NEW BUILDINGS
FOR THE
NEW ENGLAND
PEABODY HOME FOR
CRIPPLED CHILDREN

OAK HILL
NEWTON, MASSACHUSETTS

Submitted in partial
fulfillment of the
requirements leading
to the degree of
Bachelor in Architecture
from the Massachusetts
Institute of Technology

May 24, 1954

Signature redacted
Sylvan Limon

Head of Department
31 Baker Circle
Chestnut Hill 67,
Massachusetts
May 24, 1954

Dean Pietro Belluschi
School of Architecture
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Dean Belluschi:

I herewith submit for your approval, in partial fulfillment of the requirements leading to the degree of Bachelor in Architecture from the Massachusetts Institute of Technology, my thesis entitled NEW BUILDINGS FOR THE NEW ENGLAND PEABODY HOME FOR CRIPPLED CHILDREN.

Sincerely,

[Signature redacted]

Sylvan Limon
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I. PROBLEM

To design new buildings for the New England Peabody Home for Crippled Children.

The New England Peabody Home for Crippled Children, 474 Brookline Street, Newton Centre 59, Massachusetts, incorporated in 1894, is a licensed hospital, Commonwealth of Massachusetts, approved by the American College of Surgeons, and the American Medical Association, and is a member of the American Hospital Association and the Massachusetts Hospital Association.

Admission to Home:

Children of normal mentality and residents of New England are accepted, the age limits generally being eighteen months to twelve years.

Main Functions of Home:

"1. To furnish the best possible medical care for the handicapped child who cannot be treated at home or in hospitals where the turnover must be rapid.

"2. To supply educational facilities which will fit the child for a decent and dignified future life.

"3. To keep in mind that this is a home, not a regimented institution.
"4. To maintain the religious life of these children which is so important in the formative years.

"5. To continue to instruct doctors and students in medical care."*1

Training Course:

A one year course in the nursing care of children is offered. The training given prepares young women to care for children in similar institutions or in private homes. Practical nursing procedures are taught, as well as the general care of children. Approximately 12 students take this course each year. These young women are required to live at the Home.

"The third year medical students of Harvard University have obtained instruction in the diagnosis and care of surgical tuberculosis at the Home. Every member of the class goes to the Home for this instruction, which cannot be obtained anywhere else in the City of Boston. This is very important, since bone tuberculosis is on the decline, and they are taught to recognize the rare case in their practice before it is too late."*2
II. BRIEF HISTORY OF THE
NEW ENGLAND PEABODY
HOME FOR CRIPPLED CHILDREN

"In 1894, Mrs. H. M. Peabody, a former superinten-
dent of a children's infirmary, became interested in
the case of a little crippled boy whose feet had been
frozen. She tried to find a Home in which he could be
cared for, but nowhere, except in the almshouse at
Tewksbury, could she find a place for him. This inci-
dent led to the founding of the New England Peabody
Home.

"Mrs. Peabody began to interest her friends in
the need for a Home where destitute crippled children
could be well cared for, educated, and taught to become
self-respecting, economically independent young men
and women. To this end she initiated a money-raising
campaign.

"Mrs. Peabody moved from the state, but not before
awakening the interest of a number of women in her
objective, and left the sum of $210, already collected,
with Mrs. E. B. Kellogg, who became the Founder and the
first Treasurer of the Home.

"On June 2, 1895, the Home was formally opened in
Weston, Massachusetts."
"In 1900, it was moved to Hyde Park, where it remained over twenty years.

"In 1922, through the generosity of Charles F. Wright of Boston, the present building was completed on Oak Hill, Newton Centre. The site was originally the private estate of the late Dr. Henry J. Bigelow, Professor of Surgery in Harvard University.

"Under the inspirational leadership of Dr. Robert W. Lovett, the then internationally known orthopedic surgeon and the Home's first Chief of Staff, the program of curative surgery was inaugurated. This program is still being developed in accordance with Dr. Lovett's precepts."
III. SITE STUDY

Description of Land:

The present land owned by the Home comprises a tract of land over forty acres in extent and covers the top of a hill as well as the east, south and southwest slopes down to the main road. Landscape gardening was one of Dr. Bigelow's hobbies, and he used to boast that on Oak Hill he had every kind of tree which would grow in this climate. As you wander through the grounds, one is struck by the great variety of growing things. From the side of the hill a beautiful panorama of the surrounding lowlands, with the Charles River running through can be seen ending in the hazy forms of the Blue Hills. In the immediate foreground lies the Charles River Country Club, and hidden in the trees is located a group of cemeteries which are far enough away visually so as not to have any adverse psychological effect on the children. Also in the very near vicinity is the site of historic Brook Farm, established in 1840 under Horace Greeley and Albert Brisbone as a socialistic utopian community, which was not a success and was aban-
doned after a few years struggle when a fire destroyed its main buildings. It was supported by most of the prominent literary figures of contemporary New England.

