The recreational limitations of children with cerebral palsy and rheumatic fever, as determined by seventeen specific case studies and suggested recreational activities modified to fit their needs.

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THE RECREATIONAL LIMITATIONS OF CHILDREN WITH CEREBRAL PALSY AND RHEUMATIC FEVER, AS DETERMINED BY SEVENTEEN SPECIFIC CASE STUDIES AND SUGGESTED RECREATIONAL ACTIVITIES MODIFIED TO FIT THEIR NEEDS

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CHAPTER I
INTRODUCTION

Statement of the problem.-- One of the products of our evolving society has been the emergence of recreation as an accepted and necessary phase of our lives. It is an understood fact today that recreation is a part of our physical, social, and emotional development. Even before the adult attempted to organize his own recreational needs into any form of program, he was aware of the child's need for play to keep happy and occupied.

Recreation is one of the youngest organized social movements in our country today, and, even in its short span as a distinguishable structure in our society it, too, has evolved.1

During its early development recreation was looked upon chiefly as a program of physical activities to be engaged in by those sound of mind and limb... Today recreation is considered to be part of daily living in all communities, artificial as well as natural. Today recreation considers it has a responsibility to provide opportunities for all people of all age groups and of varying needs.2

Besides broadening its scope, recreation has expanded its purpose and objectives. A child's play is more than diversion and idle use of time. "It is purposeful activity, the result of mental and emotional experience."1/ The values of recreation for the child and youth extend beyond the immediate satisfaction gained through participation in some program. They encompass his whole development -- physical, emotional, social, character, attitude, leadership, and skill.2/

Simultaneous with the emergence of recreation into our social pattern there was another public attitude evolving. This was in the attitude toward the handicapped. It has progressed from downright neglect, through tolerance, to actual helpfulness.3/ Only a few years ago one doctor told the mother of a child with cerebral palsy that only the Chinese had the answer as to how to treat these children. They would take them to the top of a mountain and leave them there.4/

Yet today doctors and teachers spend time and money in research to know more about the prevention and treatment of this and other handicapping conditions. The final realization that

these children have the drives and desires of the typical child has influenced some people, at least, to help them to meet these needs through the avenues offered to normal children, but, geared particularly to their physical limitations.

An example of this type of thing is seen in the program of the Boy Scouts of America who have several boys with physical handicaps of some type in their ranks. Advancement from one rank to another is governed by a policy which emphasizes that they obtain recognition, not on what they are prevented from doing because of their handicaps, but on what their abilities permit them to achieve.1/

To understand the particular need of the child with cerebral palsy or rheumatic fever, we must know something of each condition. Cerebral palsy is a condition resulting from injury to the motor system in which one or more areas of the brain have been damaged as the result of an injury, disease, malformation, or an incompatible Rh factor between the mother and the child.2/

2/Eleanor B. Stone and John W. Devton, op. cit., p. 233.
There are basically five different types divided as follows:

1. Spastic, (50-60%) characterized by hypertonicity of the affected muscles. Injury is in the cortex of the brain.
2. Athetoid, (25-30%) characterized by multiplicity of motion. Injury is in the basil ganglia.
3. Ataxia, (5-10%) characterized by disturbance in sense of balance and posture. Injury is in the cerebellum.
4. Rigidity, (5-10%) characterized by loss of muscle elasticity. Lesions are diffuse throughout the brain.
5. Tremor, (5%) characterized by agitans type of tremor. Lesions are diffuse throughout the brain. ¹/

The cause of rheumatic fever is unknown though many physicians feel that it may be caused by a type of streptococcus. ²/

The disease runs its course through two stages--active and inactive, requiring a long period of bed rest. During the acute stage, the patient is extremely ill with high fever, rapid pulse, toxicity, and muscle and joint pains with or without swelling. It is during this stage that heart

¹/Eleanor B. Stone and John W. Deyton, op. cit., p. 241-245
²/Ibid., p. 267.
damage occurs. The inactive stage may require months of complete bed rest to prevent the system from being overtaxed and thus bring about further damage.\(^1\)

It is the purpose of this paper to develop some kind of recreational program to fulfill the needs of certain children with rheumatic fever and cerebral palsy so that they too, might derive some of the individual, social, and leisure time benefits that the normal child derives from play.

**Justification of the problem.** -- Statistics available today show us that of the 30,000,000 children between the ages of 5 and 17 in our schools today there are approximately 106,500 afflicted with cerebral palsy and about 300,000 with rheumatic fever.\(^2\) The majority of this number cannot attend the regular schools. Many are confined to homes, hospitals, or special institutions where normal social and recreational relationships are denied them. Yet no one would deprive the so-called normal child from pursuing some recreational activities while he is growing up, no can we deny the fact that these atypical children need and desire the same opportunities for a recreational experience.

