

School Housing for physically handicapped children

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Foreword

SCHOOL SYSTEMS, as never before, are attempting to provide for physically handicapped children. Much has been accomplished, but an even larger task is still before us. Thousands of such children are not yet able to take advantage of their birthright—the opportunity for education. There are numerous reasons for this, one of which is lack of facilities in the physical plant of many school buildings. In addition to the problem of children not in school is that of other children whom schools are not serving adequately. It is, therefore, important for leaders in education to think about the kinds of buildings and classrooms which will be most suitable for children. The best time to do this planning is before the building has been constructed, but much can be done to remodel and recondition old buildings. Ideal building facilities do not always insure a good school program, but other things being equal, they contribute much toward educational opportunity.

Obviously, no bulletin of this size could give an exhaustive treatment of this subject. These pages will include some guiding principles and suggestions and sources of information. It is hoped that this publication will be helpful to school systems planning special day schools, centers, or units in regular schools, single multigrade classes, or on the other hand for adjustments for handicapped pupils who are able, with assistance, to progress in regular classes.

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Courtesy, Newark, N. J., Public Schools

Area for play and recreation is a must for children with physical handicaps.

VI

School Housing— for physically handicapped children

MANY PHYSICALLY handicapped children in the United States are not in schools simply because special schools or classes or special facilities in regular classes are not available to them in their home districts. Some who could attend day schools if special classes or services were available are receiving instruction at home, a plan which should be used only as a last resort for, at best, it is a limited kind of school experience. Some boys and girls are in hospitals where little or no schooling is provided. Thousands of other children with physical limitations are in regular schools that are not equipped to provide them with the special services they need if they are to develop in accordance with their capacities. Lack of adequate and suitable *school housing* is one of the reasons that this condition exists.

NEED FOR MORE ADEQUATE SCHOOL PROVISIONS

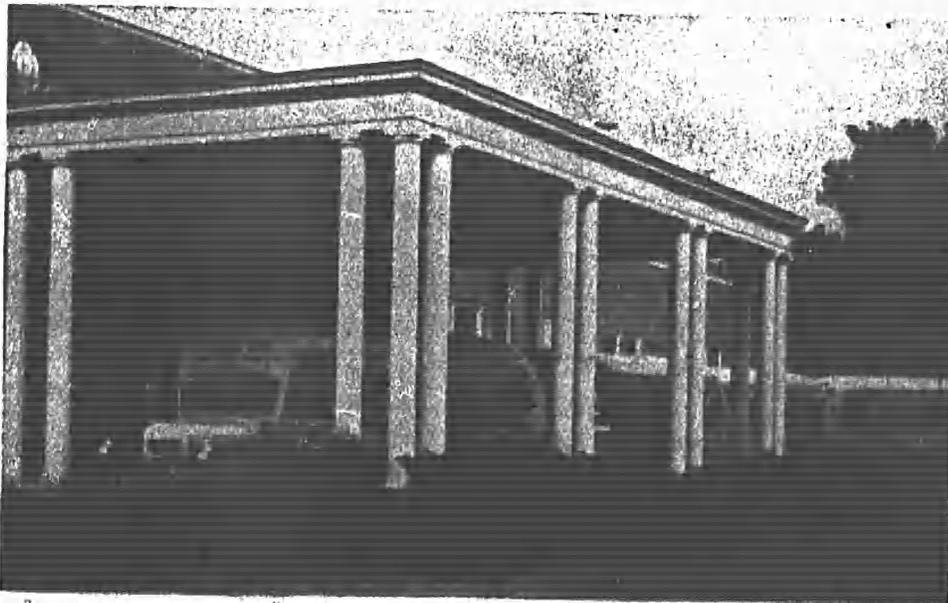
Education of physically handicapped children in the United States is a part of the broad program for the education of exceptional children. The term "exceptional" includes the various types of physically handicapped, the socially handicapped and emotionally disturbed, the mentally handicapped, and the mentally gifted. It has been conservatively estimated that in the United States there are between 4,000,000 and 5,000,000 children of school age who are so exceptional as to need some special adjustment in their school programs, one of which is school housing, if they are to attain optimum development. According to 1947-48 statistics (covering both day and residential schools) compiled by the Office of Education, only 10 to 15 percent of the number of exceptional children

estimated to be in need of special education are receiving the attention they should have.

This bulletin is concerned with school housing for physically handicapped children¹—the group which constitutes approximately half of the exceptional children. While a few communities have provided model buildings or classrooms—beautiful and well equipped for physically handicapped children—by far the larger number of school districts do not have classrooms or other school plant facilities to serve handicapped children adequately.

In new buildings and in remodeled old ones, provision should be made to meet the needs of handicapped children. It is perhaps even more necessary to provide appropriate school housing for handicapped children than for so-called normal children. The presence or absence of needed facilities in a classroom or school building may be so significant as to determine whether or not a child with a serious handicap will be enrolled in or excluded from the school. Some limitation in the school plant may, for example, become the actual reason for assignment to home instruction rather than to a special class. Many children with vision and hearing impairments both in the elementary grades and in the high school are in schoolrooms where the seeing conditions and the acoustic properties are not adequate for their needs. Under such circumstances, they cannot make optimum use of the vision or hearing they have.

¹ Physically handicapped are: Crippled by such conditions as infantile paralysis, cerebral palsy, or accident; blind or partially seeing; deaf or hard-of-hearing; cardiopathic; speech-defective; or handicapped by health conditions, such as epilepsy, diabetes, tuberculosis, and malnutrition.



Courtesy, Kansas City, Mo., Public Schools

The carriage porch provides protection from weather as children enter and leave school.