Since the Second World War this historical area has been changing rapidly in appearance. It has grown and is still growing into a large residential area. In the past five years Oak Hill Village, a large low cost housing development has been built in the immediate vicinity, as well as John Hancock Village, a high rent housing project and shopping center.

The existing site, surrounded by woods in the very near past, is now confronted by private single homes on the east, south and west boundaries and there are definite indications for housing on the north side (at the top of the hill) in the very near future. This rapid housing development can be noted by comparing the land coverage today with an aerial photograph taken in April 1951. This rapid housing development has made it necessary to erect three new elementary schools in the area and has caused the erection of a water tower at the very top of Oak Hill with one of its lot lines adjacent to the Home's. The City of Newton has
also taken a 20' right of way from the water tower along the lot line to the North-east corner of the lot which ends in the Redwoods housing development.

Existing Buildings:

Tea and Gift Shop

At the south corner of the 40 acre site, situated at the corner of Brookline and Dedham Streets, is an old wood frame house, which is now used to house the laundry-man and his family as well as two offices used by the subscription department of the Home. The subscription department can be operated in Boston as well as any place else and is, therefore, not a consideration of the new building program. This house was originally a Tea Room and Gift Shop operated by the Home. It is mentioned in the 1937 report of the Home as still being financially successful at that time.

Main Buildings

Half way up the south side of the hill and wrapped around it is the present Home with its main view opening to the south. This building, completed in 1922 was designed
by the late Mr. Coolidge of the former architectural firm of Coolidge, Shepley and Bulfinch, in Boston. It consists of a five story central portion containing student nurses dormitories, medical facilities, superintendent's suite and administration facilities. This five story unit is balanced on one side by a ward for girls and on the other side by a ward for boys. At the end of the boys' ward is an addition containing dormitories for the housekeeping staff on the second floor, a recreation hall on the first floor and the laundry in the basement. The physical therapy department, nurses classroom, children's school and library, kitchen, mechanical equipment, storage, and dining rooms for the personnel are all located on the basement level which opens only to the south. The ramp which originally connected the wards with the basement has been replaced by an electric elevator which serves the five story portion.

The Bigelow House

At the top of the hill is the present nurses home which also contains the men's dorms. This building is a wood frame house, formerly
the residence of Dr. Bigelow. This interesting house cannot be seen from the main roads, being completely hidden by trees. As late as 1937 a farm was still operated on this land.

"Our farm carries on as usual, supplying vegetables, fruit and milk. We are especially proud of our herd of cattle. 48,102 gallons of milk were produced last year -- all that was needed for the entire institution. The old Bigelow House provides living quarters for the farmer's family of seven, two teachers, five attendants and the male employees, nineteen in all. The wisdom of maintaining a farm in connection with an institution of this type is sometimes questioned, but as long as the farm pays its way, and the Bigelow affords the only housing accommodations we have for this considerable number of employees, it seem justifiable to continue the present regime."

The remnants of the farm can be seen in the apple and pear orchards, and in the fields on the side of the hill once used for grazing, enclosed with broken down fences which kept the herd of cattle from roaming.
Purely by accident during my studies in History of Architecture I came across an old picture of a house which proved to be the Bigelow House. It was apparently designed by Henry Hobson Richardson, or at least by his office in 1886. My proposed new buildings requires the removal of this house. Perhaps I can justify this in the eyes of historians who feel strongly on the preservation of such buildings by pointing out that it is not a pure Richardsonian House. It was apparently done when Richardson was so popular that his time was taken up with social-business obligations and his office turned out the houses without his supervision. The old pictures indicate that there has been additions to the original house.