\(^1\)Eleanor B. Stone and John W. Deyton, op. cit., pp. 210-212.  
\(^2\)Ibid., p. 233.
In 1949 there were only 6,000 children of all types of the physically handicapped in summer camps enjoying an experience that has come to be a part of a normal child's growing up.\footnote{Arthur K. Flanagan, "The Crippled Child Goes to Camp," The Crippled Child (July-August, 1949), 27:2:4, 30.}

Six thousand of a total of approximately 2,000,000 handicaps of all types cannot include many of our cerebral palsy or rheumatic fever groups which together total over 400,000. The main reason for this was lack of facilities, trained leaders, funds, and particularly the lack of insight into the needs of the handicapped child. Camping is only one small area of recreation. Schools, clubs, playgrounds, churches, and even families have failed to see the needs of this group of children nor have they understood how to meet them.

In our modern philosophy of education we are concerned with the total child as an individual. In dealing with children with cerebral palsy and rheumatic fever, when each new case is so different from the last, it is important that we understand each child before we can suggest activities for him. For this reason the author has reviewed a number of medical and social case histories to get an idea of the many factors involved that may influence the child's choice of activities, and to see what activities can best help his total development.
Scope of the problem.-- This study will include only educable children of the elementary school age, thus eliminating the fairly large per cent of feeble-minded children particularly in the cerebral palsy group. It will be based on the findings of seventeen specific cases of cerebral palsy and rheumatic fever.

Since approximately 80 to 90 per cent of cerebral palsy cases are of either the spastic or athetoid group, the study will deal particularly with them. The discussion of the rheumatic fever cases will concern those who have passed the acute illness of the active stage. This includes a long period of bed rest which may last from a few days to several months. It is the patient with heart damage who is confined to his bed or allowed only very little physical exercise who needs a carefully planned and modified type of recreation.

The ages of the seventeen cases studied range from six to twelve years and the activities suggested will therefore be for children within this age group.

The activities will include those that can be done in bed; indoors inactive; indoors active; and out-of-doors. Some activities will be individual and some group.
Method of procedure.—The material for this subject was acquired through interviews: personal experience in the recreation department of Children's Hospital, Boston, and the House of the Good Samaritan, Boston; review of ten case histories of rheumatic fever from the House of the Good Samaritan and seven case histories from the cerebral palsy clinic of Children's Hospital; and study of all previous literature pertinent to the subject. The following organizations and persons were contacted by letter and interviews: National Society for Crippled Children and Adults, National Recreation Association, the cerebral palsy clinic of Children's Hospital, the occupational therapists at Children's Hospital and the House of the Good Samaritan, and the teachers, social worker, and superintendent at the House of the Good Samaritan.

The method of procedure was (1) to consider the need of recreation for handicapped children; (2) to review the literature available; (3) to consider the specific medical and social case histories of children with cerebral palsy and rheumatic fever; (4) to review programs and activities used successfully in various hospitals, schools, and homes for handicapped children; and (5) to suggest specific activities that could be used with children similar to the cases studied.
CHAPTER II
REVIEW OF RELATED LITERATURE

Volume of literature available.--Since educators and physicians have finally become aware of the recreational needs of the handicapped, the last few years have produced a significant number of writings on the subject. However, material on recreational programs geared specifically to the needs of the two groups under discussion is limited except as it comes within the realm of such subjects as adaptive or corrective physical educational, occupational therapy, camping, and other related fields.

Eleanor B. Stone and Dr. John W. Deyton in their book Corrective Therapy for the Handicapped Child, have discussed the problems of both cerebral palsy and rheumatic fever.1/ Their emphasis is from the point of the school corrective program. They present an excellent description of both conditions and the problems, both physical and social, facing these children. They suggest some activities that can be used in a corrective class which are not only therapeutic exercises but also enjoyable experiences.

George T. Stafford has published a book entitled *Sports for the Handicapped*. In it he discusses the need of adaptive sports for handicapped persons and points out the physical and the psychological values of them. He discusses the causes and manifestations of several defects including both cerebral palsy and rheumatic fever. He also suggests sports that can be adapted to the abilities of the handicapped. The adapted sports he suggests are geared particularly to the physical education program in a school situation but may be used with equal success in a camp, home, or other recreational programs.