While the more seriously handicapped children need special classes, a much larger number of handicapped children of all ages could be in regular classrooms if the schools generally had the special housing features to accommodate them. Many pupils of high-school age, for example, have improved physically or they have equipped themselves with special abilities such as lip reading or Braille so they could attend regular high schools with certain assistance.

States Help Meet The Need

Under present legislation, many State departments of education can allocate funds to aid local school systems in providing needed facilities for exceptional children in local school districts. Residential schools which constitute an essential part of the special education program serve some of these children. This bulletin is written with the day school program in mind, but many of the ideas and suggestions apply to the education of children in residential schools. Nothing, of course, will be said concerning dormitory or custodial provisions.

The need for a good instructional program is the same wherever the children are: in day schools or in residential schools. The total environment of the school in either case should contribute, not only to the intellectual development, but also to the physical, social, emotional, and personal well-being of each child. Insofar as these goals of education are concerned, they are again the same no matter where or how the child is educated. However, as effort is being made increasingly to serve *every* educable child, much of the load must be carried by the local schools. As the States and local communities enlarge their programs of special education, more and more attention will undoubtedly be given to the features of local school buildings which make them functional for handicapped children. This leads to the question: How can these specialized building requirements be determined? The answer will depend upon both the *need of children* and the *resources of the community*. Whether provisions are to be made for hundreds of children or for 10 children or perhaps even for 2 or 3 children, both the needs of children and the resources of the community must be considered. The school building needs of exceptional children *cannot* and *should not* be met in just one way. Each community must decide how it can most effectively organize classes and special services for children with handicaps.

Large cities have many handicapped children to plan for. Several of these cities maintain special schools solely for such children; others provide centers in regular schools, usually in elementary schools.

For small cities and towns with limited numbers of such boys and girls, the large special school is not the answer to the problem. The center of special classes or the single multigrade class seem to be meeting with increasing favor in such communities. Needs of children are as

great in sparsely populated areas as in the cities. To what extent and in what manner these conditions can be met are matters that each community must determine.

Some educators today believe that all classrooms for exceptional children should be in a regular school. Some people advocate this arrangement whether one or more special classes are involved. In cities and in thickly populated areas, a choice must be made as to the type of organization which will be most effective in each community. The plan should be adopted which will give children the opportunity for the best possible all-round development.

A few communities will be fortunate enough to have funds to construct new buildings or centers in buildings ideally planned to provide classrooms and special services, such as space for speech training, physical therapy, clinical care, rest and lunchrooms. In many communities, however, school administrators will think in terms of remodeling and reconditioning old buildings and classrooms. No administrator should be discouraged if he is unable to build a new building either partly or entirely for handicapped children. Children can still be served in rooms or buildings of regular schools especially if these are adequately reconditioned.

Teamwork In Planning

When a new school building is to be erected or when an old one is to be reconditioned, those who are to use the quarters should help in the planning. Because of the specialized services to be rendered in schools, centers, or classes for handicapped children, group planning is especially valuable. Many mistakes can be avoided, and the facilities can be made more functional when school administrators, teachers, physicians, school board members, parents, and architects sit down together and discuss the activities that are to go on in the rooms.

The architect makes the final plans, but he can design a more satisfactory school plant if he confers not only with school administrators, but also with classroom teachers, physicians, therapists, attendants, and other personnel regularly employed in the organization. All of these people can help him visualize the kinds of special activities that will go on in the school. They can indicate something about general space requirements. They can also help the architect decide where to put special features, such as storage space, electrical outlets, and rooms for special services. For example, an architect without advice might be uncertain as to where he should place the physical therapy room in a school or center for crippled children. Teachers and therapists can help him decide. They will know where the children will be most of the time, what passages they will travel most often, how many professional people, attendants, or volunteers will be on duty to assist the children.

Before a large investment is made in special school housing or in remodeling, representatives of the school system would profit by visiting various schools to see how special education is provided in other communities. With this kind of experience and with a thorough knowledge of the needs of children and the resources of their own community, they will then be in a position to make wise plans and practical decisions for school buildings and classrooms.

PROVISIONS FOR CHILDREN WITH CRIPPLING CONDITIONS

Many crippled children are able to make satisfactory adjustments in regular schools. Some, however, can only take advantage of the opportunity for education if special classes are available to them. For the crippled child, the special day school class or the special school is very often the step between the hospital on the one hand and the regular school on the other. Probably just as often it is the step between the convalescent home or home instruction and the regular class. For this reason, the special school or class incorporates features of the hospital and convalescent home as well as features of a regular day school.

NEEDS VARY

It is somewhat difficult to describe definitely what crippled children as a group will need in either a school program or in school housing, for their problems differ one from another. Crippling conditions result from a wide array of causes and affect children in many ways. To illustrate, one child may be crippled in arms but not in legs; another is handicapped in legs and is on crutches; one has disability in the hands and cannot write; and still another has disability in both legs and arms and is confined to a wheelchair. To complicate matters still further, some crippling conditions will be of long duration, while others will be very brief; some will be severe, while others are mild; still others will have a favorable prognosis as against an unfavorable prognosis for others.

To meet the needs, many communities have established special classes for crippled children in various ways. In the United States, these special classes are housed in (1) special buildings for crippled; (2) special buildings for children with various kinds of physical handicaps; (3) centers or units for crippled children in the regular schools; and (4) single multigrade classes for crippled. Crippled children may also be educated in hospital classes, in convalescent home classes, in sanatoria, occasionally in residence schools, or when no other plan is possible in their own homes. This section of the bulletin deals only with day school provisions.