"The house commissioned by Dr. J. H. Bigelow in Newton, also in January [1886], has distinctly Richardsonian qualities of the best sort. The long low massing and the plain shingled wall surfaces, although painted red, are in the best tradition of the wooden houses of the opening years of the decade. But if the general effect is Richardsonian, the more conspicuous
details are not. The roof of the front block of the house is much sharper than Richardson himself ever used on his shingle houses, and the little front turret is a ridiculous imitation in wood of a feature of French chateau architecture. This Richardson would never have executed in his best years, although it is not unlike the turrets on the Cheny addition project and the Oliver Ames House.*5

Site Selection:

The first decision to make was whether I should use the existing site or find another site. I felt that the present tract of land offered too much to give up and I, therefore, have chosen to use it for my new buildings.

Next, the problem involves locating the new buildings so as to utilize the existing site to its fullest as well as building in an area which will not conflict with operation of the existing home. After studying the various aspects of the forty acres, I have chosen an area at the top of the hill in an open field surrounded by trees and shrubs just to the south-west of the present Bigelow House. This location is above the present Home and
the normal operation of the Home will not be disturbed during construction. My decision for using the land owned by the Home and the specific area at the top of the hill is based on the following considerations:

1. **Location and Accessibility**

The present site is situated between U. S. Route 1 (Veterans of Foreign Wars' Parkway) to the south, Massachusetts Route 9 (Worcester Turnpike) to the north, the West Roxbury Parkway to the east, and Massachusetts Route 128 to the west and is, therefore, easily reached by car through Brookline and Dedham Streets. These two streets, which form one corner of the 40 acre lot have become important thoroughfares connecting with the main highways especially because of the increased housing development in the area. The specific area I have chosen at the top of the hill is far enough away from these streets to take care of any future noisy traffic conditions which may develop. At the present time a bus line, running from Newton Centre to Oak Hill Village,
passes by the site along Dedham Street. This in turn connects with bus lines to the Cleveland Circle and the Lake Street Stations of the Metropolitan Transit Authority. Busses running from Boston along the Worcester Turnpike cross the Oak Hill, Newton Centre line. Therefore, the present land is accessible by public transportation facilities. With the still increasing housing development in the area, it can be assumed that local bus service will probably be increased in the future.

The site is also convenient to Harvard Medical School, The Boston Children’s Hospital and other medical facilities in Boston.

Fire fighting facilities are located very conveniently on Dedham Street, opposite the existing site.

The present road system on the site consists of a picturesque winding road which is entered on Brookline Street and ends at the top of the hill. A study of the contours indicates that this is about the
best way to reach the top of the hill which rises from 140 feet above sea level to 290 feet above sea level, a difference of 150 feet. There is a possibility of entering the site from the future road system which will serve the future private homes on the north side of the hill. However, this would merely necessitate the climbing of the opposite side of the hill by cars, and since that road system is not directly connected with the main roads it would cause a great deal of confusion in finding the Home. The existing road is very scenic as it winds up the hill through the trees. The Home has its own snow plow and there seems to have been no trouble in going up the road in the past. Visiting hours are from 2:30 to 3:30 every Saturday afternoon. Other than this time the traffic up the hill is very light.

The surrounding of the existing site by private homes indicates that the new buildings should be placed in the middle of the site so as to provide an equal
buffer zone on all sides of the Home. Other site conditions, however, overrule this factor and make it more advantageous to place the buildings at the top of the hill.

2. Nuisances
There are no areas in the vicinity which will cause any objectionable noise, smoke, dust or odors. Any mosquitoes breeding in the swamp lands around the Charles River, which can be seen from the hill are far enough away so as not to be a nuisance. Also the breezes which usually prevail at the top of the hill will keep the air clean. As I have already noted, the cemeteries are far enough away so as not to bother the children.

3. Public Utilities
All the necessary utilities such as water, sanitary and storm sewers, electric power, gas service and telephone service are all available. This service is increasing with the growth of housing as can be seen by the water tower erected at the top of the
hill to supply enough water pressure to the Home and the houses in the area.

4. **Topography**

Building on the highest part of the hill is best as far as natural drainage is concerned. Also the problem of pressure against the foundations of the buildings is minimized. This is a very important problem in the existing Home which seemingly holds back the upper half of the hill, requiring very thick foundation walls, which have to be inspected frequently.

I have placed my buildings in an area free from trees which will make the necessary grading easier. It is also a relatively flat area as compared with the rest of the site and will enable me to provide a flat playground area as well as a plan which allows children confined to wheels to reach the various parts of the Home horizontally under their own power.

5. **Dimensions of Site**

The 4.0 plus acres provides enough land
to take care of future unforseen developments as well as providing scenic interest and a buffer zone from traffic.