Mrs. Marie Killilea, in the biography of her cerebral palsyed daughter, Karen, has pointed out many of the needs for, and values of, a knowledge of some relaxing and recreational activities for children in both the cerebral palsy and rheumatic fever groups. Mrs. Killilea's older daughter, Marie, developed rheumatic fever during childhood and was confined to bed for several months. Mrs. Killilea writes with great understanding of the problems of both the cerebral palsyed and the rheumatic fever child.


Cerebral palsy and rheumatic fever are two entirely different crippling conditions when looking at them from the standpoint of providing recreational activities for those patients. For this reason, throughout the remainder of the paper, the two subjects will be treated separately.

Cerebral palsy.--Dr. Earl R. Carlson, a victim of cerebral palsy and graduate of Yale Medical School, has specialized in this field. In his autobiography, Born That Way, he states, "Play-life is essential for sound emotional development, which is vitally important to the spastic."¹ He points out the value of relaxation in learning muscle control and recommends the coordination of the muscle training program with the recreational program. Concerning this, he states:

A summer spent as medical adviser to a camp for handicapped children suggested a way of increasing the benefits of special education for the spastic. I found that the children at the camp obtained more benefit from physical therapy and educational work than those at the hospital, because these activities were coupled with natural play and outdoor life.²

For this reason he instituted in his clinic procedures for teaching one difficult activity, such as speaking, while the child was engaged in another activity, which he could perform with greater facility, such as playing with some

²/Ibid., p. 149.
thus the child would get his mind off the struggle he was having in learning to speak.

Charlotte Kersten in an article, "Modern Methods Make a World of Play," published in the June, 1948, issue of Crippled Child, writes concerning modern toys and their value in training the child with cerebral palsy. Toys are as much a part of the occupational and physical therapy departments as are the parallel bars, in providing motivation, developing hand skills, coordination, and social adjustment. Because the child with cerebral palsy has a lower motor age level than intellectual age level, it is necessary to adapt the toys to the interest of the child. The child with cerebral palsy relies heavily on play activity to provide stimulation in social and intellectual growth, since without proper motivation the struggle to accomplish a task is often such an ordeal that the frustrations involved only discourage the child.

The Crippled Child has published articles on "Scouting with Physically Handicapped Boys," and "Nature Recreation for the Crippled Child." These describe some successful

1/ Charlotte Kersten, "Modern Methods Make a World of Play," Crippled Child (June, 1948), 26:10-11, 29.
outdoor programs for crippled children. They are not geared particularly to the cerebral palsey child but to crippled children in general, some of whom are patients with cerebral palsy.

**Rheumatic fever.**—In discussions of the treatment of the rheumatic fever patient doctors have touched on the need for including a planned recreational program as part of the treatment. The child has been through an acute illness in which medical treatment has had to have first place. Now he is faced with a long period of convalescence in which the primary concern is "to give the heart the best possible chance to make a good recovery, or to escape injury altogether. Bed rest gives this chance. During rest, the heart is spared unnecessary work. Weeks and perhaps months of rest may be required."1/ Yet it isn't rest if the child is in bed and having temper tantrums because he wants to be somewhere else, nor is it rest for the older child who stays in bed but is worried about falling behind in his school work. The child with rheumatic fever may feel well even with a low fever or a damaged heart and therefore dislike staying in bed.2/ "The


2/Steven M. Spencer, "We're Learning How to Lick Rheumatic Fever," *Saturday Evening Post* (August 26, 1950), 223:27.
proper type of recreation is therefore as important a prescription as aspirin. But it is much more difficult to get filled,"\(^1\) states Dr. Kathrine Brownell, director of the Lower East Side Rheumatic Fever Project in New York.

Francis Schwentker, in the January, 1951, issue of Pediatrics, described a home play and occupational program for the bedfast child known as the "Counterpane Course."\(^2\) The course includes adequate instruction books and materials suitable for children from seven to twelve. The program includes such craft activities as leather tooling, clay modeling, weaving, carving, and painting.

The John Hancock Mutual Life Insurance Company publishes a booklet entitled *Diversions for the Sick* which has many suggestions for activities for bedridden patients.\(^3\)

Louise Adler in the April, 1950, issue of Recreation magazine, described a "Day Camp for Children in Bed."\(^4\) This was a project held at the country home, Far Rockaway, New York. In this program, hospitalized, bedfast, children

\(^1\)Steven M. Spencer, op. cit., p. 28.
were moved out-of-doors and carried on camping activities such as observing cloud formations and birds, storytelling, crafts, and even roasting hot dogs over a charcoal grill using extra long-handled forks.