Crippled children need a variety of services and make the best educational progress if the school system is organized so that children can move freely from one type of class to another, depending upon the current needs of each boy or girl. To illustrate, it is possible for a single crippled child during the normal 12 years of schooling to be enrolled in a hospital class, a convalescent home class, a special school for crippled, a class for crippled children in a regular school, or home instruction. If he is cerebral-palsied, he might also spend a period of time in a residential school for diagnosis and intensive training. Wherever the child is, opportunity for education should be available to him; this means the building, as well as the instructional program, should be adjusted to his needs.

Safety and Comfort

A building or classroom for crippled children should have features which help the children develop feelings of security and encourage free physical activity with a minimum of help from attendants and teachers. Features in the physical plant which should help children attain such feelings of security are ramps, elevators, handrails, sturdy equipment, wide hallways, spacious classrooms, and adequate lighting. To be avoided are swinging doors, slippery floors, thresholds in doorways, light and easily overturned equipment, sharp corners, and uneven projections.

Types of School Organization

Quite often, a lay person or an educator will ask what is the best kind of day school organization for the crippled child. No one pattern of organization can be followed by all communities. Each community should make the plan or plans which will insure a high quality of service to all its children. It is obvious that large special schools or large centers are possible only in the cities. Smaller school systems will think in terms of small units or classes which might form a center or even a single class which would perhaps serve one or more school districts—or perhaps even a whole county.

The regular day school classes serve large numbers of crippled children, mainly those with lesser handicaps, many of whom need some form of special service. Often the regular schools could provide for larger numbers of these children if they were equipped with elevators, ramps, suitable entranceways, facilities for rest, physical therapy, and special guidance.

For some children, however, day schooling is possible only in special classes. Some communities provide for these children through specialized schools such as the R. J. Delano School in Kansas City, Mo.; the Charles Boettcher School in Denver, Colo.; the Sunbeam School in Cleveland, Ohio; the A. Henry Moore School in Jersey City, N. J.; and the Sunshine School in San Francisco, Calif. Some cities provide by arranging units

or centers in regular schools, a plan that is meeting with favor in many communities; still other public-school systems meet the needs of crippled children by providing one class in a school. Throughout the United States, many small cities and county school systems make provisions through small centers and single multigrade classes. In most of these schools and in many of the centers in regular schools, physical therapy under proper medical supervision is provided; some schools also have occupational therapy. Under an ideal plan, even in one-classroom units, there should also be at least one other room for physical therapy.



Courtesy, Wisconsin Department of Public Instruction

In schools, parallel walking bars occupy a portion of the area in physical therapy rooms.

Special Features

A special school should be equipped to function in a genuinely special way. Its very existence can be justified only if constructed to accommodate the severely handicapped who cannot get the services they need in a regular class. It should include: Space for instruction, medical and health services, physical therapy (and perhaps occupational therapy), speech training, rest facilities, and equipment for noonday lunches. It should have easily accessible lavatory and toilet facilities, ramps, handrails, wide hallways, and functional entrances.

When school buildings are being planned or remodeled for crippled children, some of the general school housing features call for unusual attention. For example, most crippled children come to school in a bus, which means that arrangement should be made for the unloading of children at the building. Some schools are so constructed that the floor of the bus is flush with the floor of the building at the point of loading and unloading. Some schools are constructed so that the busses drive under a "carriage porch" such as is shown on page 2. Such covered entranceways allow children to be unloaded without exposing them to inclement weather. This feature is needed more in climates where ice and sleet make an exposed slippery floor or ramp a serious hazard.

Special schools for crippled children are quite often of single-story design. Centers and single classes in regular school buildings are usually located on the ground floor. Whenever it is necessary for children to go from one floor to another, there should be elevators or ramps. Elevators should be large and should be equipped with handrails. They will be required to carry not only children, but also wheelchairs and perhaps carts or other cumbersome equipment. For example, the A. Harry Moore School in Jersey City is a 5-story building, but it is equipped with 3 large elevators.

Doors should be wide enough to accommodate children on crutches, in wheelchairs, wagons, and large pieces of equipment. One authority states that all doorways should be at least 6 inches wider than usual; another specifies 54-inch doorways.

To add to feelings of safety and security and encourage movement and self-help, handrails should be placed wherever the children go. Double handrails should be in hallways, around the walls or ramps, drinking fountains, entrances to stages, lavatories, and toilets. The Illinois State Department of Public Instruction suggests that the lower handrail be placed at 28 inches from the floor. One school in California which serves only cerebral-palsied children, but which includes a nursery school, recommends that handrails be placed at 18 and 30 inches from the floor. Rails should be one or one and one-half inches in diameter. Usually

they project from the wall, but some newer types are built into the walls. Handrails should be continuous or terminate by returning into the wall.

Classrooms

Classrooms should be large enough to accommodate wheelchairs, relaxation chairs, special tables, crutches, and other cumbersome but necessary equipment. A spacious room, furthermore, fosters feelings of security and freedom which in turn encourage physical activity, a very important part of the medical and health program for crippled children. The classroom for crippled children should probably be at least one and a half times as large as that for normal children even though the pupil-teacher ratio is lower. Classrooms in the California State School for Cerebral-Palsied Children are 30' x 40' except the nursery school classroom which is 30' x 50'. These dimensions do not include storage or bathroom space.



Courtesy, Chicago Public Schools

A classroom would need to be large enough to allow for furniture such as this large cut-out table—a type of equipment often used for cerebral-palsied children.