6. Orientation
The orientation is perfect since the site occupies the east, south and west slopes of the hill enabling me to get a maximum of sunshine and the prevailing south-west summer breezes by the careful placement of the buildings.

7. Cost
The site appears to meet all the necessary requirements and since I am using the land already owned by the Home, there is no cost involved. Because of the density of the area surrounding Boston it would probably be time consuming and expensive to locate and purchase a site so near and convenient to the metropolitan area and offering the advantages of the present land.
IV. BUILDING PROGRAM

I have based the building requirements on the present facilities, the various research materials available, and my discussions with the present staff of the Home. At the present time there is no definite program of building requirements available. The present buildings are undergoing extensive remodeling and a survey has been started to determine the exact needs of the community in the future for this type of Home as to the types of orthopedic diseases most prevalent and the number of children to be cared for. It must be understood that the situation changes quite rapidly due to epidemics, such as Infantile Paralysis, plus research in the field of orthopedics with the decrease of some diseases, as bone tuberculosis and appearance of others. At the present time it is felt, without the benefit of any recent statistics, that facilities for about 48 children should be provided in a new Home.

The over-all project includes the design of the buildings for the home plus housing for the nurses, female employees and male employees. Due to the time limit of this thesis, I have designed the buildings for the Home itself and have only indicated the placement of the personnel dormitories in relation to the new Home.
Space Requirements:

Rooms and Approximate areas in square feet

A. **NURSING UNIT = 11,500 square feet**
   - beds and locker space for 24 boys: 2500
   - beds and locker space for 24 girls: 2500
   - 2 isolation rooms: 300
   - living, playing, studying and dining room: 4000
   - bathrooms (children): 800
   - treatment room (boys): 200
   - treatment room (girls): 200
   - utility room (boys): 400
   - utility room (girls): 400
   - storage space and nurses station: 200

B. **DIAGNOSTIC, THERAPEUTIC AND TREATMENT FACILITIES = 3,100 square feet**
   - physical therapy department: 1000
   - X-ray department: 1000
   - laboratory: 300
   - examining room: 400
   - dental suite: 400

C. **OPERATING DEPARTMENT = 800 square feet**
   - operating room: 400
   - srub up room: 150
   - sterilizing and work room: 250
D. ADMINISTRATION = 2,550 square feet
   lobby and waiting and exhibition 800
   business office 300
   medical record room 200
   superintendent's office 300
   assistant superintendent's office 200
   staff lounge, library and conference room 600
   public toilets 150

E. SERVICE = 1,200 square feet
   central storage 1000
   receiving area 200

F. DIETARY = 3,000 square feet
   kitchen and bakery 1200
   day storage 200
   dietician's office 100
   dishwashing 300
   dining rooms 1200

G. GARAGE = 1,250 square feet
   truck 250
   station wagon 250
   sedan 250
   tractor 250
   power mower 250
H. PARKING AREA = 16,000 square feet
   approximately 50 cars

I. HOUSEKEEPING = 1,600 square feet
   laundry
   central linen room
   soiled linen room

J. MECHANICAL = 1,149 square feet
   boiler and pump room
   maintenance shop

K. EMPLOYEES = 850 square feet
   part time nurses' locker room
   male employees' locker room
   female employees' locker room

L. NURSES' TEACHING FACILITIES = 600 square feet
   1 classroom (12 students)

M. CHILDREN'S TEACHING FACILITIES = 2,000 square feet
   2 classrooms
   1 shop
   1 library

N. RECREATION = 6,000 square feet
   assembly area
   outside play area
0. PERSONNEL HOUSING = 10,000 square feet
   superintendent's suite
   dormitories for 35 females
   dormitories for 5 males
V. OPERATION OF HOME

There are no doctors located permanently at the Home. It is run by the nursing staff under the direction of the Superintendent of Nurses. The active staff of doctors meets once each month, or whenever needed. Operations, physical examinations and dental care of the children is attended to by doctors who visit the home at specified periods or whenever needed. A list of the employees of the home gives a good indication as to what activities take place there. This list does not include the board of trustees, the active staff of 10 doctors, and the advisory, associate and consulting staff of 27 additional doctors.