Depending on the professional medical approval in each case, any of these activities can be used for the convalescent rheumatic fever patient.
CHAPTER III
THE RECREATIONAL LIMITATIONS

1. Cerebral Palsy

Variability in Cases.-- The limitations of children with cerebral palsy are as diversified as the number of cases. Each child may be limited to a different degree in a different area. It can be said, however, that the five different types each seem to have certain characteristics with which they can be identified. Since in this study we are considering only educable children, mental limitations of the retarded child will not be discussed.

Cerebral palsy is a condition in which one or more areas of the brain have been damaged resulting in malfunction of the motor system. This damage may be manifested in any of the muscles of the body, and, depending on the type, may result in hypertonicity, involuntary motion, rigidity, or tremor, of the affected muscle.

Of the seven cases reviewed by the author at Children's Hospital, five were spastic and two were athetoid. The degree of involvement ranged from awkwardness in gait due to spastic monoplegia, (Case 5) to the complete helplessness of severe athetosis. (Case 1) These seven cases show the variability in the manifestations of cerebral palsy and the various degrees of limitation.

1/See appendix.
The limitations of this crippling condition are in the motor abilities which in turn impose social limitations upon the child. Involvement may be in one extremity or in the whole body. It may be characterized by awkwardness in performing dexterous acts or may be complete uselessness of any of the affected parts.

The spastic group.-- In the spastic group the affected muscles are unable to relax. There is hypercontractility at the slightest stimulus. When a spastic child attempts to perform a specific motion, there is a blocking or slowing down of reaction caused by the antagonistic spastic muscles. This results in a hyperactive "stretch reflex" which causes the involved part to go into uncontrollable contraction and may result in a movement directly opposed to that desired. Even when there is a balance between the antagonistic muscles and the prime mover, the motions produced are generally stiff and jerky.¹/

There is generally a limitation in ambulation. The gait is often slow, jerky, and scissors-like. The children fall often and are in danger of injuring themselves from falling. For this reason a football helmet is often worn as a protection from concussion.

Tight heel cords are a characteristic of the spastic group. These can sometimes be corrected through surgery and muscle training. Tight heel cords cause the child to step first on his toes rather than his heels when walking. It also may result in hyperextension of the knees and a lumbar lordosis. All of which make walking very difficult and running an impossibility in many cases.

In the upper extremities the muscles react in the same way causing contractures of the wrist, elbow, or shoulder joints. Movements with the hands are therefore awkward. The child may have difficulty grasping objects or holding onto them. They are constantly dropping things and knocking objects to the floor because they cannot direct their motions properly.

The athetoid group.-- Athetoid cerebral palsy is characterized by involuntary, unrhythmic, and uncontrollable motion. It may be present at all times except when the child is asleep. The injury appears in the basil ganglia of the brain and prevents the filtering out of random contraction impulses in response to stimuli. The result is grotesque and uncontrollable motion which may appear in any of the extremities, the face, or the trunk. This multiplicity of motion increases with the desire to perform a certain task and may appear in any part of the body. Thus in steering the
hand to pick up a single object the face may grimace, the arms and legs jerk, and the neck turn. In most cases, therefore, an athetoid is denied the power to execute a single fluid motion. In an effort to control the movement he develops a habitual tenseness. For this reason a child who is concentrating on what he is doing, rather than trying to control his movement, tends to relax, and the desired movement is easier.\footnote{Ibid., p. 242.}

The athetoid, as the spastic, is generally limited in ambulation. Braces or crutches may enable the child to get around easier. Although for many walking is an impossibility and they are confined to a wheelchair or a walker to move about.

Use of the hands is difficult in many cases. The child cannot easily grasp small objects or control his fine hand movements. Involuntary motion limits the child's manual activities and greatly slows down any desired movement.

In severe cases of athetosis (as in Case 1) the only way a child can remain in a sitting position is to be tied to a specially designed chair or standing device. In this way many children are able to carry on activities that otherwise would be impossible in an upright position.
Speech defects are another limitation of the child with cerebral palsy which may occur in any of the types, but, perhaps most often in athetoids. Impaired speech limits a child's social activities to a great extent. He is often able to develop a method of communication that can be understood by his family and close associates but is completely unintelligible to outsiders. Speech training is therefore an important part of their rehabilitation and is successful in many cases.