Physical Therapy Quarters

The therapy quarters are a matter of concern to school architects. These quarters house the treatment activities of the program which are, of course, under medical supervision. In many respects, these quarters are designed more like hospital or clinical rooms than like the usual schoolrooms. Service may in some schools be limited to one room, or it may consist of a suite of rooms, depending upon the number of children to be served and the nature of the program. Equipment for such a room should be prescribed by the medical staff in charge. The architect will need advice from the medical staff when he is planning physical therapy rooms. Most equipment will be acquired gradually. Some small cen-



Courtesy, Ontario Society for Crippled Children, Toronto, Canada

Stall bars are a standard piece of equipment in most physical therapy rooms.

ters have started units with only these three pieces of equipment in the physical therapy room: a set of parallel walking bars, a posture mirror, and a treatment table. Space should, however, be available for other equipment which will be added, such as: stall bars, individual tables, or a Hubbard tank. Many of the older schools include a pool for hydrotherapy, but now since many doctors do not prescribe it, a recommendation from the medical staff should be secured before making a large financial investment for a treatment pool.

Lavatory and Toilet Facilities

Toilet facilities should be easily accessible to the most-used parts of the building, such as classrooms and physical therapy rooms. The Sunbeam School in Cleveland has a lavatory and toilet between every two classrooms. Some schools have running water in each room. Because ambulation is difficult for many crippled children and impossible for others, it is desirable to have a wash basin in or adjacent to each classroom. One or more toilet cubicles should be large enough to accommodate a wheelchair.

The California State Department of Education makes the following specifications for the bathroom in the education wing of the State residential school for cerebral-palsied children:

Bathroom: 20' x 16' between each two classrooms will serve both. Need two regular toilets in 60" wide cubicles; 2 in 42" wide cubicles, and space for pottic chairs and wheel chairs. Hand rails and grab rails inside the cubicles; one 60" cubicle should have a door for adolescent girls; others are easier doorless.

Examples of Practice

An interesting school building has been constructed in Austin, Tex., to provide for the crippled children in the Austin Public Schools and also to serve as a laboratory school for the teacher-education program at the University of Texas. A recent article described this building as follows:²

The building is a one-story building. It does not have steps or stairways anywhere so as to facilitate free movement by children in wheelchairs or on crutches. All halls are lined with rails on both sides to help steady children who may experience difficulty in walking. Every exceptional child who is physically able will be a member of a regular class and participate to the extent that he is able in the regular program of his ages. Those in need of specialized educational services will go to the special education wing for designated periods during the day. Only those who are physically unable to be members of regular classes will spend full time in the special education rooms.

The administrative offices are designed to provide ample space for the principal, an outer secretarial office, a conference room, a faculty workroom, several smaller rooms for pupil personnel services (including a health suite and conference or individual testing rooms), and several small rooms for parent-teacher conferences.

Classrooms were designed to house the single-teacher-per-grade plan of organization. The dimensions of each room are 28 x 36. Each room has its own work alcove with sink, running water, a gas outlet, cabinets and a drinking fountain. Individual toilet rooms serve each class group throughout the six grades. The placement of one toilet between each two classrooms enables one toilet to serve girls from two contiguous rooms while the other toilet serves boys from two neighboring rooms. The five group toilet rooms in the building are much smaller than the usual gang toilet rooms and are designed primarily to serve adults, except that the two gang toilets near the gymnasium will serve children from the playground. Each group toilet has one large stall to accommodate children in wheel chairs. Each classroom has an individual exit to the outside to permit outdoor class activities. Adjoining each classroom will be a small garden plot and a small paved area.

²Henry J. Otto, and J. W. Edgar. *Nation's Schools*, June 1950.

PLANS FOR CHILDREN WITH IMPAIRED VISION

It is easier to make adjustments in the school building for some types of handicapped children than for others. Children with impaired vision, especially the partially seeing, require adjustments in the classroom which are relatively easy for school systems to provide. The description of classrooms for partially seeing and for blind children on pages 13-16 will support this assertion.

According to estimates, there are in the school-age population of the United States approximately 60,000 who have defective vision even after all possible correction. For purposes of education, they are classified as partially seeing and blind. It is estimated that about 50,000 of these children are partially seeing; the others are classified as blind. In some communities, there will be enough children with partial vision so that a special classroom will be practical. The number of blind children, however, is fortunately small enough that a classroom will not be feasible except in the large population centers. For blind children from rural and village populations, other provisions must be made such as placement in a residential school, a boarding home, or, under certain circumstances, in regular schools under the supervision of a specialist in the



Courtesy, Horace Rathom School of Special Education

Spacious classrooms accommodate large-type books, globes, and other needed equipment. Ample storage space should be provided for such equipment when temporarily out of use.

education of the visually handicapped. When these children are in regular classes, the same ease-of-seeing conditions should be observed as in special classes.

Classrooms for Children With Partial Vision

Education for children with partial vision is usually carried on in a regular school building. In general, children who are partially seeing have a divided program, spending part of the time in the regular classroom and part of the time in the special class. The program should, however, be developed so as to be practical and acceptable to the community. The sight-saving classroom should be of standard size and wherever possible a little larger.

When a sight-saving classroom is properly arranged, it serves as a model for good seeing conditions for the entire school. It should be carefully planned insofar as natural and artificial lighting are concerned. A standard of 50 foot-candles of light correctly diffused and distributed is recommended for sight-saving classes. Sharp contrasts and glare should be avoided. In order to make the best use of light, the ceilings should be white; the walls a light tint; the woodwork a dull finish and light in color. To control the natural light, a pair of buff or light gray translucent shades should be attached to the center of each window, one shade pulling up, the other down. With this type of shade, only the part of the window through which the sun can shine needs to be covered. There are other technical ways of controlling natural light; advice of an expert in the field of lighting will be helpful in solving this problem. A light-colored dull-finished floor will also improve the seeing conditions.

