribute for the building project of a high school to include a civic center for the community.

c) PRESENT BUILDING MATERIALS:

The present school building materials as stones, wood and likes can be used again in the new project . They form a relatively big item and helps in saving thousands of pounds. The stone masonry walls can be deplaced very easily since when they were built, no cement mortars was used. Only lime mortar was they available. The wood trusses that support the tiled roof can be used again in forming lumber out of them.

d) MUNICIPALITY HELP. MUNICIPALITIES are allowed to make loans with the government for a certain sum of money ^{depending} on the income of the municipality. There are about twenty municipalities in our community. These can secure about fifty thousand pounds from which they can give about ten thousands for the school

project. This money can be paid back with time as the school progresses and begins to make profit.

e) SPECIAL PARTIES AND BALLS:

Special parties and balls are an effective means for *Collecting* money for projects of public benefit. These can be arranged in cinema halls in Tripoli or Beirut by the many individuals and groups from our community who are well known in these social atmospheres.

f) SPECIAL LOTTERY:

Lottery is a good means of securing funds for such a project. It does not have the attitude as that of asking direct contributions. When people buy lottery tickets they have the idea of possibly having chance to win the prize. This helps in getting more to buy tickets and thus indirectly advance the cause of the school fund.

g) BANK LOANS: ^{NEARLY} All the above mentioned means of building up funds for the construction of the prospective high school building in Beshmezzin have no draw back as to their being repaid. If it were impossible for the committee responsible for this project to collect the necessary amount of money in the various ways mentioned above, and if it were deemed necessary to finish the construction of the project after it has been started and is about to finish, then the only means to secure the money necessary is through a loan with a bank that uses special measures for such loans relating to public utility as a school. The interest is relatively small and the money can be repaid in intervals of times depending on how fast it begins to make *out profit*.

This is a short discussion to indicate the sources for funds to construct the new school building.

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