The ataxia group. -- Children in this group, constituting about five to ten per cent of all cerebral palsy cases, have no trouble in performing voluntary motion except for a general lack of muscular tone. The difficulty here is a disturbance in the sense of balance and posture. There is complete range of motion, yet the child may not be aware of the location of his extremities in relation to the position of the rest of his body. 1/

The rigidity group. -- Another group which embraces only a small per cent of all cerebral palsy cases is the rigidity type. Here there is loss of muscle elasticity resulting in the inability to give up contraction easily. Movement is

1/Tbid., p. 243.
therefore stiff, and slow but differs from the spastic type in that the muscles are not tense and hyperactive. 1/

The tremor group.—The tremor type of cerebral palsy is, as its name implies, characterized by a fine, fast, rhythmic tremor. Of the five types this group represents the smallest number of cases. It occurs chiefly among children who have contracted the disorder after birth as the result of infection. 2/

2. Rheumatic Fever

How limitations are determined.—Unlike the child with cerebral palsy, the child with rheumatic fever is in most cases no more limited in his abilities than a healthy child; he may be as skillful as the so-called normal individual in crafts or just as adept in athletics. His limitations are forced upon him by his condition rather than coming from himself. Compliance with doctor's orders concerning his physical limitations are absolutely imperative to prevent further serious heart damage. After the acute stage has passed and during the convalescent period, the patient's limitations

1/Ibid., p. 244.
2/Ibid., p. 244.
and restrictions on activities are lessened according to his rate of recovery. Therefore, limitations among rheumatic fever patients do not vary so much in kind but in degree.

Of the ten cases reviewed by the author at the House of the Good Samaritan, limits on time allowed out of bed varied from zero to five hours. The amount of time up did not always correlate positively with the length of convalescence, but was dependent upon the patient's condition and may vary from day to day. The amount of time a child is allowed out of bed in indicative of the progress he is making and of his present condition. When his time up reaches six hours he is then ready for discharge if home conditions are suitable. When the child leaves the hospital, he receives rigid instructions as to the amount of physical activity in which he can participate. His recreational as well as other activities must comply with these limitations made by the physician.

**Physical limitations.** As important as enforced rest is during the acute illness, if it continues beyond this point, it becomes detrimental to the child's adjustment. Dr. T. Duckett Jones, one of the nation's leading authorities on rheumatic fever states:

> Unless there is real heart injury of a moderate-to-severe degree, the physician need actually order rest only in the active phase of rheumatic fever, and in most cases this will last a long time, perhaps
four to six months. After that, even when rheumatic heart disease remains, there is a tendency to overdo the restrictions. A great deal of harm can be done by hedging a child about with a forest of needless 'don'ts.' 1/

Thus we see the need of carefully planned recreational activities.

Of the ten cases from the House of the Good Samaritan, 2/ three children are not allowed out of bed, (Cases 8, 9, 12) but are limited to activities that can be done while in bed. These activities must be of rather short duration and of the kind that will not prove tiring. These children can be in a sitting position for short periods of time but must not engage in activities that require a lot of arm motion such as loom weaving and bean bag games.

Cases 11, 15, and 16 are allowed from one-half to two hours a day out of bed. They have bathroom privileges and can walk around their wards. However, this activity must be followed by a period of rest. This time that they are allowed out of bed is generally taken in the morning and is often divided into shorter periods. Any increase in physical activity must come gradually. While they are out of bed they cannot run, jump, or go up and down stairs.

1/ Steven M. Spencer, "We're Learning How to Lick Rheumatic Fever," Saturday Evening Post, (August 26, 1950), 223:27.

2/ See Appendix.
The four remaining children (Cases 10, 13, 14, 17) are allowed from three to five hours up in one day. These children may go to the occupational therapy room for activities and to the class room for school. However, they must have been out of bed for one hour before they can visit the other rooms so that the change in activity is not too sudden. These children also cannot run or jump and must take the elevator when going from one floor to another. Visiting other wards or being with other children is discouraged, particularly during the winter months when there is danger of streptococcus infection. During the summer months these children are allowed to go outside on the porches or even out-of-doors on warm days for short periods of time. Here they can play inactive games, tell stories, or engage in other activities where there is little physical exertion.

**Emotional limitations.**—Besides these physical limitations the rheumatic fever patient must be guarded against tense, frustrating, emotional experiences. Like excessive physical activity, disturbing emotional experiences are an added strain on the heart and may set the stage for a recurrence of the disease. Depending on his psychological makeup, the amount of excitement a child can take is

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proportionate to his condition at any time. Many doctors feel that emotional problems are a very significant factor in the cause of rheumatic fever because lowered resistance, which makes the child a target for the streptococcus infection, can so often be traced to a specific emotional problem. Therefore it is necessary to consider the psychological and emotional factors involved when planning a child's recreational activities.

Overprotection.-- Almost as important as the limitations placed on the child is the matter of being overprotective concerning his recreational activities. Parents often have the mistaken idea that if less physical activity is good, none would be better, and impose a lot of unnecessary restraints on the child. Such parental attitudes result in maladjusted youngsters who do not truly understand their limitations and therefore never learn how to modify their activities. For healthy emotional growth each child should be made to feel that he is normal within his limits, rather than that he is different from other children. When rheumatic fever patients realize that forms of entertainment can be made to fit their needs, and, that they can derive fun from them, they will be more prepared to modify their other activities.