Light green is an acceptable color for the chalk boards. If they are black, they absorb too much light. If, however, only black boards are available, an ordinary window shade of light color may be mounted at the top of the chalkboard frame and pulled down when the board is not in use. The same standards of lighting and ease-of-seeing conditions should be followed when selecting bulletin boards and room decorations. Bulletin boards should be light in color or covered with light paper. Glass is a source of glare and for this reason should be used as little as possible in classrooms for the partially seeing. In old buildings, where glass may be found in cupboards or on wall pictures, the glass should be removed or covered. The National Society for the Prevention of Blindness has prepared a detailed outline for checking lighting facilities and equipment for eye work in the classroom. A portion of this outline² is included here:

² This list was prepared by the National Society for the Prevention of Blindness, 1700 Broadway, New York. This is in mimeographed form and can be secured from that organization.

NATURAL LIGHT

Windows (Unless climatic conditions make considerations of heat and ventilation paramount, school buildings should be oriented in a direction to bring an abundance of light into the room without the necessity for use of shades over long periods of the day.)

1. Top of glass extending
 - (a) practically to ceiling (no wall space or broad window frames above glass area)
 - (b) to height above floor at least equal to $\frac{1}{2}$ width of room
2. Bottom of glass starting at 3 to 4 feet above floor (may be lower in lower grades with glare and safety protection)
3. Windows extending as near rear wall as practicable
4. Windows extending to front row of desks, or to front wall if left end of front wall is not used or is shielded from glare
5. Glass area at least 18 percent of floor area if 3 feet from floor
16 percent of floor area if 4 feet from floor
6. Vertical divisions between windows very narrow and light in color
7. Chief source of natural light provided by windows situated at left of students' desks or work tables
8. Additional windows to give more uniform distribution of light within room:
 - (a) All situated well above head level—e. g., clerestory windows
 - (b) None in wall faced by students
 - (c) Shielded or shaded to prevent direct sunlight or skylight entering at angles within field of vision of students
9. Daylight not obstructed by trees, shrubs, or buildings situated too close



Courtesy, Cleveland, Ohio, Public Schools

An adequate classroom for partially seeing children includes a number of large-type typewriters, for which additional table space is necessary.

Window Glass

1. Clear glass in all windows, or
2. Glass blocks directing light toward ceiling in panes above head level, clear in lower panes

Daylight Controls (Needed to improve quality of illumination by diffusing and directing light rays and by providing protection from glare and excessive brightness)

1. Available for all windows exposed to direct sunlight or glare from sky
2. If provided by shades:
 - (a) Two shades for each window, one to pull up, the other down—mounted on rollers placed at or near center of windows with shield between to prevent streaks of light
 - (b) One shade at middle and one at bottom of window, both operating upward
 - (c) Neutral, light color
 - (d) Translucent, unfilled, durable material that will not crack
 - (e) Wide enough to prevent streaks of light at sides
3. May be provided by other means such as:
 - (a) Vertical louvers, located at window panes above eye level and so placed as to shield field of vision from sun or sky brightness by directing light toward front of room
 - (b) Diffusing glass screen, placed at upper portion of window and at 45° angle to it, to direct light toward ceiling and thence into the interior of the room
 - (c) Other devices—e. g., Venetian blinds—provided they improve diffusion and distribution of light without introducing undesirable features such as glare or marked decrease in quantity of light

(NOTE: Where light from upper panes is controlled by means other than shades, shades are needed for bottom panes only.)

ARTIFICIAL ILLUMINATION

The choice between *incandescent* and *fluorescent* systems is usually one of economics rather than of quality. Both systems, when properly installed and utilized, will meet accepted standards if they have the characteristics listed below:

1. Artificial light available wherever light may fall below minimum requirements at any time during period room is in use
2. Fixtures
 - (a) Indirect type (directing all light toward ceiling) with luminous or light-colored opaque bowls to reduce brightness contrast with ceiling, or
 - (b) Semi-indirect type (directing more light toward ceiling than downward)
3. All bare lamps concealed from view by:
 - (a) Diffusing glass or plastic covering, or
 - (b) Baffles, or louvers, which cut off view of lamps (i. e., no lamps visible to least favorably seated child within 45° angle from horizontal line of vision)
4. All units placed against very light background, to reduce brightness differences between luminaries and their immediate surroundings
5. Size, spacing, and suspension of units such that there are:
 - (a) No noticeable spots of light and shadow on the ceiling, and
 - (b) No marked variations in quantity of light on work places in various parts of room, and
 - (c) No strong shadows cast on work by hand or work equipment to interfere with clear vision

6. Wiring and switch arrangements which permit separate turning on and off of lights on the darker portions of the room

QUANTITY OF ILLUMINATION

1. Minimum lighting levels at work areas (desks, tables, chalkboards, etc.) which meet standards recommended for the type of visual work performed in the room or area.
2. Levels of illumination as recommended actually maintained at all times room is in use, through:
 - (a) Artificial illumination available when needed to supplement and equalize illumination within room
 - (b) Maintenance adequate to keep light levels up to standard

Day-School Classes for Blind Children

Special day school classes for blind children in public schools are practical only in the large cities. For blind children in smaller communities, other arrangements such as boarding homes, placement in residential schools, or under some circumstances through adjustment⁴ in regular classes. Chicago, which was the first city in the United States to provide Braille day-school classes now has 70 children enrolled. Other school systems that have numbers of children in Braille classes are New York, Cleveland, Detroit, and Los Angeles.