PROFESSIONAL

supervisory 6
staff nurses 5
attendants 4
student attendants 12
social worker 1
laboratory technician and secretary 1
accountant 1
physical therapists 2
X-ray technician 1

SUBSCRIPTION DEPARTMENT 2
<table>
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<tr>
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<tr>
<td>HOUSEKEEPING DEPARTMENT</td>
<td>housekeeper</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>chambermaids</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>housemen</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>seamstress</td>
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<tr>
<td>OPERATION OF PLANT</td>
<td>general maintenance</td>
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</tr>
<tr>
<td></td>
<td>handyman</td>
<td>1</td>
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<tr>
<td>LAUNDRY DEPARTMENT</td>
<td>laundry man</td>
<td>1</td>
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<tr>
<td></td>
<td>laundresses</td>
<td>2</td>
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<tr>
<td>DIETARY DEPARTMENT</td>
<td>dietician</td>
<td>1</td>
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<tr>
<td></td>
<td>assistant dietician</td>
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<td></td>
<td>cooks</td>
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<tr>
<td></td>
<td>pantrywoman</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>waitress</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>dishwasher</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>kitchen man</td>
<td>1</td>
</tr>
<tr>
<td>TEACHING DEPARTMENT</td>
<td>teachers</td>
<td>4</td>
</tr>
</tbody>
</table>
Daily Schedule:

The daily schedule of the Home is an early-to-bed, early-to-rise one as follows:

Breakfast 7:00 A.M.
School 8:30 A.M. → 10:45 P.M.
Dinner 11:00 A.M.
Staff eats in two shifts: 12:00 Noon and 12:30 P.M.

Rest Hour:

pre-school children 12:00 Noon → 2:00 P.M.
school children 12:00 Noon → 1:00 P.M.
school 1:00 P.M. → 3:00 P.M.
free time 3:00 P.M. → 4:00 P.M.
supper 4:00 P.M. → 4:30 P.M.
nursing care 4:30 P.M. → 5:30 P.M.
younger ones in bed 5:30 P.M.
wards close 6:30 P.M.
milk for older children 7:00 P.M.
older children in bed 8:30 P.M.

Schooling is required by state law to be given all children up to the age of 16. The City of Newton is responsible for providing teachers for the school.

Families of children are charged according to their ability to pay. Nobody pays full price which is about $12. per child per day.
One afternoon each week, religious training is given to each child, according to his faith by religious groups in the community.
VI. PHILOSOPHY

When the subject of crippled children living in a special home comes up, one is usually overcome with a feeling of sadness and pity for such children and thanks his lucky stars that he himself is "normal" and does not have to go through such a monotonous dull life unable to have any fun or do any useful work. When first starting out on this project, I think my attitude towards crippled children was along this very line of thought. The visits I have made to the New England Peabody Home, my talks with the staff and my time spent with the children has changed my first attitude completely. It is quite inspiring to talk with and observe these children, and find out that they are as "normal" as any child who is not afflicted with physical handicaps. When I compared the crippled children with children I have worked and played with as a counselor at a boys' camp a few years ago, I was overly impressed with their same attitudes towards life except that the crippled child has an extra desire, which is to overcome his physical handicap.

As I wandered around the Home one Saturday afternoon, I found that the children were very glad at the opportunity to talk with a new personality, namely myself, and were eager to tell me all about themselves as well as
finding out all about me. I learned of their feelings towards school. They were quite surprised when I tried to tell them how much I liked school. They complained about the food (no reflection on the Home) as much as I complain about commons meals in the dormitory and they related (in strictest confidence) all the pet names they had given the nurses.

One rather heavy young man who was being pushed around in his wheel chair by a friend, took a turn too fast and toppled over, wheel chair and all. I quickly picked him up and straightened his wheel chair. The boys thanked me with sighs of relief for doing so before the nurse caught them, and proceeded undaunted in their activity. This incident I might add established me as their friend, and in my later visits these boys were very helpful in supplying various bits of information. These incidents are just a few which I hope will show that these children are very much like other children without physical handicaps.

The children at the Home were also proud to show their progress in overcoming their physical handicaps. One boy gave me a demonstration of how he used to walk when he first entered the Home and then he showed how he could walk today. Quite an improvement. I have observed that the children are just as restless, if not
more so as a "normal" child who is forced to stay indoors on a rainy day. For this reasons, as well as others I have provided a large enclosed space where the children can move around freely and release some of their excess energy.