1/S. Spencer, op. cit., p. 28.
Recreational activities are not only important from a mental hygiene standpoint, but "physical activity is desirable to effect increased tolerance of the heart." This must, of course, be kept within the capacities and limits of the child's heart, but it cannot be neglected as it is an important therapeutic factor.

1/Eleanor B. Stone and John W. Deyton, op. cit., p. 212.
CHAPTER IV
RECREATIONAL ACTIVITIES

1. Cerebral Palsy

Some general rules. -- Relaxation and interest might well be called the keynotes in planning recreational activities for children with cerebral palsy. Muscle control can best be attained when the child is relaxed. Tenseness and conscious effort to control spastic or athetoid movements only increase the condition. Interest in what he is doing helps him to forget his condition and brings about maximum performance.

Those activities which the child is able to accomplish are, in general, the best for him psychologically. Attainment fosters a feeling of success or accomplishment. This does not mean that success should be easy, but it should be within reach, for much struggling will only defeat the purpose of the activity. The child will become frustrated and accomplishment only becomes impossible.

Excitement should be kept at a minimum. This does not exclude competition if the competitors are of like abilities. However, a child with cerebral palsy who has to compete with a normal child or who is placed under stress, will react adversely and become more tense or more erratic in his movements.

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It is important to remember that the motor responses of a child with cerebral palsy may be far behind his mental age level. A ten year old child with athetoid cerebral palsy may have as much difficulty picking up a small object and guiding it to a desired position as a twelve-months old baby, yet he may have a normal rate of mental response. Recreational leaders and parents must remember to give him activities that suit his mental age level, although he may not be able to perform with the normal manual dexterity of his chronological age. The activities must therefore be adapted to his particular abilities.

Craft activities.-- Of all phases of recreation, the child with cerebral palsy is probably the most limited in the field of crafts. Any activity that requires fine muscle movement is difficult for the cerebral palsied to perform, even when there is only slight involvement in the upper extremities.

The following are types of crafts that can be successfully used with some cerebral palsied children, depending in each case on the degree of deviation.

Painting.-- Finger painting particularly is a good activity for the child with cerebral palsy. There are no restricting lines that he must follow, no tiny brushes to manipulate. Yet an interesting and effective design can be
achieved. Even the athetoid with his many involuntary motions can do finger painting. Finger paint can be purchased at any art or stationery store or can be made by making a smooth paste of cornstarch and water, boiling it until it thickens to a smooth, soft, consistency, and mixing it with ordinary tempera or poster paint.

For those with less involvement in their hands and arms, tempera paint can be used. By using larger brushes with thick handles the strokes are more easily controlled. By painting on a large area with large-sized brushes the child can use long sweeping movements which are much easier than having to confine his work to a small area. Water color and oil painting, in most cases, require too much precision for the child with cerebral palsy.

Modeling.--Clay modeling is difficult for a child with cerebral palsy because, unless large amounts of clay are used, the work is too fine, and, when large amounts are used it becomes heavy and difficult to mold. For this reason a dough can be made of flour, salt, (5 parts flour to 1 part salt) and water. This is much softer and easier to handle, yet can be molded and will harden and retain its shape.

Papier mache can also be used in modeling. This, too, is easier to handle and less expensive than clay, yet can be just as effective. It is made by soaking bits of newspaper in
water and paste till it is thick and soggy. It can then be molded into any desired shape. It must be allowed to dry several hours before paint can be applied.

It must be noted that in modeling, as in other activities, one cannot expect perfection or a masterpiece from a child who is spastic or athetoid. They should be encouraged to be creative and to enjoy it for the pleasure derived.

Wood working.-- Construction of simple articles from wood is an excellent activity for older children. Objects without elaborate design or complicated construction can be fun as well as excellent muscle training. Sawing, hammering, and sanding are activities which many children can do because the movements are not fine and exacting.

In woodworking it is often necessary to build up the handles of the tools with a layer of sponge rubber or some other material which makes them easier to grasp. If the wood is held firmly in a vise it facilitates the work.

Articles that can be glued together such as wastebaskets or book ends can be made if the child has difficulty in handling nails. Other articles that do not require intricate work are bread boards, simple bird houses, checker boards, and simple candlesticks.