The classroom.—The Braille classroom in a day school is a home-room for blind children usually in a regular school building. Even though the enrollment is small in such classes, the room should be at least of standard size or larger. Large classroom space is needed for several reasons. One of these is for the psychological value to children. The blind child has to learn to move about. He will be encouraged to do so without fear if the room affords unobstructed space. Space in the classroom is also needed for special equipment, such as typewriters, ediphones, Braille books, talking books, 3-dimensional models, or other teaching or communication aids. Where there are blind children, all of this equipment must be out of the path of movement of the child. It must also be kept systematically on shelves and in cabinets, labeled in Braille so the children can select equipment without the assistance of the teacher. There should be corners in the room for reading and for using the talking book. Electrical wall outlets should be arranged so that the equipment can be connected without leaving electric extension cords which might endanger the safety of the children.

⁴ Blind children usually can succeed in regular classes only if they have acquired Braille and if they are under specialized supervision.



Courtesy, New York Institute for the Education of the Blind

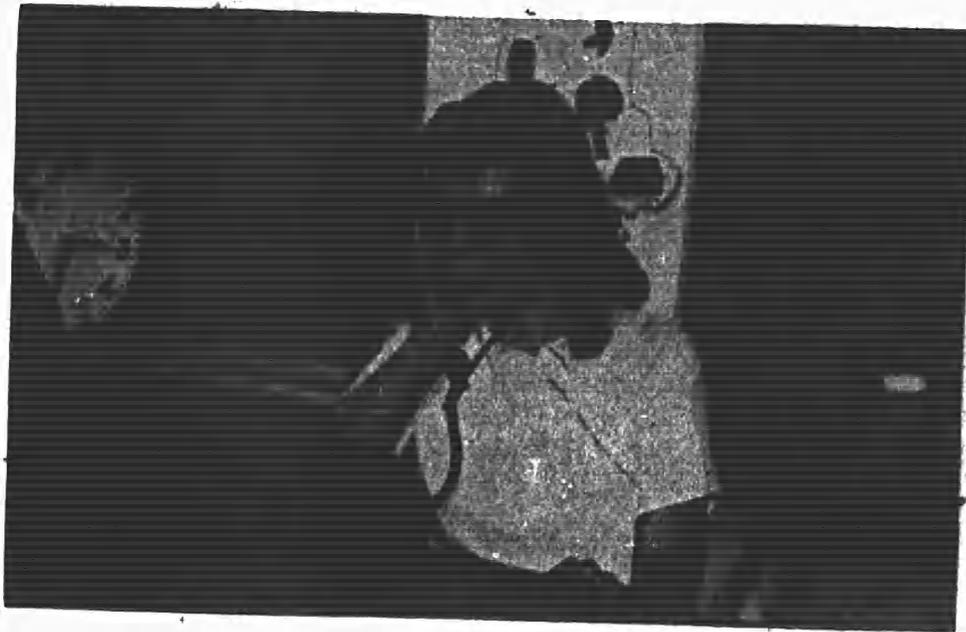
A blind child must learn to move about freely and without fear. Spacious classrooms help to make this possible.

ADJUSTMENTS FOR CHILDREN WITH IMPAIRED HEARING

In this section, the term impaired hearing (a term which covers the range of hearing losses) is used without attempting to define categories, such as the deaf and the severely hard-of-hearing. Deaf children, and in some cases children classified as severely hard-of-hearing, are educated in special classes. Hard-of-hearing children with less serious handicaps are usually educated in regular classes, but most of them need the special services of lip-reading and speech-correction teachers. More will be said

on page 23 concerning the special services and school-building needs of these hard-of-hearing children.

The child with seriously impaired hearing has much to overcome, and he should be in school surroundings which make it as easy as possible for him to learn. He may have some residual hearing or he may be so handicapped as to have no usable hearing. In either instance, he must have, particularly in his early life, a specialized educational program. He needs the help of trained personnel who can give him technical assistance in learning lip reading and in developing speech. He needs also the best in mechanical hearing aids and acoustic conditions. The principal of one school for the deaf says "All we want for the child with



Courtesy, Cleveland, Ohio, Public Schools

The talking book is an example of special equipment needed by children with visual handicaps for which classroom and storage space should be available.

impaired hearing is the same opportunity as for the normal child. If he is to have a fair chance—an even chance with other children—the schools must provide extra and special services for him."

Children who are deaf or severely hard-of-hearing may well begin their schooling in nursery schools or kindergartens. Increasingly, the larger school systems are providing classes for the education of deaf children under the age of 6. The years under 6 are those of greatest language readiness and should be capitalized upon. The progress of children who have been in special nursery school and kindergarten classes is encouraging, both as to academic learning and to social adjustment. The nursery school and kindergarten programs for deaf and severely hard-of-



Courtesy, New York City Public Schools

In this school, there is a sound-treated room where a technician measures a child's hearing loss.

hearing children promise to contribute dramatically to the later adjustment in youth and in adult life.

Types of School Organization

Public-school systems that provide for deaf and severely hard-of-hearing children in the United States usually do so, except in large population centers, by establishing units or centers in regular schools. Quite often these consist of one or two classes only. Some large cities like New York, Los Angeles, St. Louis, and Detroit have special schools for these children. A few public high schools set aside one or more rooms for special services to handicapped high-school students in need of personal help and special equipment.