During a weekday I watched the physical therapist as she exercised some children. The children are taken out of school or wherever they happen to be when their turn comes to be treated. After having exercised one boy's legs she strapped crutches on him and had him walk along the corridor, towards the elevator. Even though he could barely lift his legs, he tried hard and did very well. Just at this time, the morning school session had ended, and a group of children were coming down the corridor on their way back to the wards to eat dinner. When they reached the point where this boy was exercising, a traffic jam developed involving wheel carts, wheelchairs, children, teachers and crutches which only untangled after some backing up and waiting. This incident was accepted by those involved as a necessary evil but it has led me to use wide corridors throughout my plan.

I have also observed the difficulty children in wheelchairs have in going over a very slight ramp or bump. The ramp in the original design of the present
buildings was removed in favor of an electric elevator partly because of the difficulty of pushing children in wheeled vehicles up, and down ramps. An elevator is much safer, faster and easier on the nurses. Because of this I have arranged my buildings so that children confined to wheels are able to reach all points on level, and by their own power in the case of wheelchairs. The ramps in my scheme are used only by children who are able to walk up them by themselves.

The average stay of the children in the Home at the present time is approximately four years. The necessity for this type of home arises from the fact that "an orthopedic operation may take but an hour or two, but convalescence, adjustment, healing, and re-education of muscles, etc., may take years. It would be unjust to other children needing active surgical intervention to have the beds taken up in the acute hospitals by children who have already been operated on. Yet this takes place all over the country every day because of lack of suitable convalescent centers. The care of such children is not merely a problem of creating a romantic dreamland environment in the country, it is the medical progress of these children which is the most important consideration. This involves therapeutic facilities peculiar to their needs. At the same time
it would be short sighted to let the children merely vegetate while convalescing as is frequently the case with convalescent adults. The children must at the same time, go through all the activities and processes that add up to growing up into healthful, useful adulthood. This means eating, sleeping, resting, playing, working, studying, experiencing, etc; all under physical handicaps to be sure, but all calculated to produce happy useful citizens."

The following excerpts are two of many resolutions adopted by the international conference on the Educational Problems of Orthopedically Handicapped Children, which convened in Geneva Switzerland in February of 1950 under the auspices and in co-operation with UNESCO.

"5. Specialized institutions will better fulfill their role if they are organized on a family pattern.

"6. The education of the handicapped child must be undertaken in very close co-operation with the family, and by associating family institution and school in a joint effort through the appropriate social and public health channels."*

I have tried in my design to help these ideas to work by the arrangement of the wards and living facilities
and by providing an area where parents and staff can meet conveniently. This space is used as an indoor playground and for activities such as carnivals, entertainment, and scouts which give the handicapped children a chance to participate in the normal childhood activities.

My over-all approach to this problem has been to give the handicapped children a chance to live as closely as possible in the same manner as other children, and to give them an opportunity to encounter the same problems and experiences. This will prepare them to go out into the world after their stay at the Home with a minimum of adjustment to the different conditions.
VII. BUILDING SCHEME

Taking into account all of the various factors I have arrived at the following scheme for the Home. (See Figure 1) Basically there are three buildings, a "living" building, a service building, and an educational building. The "living" building contains the sleeping, eating and playing facilities for the children. The service building contains the kitchen, laundry, mechanical equipment, storage rooms and the receiving department on the first level; the lobby, administration section, nurses and employees lockers and dining on the second level; all the medical facilities such as the operating room, dental room, X-ray room, physical examination room and nurses' classroom are located on the third level. The educational building is one story high and consists of two classrooms, a library, a shop, and the physical therapy area.

Children who are able to walk live in the first level of the "living" building and reach the school by the use of a ramp. Children confined to wheelchairs or beds are located on the second level of the "living" building and can reach the school which is at the same level. All children use the elevator in the service building to reach the medical facilities. This is justifiable because they use this floor only when doc-
Figure 1
tors come to give physical exams and dental treatment, etc., or when X-rays are taken or an operation is performed. It is not used daily by the children as is the school.

The administration level of the service building is connected by an enclosed passageway with the education building. The multi-purpose space is entered off of this passageway and is used by visitors, staff and children.

This scheme eliminates the use of ramps for wheel patients and allows the children in wheelchairs to reach the school or multi-purpose room under their own power as well as giving those who can walk the opportunity to go up ramps or stairs in order to simulate normal conditions.