Games.-- Games are a normal outlet for any child and the child with cerebral palsy is no different in that way.
Though some games need to be revised so that he can manipulate his body in the required way, yet he can find pleasure in many of the same games that the typical child enjoys. In most cases it is best for the child with cerebral palsy to compete with those of like deviation.

The handicapped, like the normal child, will develop many desirable qualities through participation in games—sportsmanship, friendships, unselfishness, and others. Beyond these the child with cerebral palsy, forgetting himself in games, will also be able to perform with maximum results, and, he is thus indirectly training his affected muscles.

Some examples of games that can be played by children with cerebral palsy follow.

Games requiring from two to four players.

Checkers.-- The ordinary checker game is somewhat difficult for a child with involvement in the upper extremities to play. To facilitate handling, therefore, checkers and checkerboard can be made larger and checkers can be weighted. Convenient dimensions for such a checkerboard are 1 yard square with each check 4 inches by 4 inches. Checkers can be made of 3 inch circles or squares with a piece of lead attached to make them heavier.

It may be advisable to make a hole in the center of each square and to put a peg in the center of each checker. The
game can then be played, while the players stand, by hanging the board against the wall. This may be necessary if the child has difficulty sitting down or reaching across the extra large board. Being able to place the peg on the checker into the hole on the board is also good training in manual dexterity.

Fox and Geese -- This is another game that can be played on this large size checkerboard. It is played with two players and with just five checkers. The object of the game is for the fox to break through the line of geese and for the geese to try to shut the fox in a corner with a checker on either side. Four red checkers (geese), are placed on black squares in the last row on one side and one black checker (fox) on a black square on the opposite side. The geese can only move in one direction while the fox can move in any direction. Neither fox nor geese can jump the other players. Either side moves first, taking turns for each succeeding move. The game is over when the fox is cornered or when the fox breaks through the line of geese.

Bean-bag games. -- Bean bags are excellent toys that are simple and inexpensive to make. For the child with hand involvement they are often easier to grasp than balls and can be used in many games where balls are used. Bean bags are made from canvas or other strong cloth. They may be square,
oblong, or round. Six inches square is a convenient size for most games. The bag should be filled slightly more than half full of beans.

Bean bag shuffle is one game that can be used successfully with children with cerebral palsy. For this game a few shot may be put in the bag to add weight. The game is played like regular shuffleboard but is easier for the child who cannot stand or walk. The players slide the bean bags across the floor with a motion similar to that used in bowling. The floor chart and scoring are the same as for shuffleboard. It may be necessary to vary the length of space between the two goals depending on the deviations of those playing.

Figure 1. Shuffleboard Diagram
Hand Hockey.-- This is an excellent game that can be played with two or four players. It is particularly good for children with limited or no ambulation but with little hand involvement. Hand hockey is played on a table with a 3 inch ridge around the edge. There are four bars extending across the table with two paddles hanging from each bar. The bars may be moved 3 or 4 inches to change the position of the paddles and rotated to strike the ball. A small rubber ball or ping-pong ball is placed in the center of the table and the players attempt to knock the ball through the opposite goal. If there are two players, each manipulates two alternating bars. If four players each manipulates one bar, partners taking alternate bars.

Figure 2. Diagram of Hand Hockey Table
Group or team games.

**Backball.**-- This is a team game and can be played with any number of players. Teams should be divided evenly according to their means of locomotion, i.e., crutches, wheelchair, or walker. There is one field base 25 feet from home base. (This distance may be varied according to the abilities of the players.) One player is on the field base and the others are scattered in the field. A player from the opposing team stands on home base and kicks or pushes the ball away from him. Those in the field try to get the ball and tag the runner before he reaches home plate.

**Volleyball.**-- The regular game of volleyball can be modified in several ways, according to the limits of those playing. A balloon or beach ball may be used instead of a regulation ball. These travel slowly enough for the players to get to them. By lowering the net this can be played from wheelchairs, or even with the players sitting on the ground. Newcomb is another modification of volleyball where the players catch the ball rather than tapping it.

**Human tic-tac-toe.**-- In this game the group is divided evenly into two teams. The tic-tac-toe diagram is chalked or painted on the floor, each square being 4 feet square, allowing room for wheelchairs or walkers. Members of each team wear colored arm bands to distinguish them from their
opponents. Each team is then numbered off. The leader calls out "green-one" or red-one" and the players arrange themselves in the squares. It is scored just as in tic-tac-toe, each team trying to line up three of its players before their opponents.

Simon Says.--This is an excellent game for children of the spastic or ataxia group. The definiteness of position would make it difficult for the athetoid. It is played with any number of players. The leader gives certain commands to the group and when the command is preceded by "Simon says--" the command must be carried out. When it is not preceded by these words it must not be done. If a player does it anyway he is eliminated. When used with children with cerebral palsy the leader must remember to give the command slowly enough to allow time for completion. This game may be used for control and conscious voluntary movement.