Public Junior High School No. 47 in New York City is the largest day school for the deaf in the world. It includes a range of classes beginning with a nursery school group for 2-year-olds through the junior high school. The school has 55 classes. Some of the special housing features in addition to special classrooms are a clinic space, an acoustically treated testing room, a lunchroom, a large court enclosed play space for recreation, and rest facilities. A similar service is rendered in Los Angeles by the Bennett School which enrolls deaf children from age 3 through the elementary grades.

Most city school systems, such as Erie, Pa., Columbus, Ohio, and Compton, Calif., maintain special classes for acoustically handicapped children in regular school buildings. For some deaf or severely hard-of-hearing children, guidance and special help is given in the senior high schools. In Textile High School, New York City, for example, a speech teacher

serves as a guidance person for the children who have come from Public Junior High School No. 47, the special day school for the deaf. Many more high schools should provide this kind of assistance for young people with serious handicaps. One or more rooms should be set aside in certain buildings for such purposes.

Extraneous Noise

Everything possible should be done to reduce noise in the classroom and in schools for the deaf and hard-of-hearing. When a hearing aid is worn, noise, as well as useful sound, is amplified. Extraneous noise creates confusion. A classroom, for instance, should be placed in a quiet part of the building. It should not be near the gymnasium or cafeteria which would contribute confusing sounds to the classrooms. Neither should the special classroom be on a busy thoroughfare. Children—especially those who are in the early stages of learning a means of communication—should be protected insofar as it is possible from the disadvantages of confusing sounds.

In addition to the placement of classrooms, other things can be done to improve the acoustic condition. The ceilings of classrooms and often-used parts of a building can profitably be sound-treated. Wall treatment of various kinds, as well as some types of wallpaper, tends to reduce extraneous noise. Draperies at windows are also a noise-reducing device.

The Classroom

The number of deaf children in the classroom does not usually exceed 10, and under some conditions the enrollment might ideally be limited to as few as 5. Because of the small enrollment, it would be easy for a school administrator to assign such children to a room which is very small. Such assignment would be unfortunate and tend to defeat the purpose of the special class.

Deaf and severely hard-of-hearing children will need much special equipment, both for instruction and for therapeutic help. Most specialists recommend that the classroom for elementary children be of at least standard size regardless of the number of children enrolled. For children under the age of 6, even more spacious rooms are needed. A modern classroom for deaf children will be equipped with a group hearing aid arrangement which immediately blocks off considerable space in the room.

Electrical equipment plays a large part in a modern educational program for the person with impaired hearing. When new schoolrooms are being planned for deaf and hard-of-hearing children, electrical wiring should be under the floor. In older buildings, however, outlets cannot always be placed in the most desirable way. It may be necessary in some instances

to cover the wires with metal casings, especially for the group hearing-aid arrangement.

In many schools, one finds this group hearing-aid equipment attached to individual desks which are fastened to the floor. The desks are usually arranged in a semicircle. A number of the schools and classes also use movable furniture for the group hearing-aid equipment. Because of the complicated nature of the electrical equipment, however, it may not yet be practical to move these desks or tables about the room as extensively as one would like. Besides the customary semicircle, there are other situations in which children may use group-hearing aids. Some schools have placed electrical outlets around the chalkboard so that the group hearing aids can be plugged in when children are working at the board. Corners of rooms may be equipped with electrical outlets where two or three children enjoy a group activity or where the teacher may work with them in small numbers.

Various factors should be considered in planning electrical equipment for the classrooms. Today experimentation is going on with ceiling microphones for group work. There seem to be differences of opinion concerning the comparative advantages of individual microphones at the desks as against the ceiling microphone for group work. Before an architect makes final plans for such a classroom, it would be well to call a conference of those responsible for the acoustic equipment which is to be used in the room.

A classroom for deaf and severely hard-of-hearing children should have everything that normal children have. Such classrooms should include corners for reading, science experiments, art projects, housekeeping activities, large blocks, cupboards, shelves, and space for other enterprises that children wish to engage in.

Lighting

Much of the learning of the deaf and severely hard-of-hearing children takes place through the eyes. For such children, the best possible practices in school lighting should be observed. When deaf children are beginning language development and lip reading, they must be watching people's lips intently and observing objects. Good lighting will help.

Ceilings should be white and walls of the classrooms should be light and cheerful whatever the choice of color. One school has recently redecorated old walls and darker walls of the primary rooms with a bright yellow which seems to be very satisfactory. In the same school, every effort has been made to remove all sources of glare, again protecting the important eyesight of children with impaired hearing. For good lighting practices, refer to pages 14-16.

PROVISIONS FOR CHILDREN WITH SPECIAL HEALTH PROBLEMS

In addition to the children who have vision or hearing handicaps and those who are crippled, a large number have special health problems. The causes of such problems are many. Common among these are cardiac conditions, asthma, diabetes, epilepsy, allergy, and malnutrition. Most of the children with such conditions will be enrolled in the regular grades of the public schools, and many of them will make satisfactory progress in these classrooms. A good many, however, will need special services and guidance; a small number will require a special class. Here again the nature of the special class will depend upon the needs of children and the resources of the community.

The health problems of children are changing. Concepts of care and treatment also are changing. All of this means that the services of the schools as well as of the health and welfare agencies must change in accordance with the needs. For example, in former years, some communities provided open-air classes for malnourished children and for those suspected of having tuberculosis. Changing concepts in the treatment of tuberculosis and malnutrition have caused the traditional open-air class to be almost universally abandoned. Even though such classes have generally been discontinued, some children with special health problems still require adjustments in the school. Today the special classes for below-par children usually enroll a good many children with cardiac limitations. They are boys and girls who for a period of time at least need a protected environment.