In a further effort to give the children a normal atmosphere rather than placing them in a secluded world of their own, I have allowed the service road and the main road to circle the buildings so the children can see cars, milk trucks, food trucks, fuel trucks, etc., as they approach the Home. This will also help break the monotony, especially for those children who are confined to beds. It is also advantageous from the standpoint of allowing fire apparatus to approach the buildings from all sides.
VIII. STRUCTURE

Although the City of Newton does not specify fire-proof buildings for hospitals three stories high or less, it is a desirable feature in a home for crippled children. The structural system consists of ribbed concrete slabs on fireproof lally columns. Preliminary calculations indicate 8" thick slabs on 6" diameter lally columns.

Because of the nature of the multi-purpose space, I have employed a Fuller Geodesic Dome using aluminum members in order to provide a non-combustible, light structure.
IX. HEATING AND VENTILATING

I have chosen radiant heating as the basic system coupled with a separate ventilating system. Ceiling panels, which produce the most even temperature gradient from the floor to the ceiling than either wall or floor panels, will be formed of copper tubing incorporated in the bottom of the concrete slabs.

The use of a panel heating system offers the following advantages in relation to a home for crippled children.

1. The heating elements are out of sight and do not interfere with any furniture placement, or wheelchairs.

2. There is no possibility of children getting into trouble by tampering with the system.

3. In case it is decided to change the sizes of the wards or classrooms, partitions can be removed or added without any changes in the heating system.

4. Heating panels provide warmer floors than any other system.

5. Air currents within panel heated rooms are of lower velocity than in rooms heated by conventional means with the result that dust particles to which disease-producing organisms may be attached can settle more rapidly. In
an institution where children are living in
groups, it is important to minimize the
chance of colds and common children's diseases
from spreading.

6. Heating elements can be used for radiant
cooling where warm weather relative humidities
are low.

7. Use of large ceiling panels operated at low
temperatures eliminate dust-collecting
heating elements as well as eliminating dust
streaking on walls.

There are two disadvantages associated with panel
heating:

1. The control of the room temperature in rela-
tion to changes in outside temperature is
often a problem. Due to the thermal inertia
of large panels, it takes time to heat them
up and cool them down. However in a home of
this type, there is a definite daily schedule
of activities so that it is known at what
time a lower temperature is desired for sleep-
ing conditions etc. Using this information
with control elements actuated by outside conditions,
a satisfactory control can be established.
2. Panel heating offers no ventilation (as is the case with most other systems) and it is, therefore, advisable to use a separate ventilating system, especially where groups of people gather in one room.

Air conditioning is only required in the operating suite. It is also used only a few times each month. A unit air conditioner fits this situation best.
X. POWER EQUIPMENT

All electrical conduits can be placed in the concrete slabs, which will minimize accidents from children playing with wires.

Sterilization, cooking, laundering and emergency generation of electricity require a high pressure boiler. It is necessary to install two high pressure boilers, one for heating and the other for sterilization, cooking and laundering. In the case of mechanical breakdown of one boiler, the other should have the capacity to substitute temporarily for all these services.
XI. MATERIALS

Corridor ceilings and playrooms shall be treated acoustically for noise control.

Classrooms shall be treated acoustically to provide good hearing conditions.

Exterior walls shall consist of two sheets of glass with a sealed air space, where windows are indicated. This will prevent condensation on the interior surface, eliminate the use of any type of storm window, and will provide a good heat insulated wall section which will enable the radiant heating to be easily controlled.

All exterior panels shall be 2-inch thick colored porcelain enameled steel with honeycomb core filled with insulation.

Ceilings in all rooms where no acoustical tiles are needed, shall be finished in white plaster for better reflectance of lights.

General lighting shall be of the indirect variety and all fixtures in children's rooms shall be fixed so as not to interfere with wheelchairs, etc.

Interior partitions shall be 4-inch thick gypsum tile blocks plastered on both sides and painted in light colors.
Strips of wall surfaces in the wards shall be finished with a corkboard panel surface instead of plaster to provide space for posting drawings, pictures, etc.

All exterior walls where masonry is indicated shall be of Gonick Harvard Antique Waterstruck Brick on 1½-inch gypsum tile backing.

Floor surfaces shall in most cases be of asphalt tile, the colors varying with the color scheme of the specific room.

The operating room shall have a terrazzo floor with a grid of brass strips six inches apart, brazed together and grounded to a water pipe. This is to conduct static electricity away before it has a chance to accumulate and cause an explosion with various gases used in this room.
FOOTNOTES


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