Children with special health problems should be identified and recommendations should be secured from medical authorities concerning the needs of each child. When a special class is recommended for such boys and girls, they should be housed in a well-ventilated, cheerful classroom. Such a room should be on the ground floor or accessible to elevators. Lavatory and toilet facilities should be adjacent or near the classroom and rooms used for rest periods. Although there is a difference of opinion concerning germicidal lamps, their use might be considered for below-par children. In schools where there is only one classroom for these children, it may be necessary to have rest facilities in the classroom. When this is the case, the room should be large enough to accommodate cots and relaxation chairs. Under no circumstances should the space be so small as to require delicate children, especially those with cardiac conditions, to manage their own folding cots for rest periods. When special rooms are provided for rest, they should, of course, be large enough to accommodate

the needed number of cots. Rest facilities, as well as those for lunch, should be easily accessible from the classroom.

Some children with special health problems, particularly those with severe cardiac limitations will be transported to school. Suggestions on page 8 for entrance ways and for loading and unloading the crippled are equally applicable to children whose cardiac conditions especially when these conditions result from rheumatic fever.

ATTENTION TO CHILDREN WITH SPEECH DEFECTS AND LESS SEVERE HEARING PROBLEMS

Many children with physical handicaps are in regular classrooms, but some of these children require the help of specialists who spend part time in the schools. Children in need of speech correction and many hard-of-hearing children need the part-time assistance of a speech and hearing teacher. In large schools, such a specialist may be a full-time member of the staff, but more often the speech and hearing teacher is an itinerant teacher. Too few school plants have space in the school where the itinerant or special teacher can work with children in need of this aid. The instructor cannot develop an effective program unless she has a definite and adequate place to work. All too often, she has been assigned to improvised quarters, such as the end of a hallway, a nook in a teachers' room, or in a corner of a passage where people are moving about. In proportion to the requirements, one or more suitable rooms should be provided for the speech and hearing program. It would be advantageous if these rooms could be sound treated. These rooms should be quiet, attractive, well-lighted, and large enough to accommodate tables and chairs of heights to suit the children. A mirror is a necessary piece of equipment in such a room. When the space is not needed on a full-time basis, it might well be scheduled for other activities.

Teachers working with children who have speech and hearing problems ideally use much equipment. They will have recording machines, audiometers, instructional material, including objects and visual aids of the type referred to in the section on Adjustments for Children with Impaired Hearing. Ample space is needed for the storing of equipment of this kind. It is most likely to be used effectively if storage space is adjacent to or near the room used by the speech and hearing teacher.

Increasingly, schools or centers for crippled children or for deaf children provide small sound-proof or sound-treated rooms. These aid the teacher in testing and in working with individuals and groups who need speech correction or speech development or who need tutoring in the development of speech.

SCHOOLS FOR CHILDREN IN HOSPITALS AND CONVALESCENT HOMES

The importance of school in the hospital is being recognized today as never before. The majority of the boys and girls who spend a long period of time in the hospital could and should have some form of educational service, and in most cases it is a responsibility of the public schools to provide this. For some children, school may be a brief period with the teacher. It may in other instances vary all the way from this limited kind of education experience to a full schedule of activities. In spite of this need, very few hospitals have suitable space for teaching children either in classroom groups or individually in the wards. Where classrooms have been provided in hospitals, they are frequently small, poorly lighted, or ill adapted to a school program. Sometimes school is carried on in the blocked-off end of a corridor or in other improvised quarters. Such arrangements are unsatisfactory and take away from, rather than contribute to, a high quality school program.

The physical plant of the modern hospital should have a classroom or classrooms of normal size or larger, space in wards for group work, supply closets, and storage rooms. These facilities make it easier both for teachers and for nursing and custodial personnel. It is advantageous if classrooms are conveniently located in relation to wards so children can be assembled easily. Such rooms should be well lighted and attractively arranged. They should have shelves for toys and books, space for large blocks for young children, and for other modern educational equipment. In a hospital where children's experiences may be limited, equipment may be even more needed than in day schools where children have the usual school, home, and neighborhood experiences.

Wards should, insofar as possible, be large enough so that beds can be pulled together for group work, allowing the children to share common experiences. Storage space is a must in a good hospital school. Often school equipment is tolerated only if the teacher removes it when the formal school session ends. This may mean that textbooks, art materials, musical instruments, and other equipment which would ordinarily be available in the school may have to be stored at least part of the time. If the hospital school has a supply wagon to carry materials from bedside to bedside, there should be a place to keep it when it is not in use. 7

In small general hospitals where there would be only a few long-term child patients, the classroom space may be used for other purposes. It could, for example, be used for a nurses' classroom, for adult patient conferences, or upon occasion, for staff conferences. The important thing is that a classroom should be available for all children who can come to it either in beds, wheelchairs, or on carts.

Adequate provisions are more often made for school in the convalescent home than in the hospital. In the convalescent homes, children stay for longer periods of time. Most of them are able to go to classrooms for all or part of the day. In some cases, the school is part of the general building as at Irvington House-on-the-Hudson, New York, a home for children with cardiac conditions. Sometimes, the school is in a separate unit of its own as at St. Giles Convalescent Home for Crippled Children at Garden City, Long Island.

In either case, it seems unnecessary to make further comments concerning features which should be included in the school part of a convalescent home. Suggestions made in the previous sections of the pamphlet, especially those made in "Provisions for Children with Crippling Conditions" should cover most of the aspects of school housing in a convalescent home. The custodial and dormitory aspects of the convalescent home would again not come within the scope of this publication.

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