Going to Jerusalem.--This game can be used as successfully with children with cerebral palsy as with any other group. If the children are not able to walk from one chair to another circles can be drawn on the floor and those in wheelchairs or walkers can play too. Circles should be about 4 feet in diameter and at least 2 feet apart. As the music stops the child not in a circle drops out and one more circle is eliminated by drawing an X through it.
Hot Potatoe.--This is a game that is played normally with a bean bag, but demands quick action and rapid movement. For this reason a balloon can be used to give the handicapped child time to complete the necessary movements. This game is best for those without serious involvement. The players are in a circle and throw the balloon from one to another, trying not to hold it long enough to be tagged by the player in the middle. If a circle player is tagged he takes the place of the one in the center.

The Hunt.--An adaption of hide-and-seek or hide-the-thimble that can be played by most children with cerebral palsy is to hide a suitable sized object, (previously identified by the group) in a visible spot. When the object is discovered by the first child he says nothing but goes and sits down quietly. This procedure continues until only one child remains. The group then helps him by calling out "hot" and "cold" as he nears or leaves the object.

Squeeze Hockey.--This game requires little or no ambulation and can be played from a sitting or standing position. It is excellent training in developing fine hand muscles. The number playing may vary but it is best played by four to eight players divided evenly on two teams. It is played on a table on which a goal has been established at both ends. The players line up around the table. Each has an
ordinary air syringe which he squeezes to force air at a cotton ball. The object is to get the ball across the respective goal lines.

**Ping pong blow.--** A similar game can be played with a ping pong ball where the players kneel or sit next to the table so that their chin rests on the table. The object is to blow the ping pong ball across the goal line.

**Miscellaneous activities.**

**Diabolo.--** This is an individual activity which can be entertaining for a young child and can also have therapeutic value. It is played with a string strung through two holes of a large button and knotted at the ends forming a circle. The child holds one end of the loop in each hand and twists the string. The object is to keep the button spinning by pulling out on the string. If the child fails to do this with fair coordination, the button will stop spinning. By holding the spinning button against a paper, musical tones can be made. Spools are placed on the string to form handles at the ends to make it easier for the child to grasp.

![Figure 3. Diagram of Diabolo](image-url)
Yo-Yo or Hi-Li.-- This is a game similar to Diabolo which is popular with children everywhere. This is played with a string wound around a wooden disk. The disk is kept spinning by raising and lowering the hand.

These two above mentioned activities call for timing, coordination, and balance, yet are simple and entertaining for all types of cerebral palsy patients.

Rhythm band.-- A rhythm band is a good activity for children with cerebral palsy. Instruments can be made inexpensively or purchased. Drums, triangles, wooden rhythm sticks, tambourines, rattles and bells are some of the instruments that can be used. The rhythmic motions required to play the instruments afford excellent muscle training as well as having creative and musical value. A piano or record should be played along with the rhythm instruments to provide the melody.

Camping.-- Camping is one activity that has been tried and proven successful for children with cerebral palsy. The camping program for these children is not unlike similar programs for normal children. Under skilled leadership, the child with cerebral palsy can have the enjoyable experience of living with others, creating new hobbies, learning new skills, and observing the out-of-doors first hand. Many of the
activities can be used outside of the camp setting as well. They are just as numerous and popular at a crippled children's camp as at any other camp. Arts and crafts, athletics, dramatics, hiking, music, nature study, and camping out all have their places on the camp program. Adoptions and modifications may be necessary but the abilities of each child should be fully utilized. Where one child cannot use his arms another child may be particularly dexterous with his arms but cannot use his legs. By working and playing together they can accomplish practically the same things that a group of non-handicapped children can.

Hikes, cookouts, and campouts should be planned with the abilities of the children in mind. It is wise to choose an area where the terrain is not too rough to lessen the danger of injury from falls. Fishing is an activity that can be done with non-ambulatory patients as well as ambulatory. Pets, gardening, star gazing, are other popular activities with all campers. In fact, there is little in the entire camping program that the child with cerebral palsy cannot enjoy.

2. Rheumatic Fever

Some general rules.--There are a number of general rules and precautions to keep in mind when planning recreation for the child who has had rheumatic fever.
1. The leader or parent should be aware of each child's condition, know his limitations as prescribed by the physician and see that the child keeps within them.

2. Watch carefully for any signs of fatigue, shortness of breath, cyanosis, pallor, crying, or poor recovery of pulse rate.

3. Avoid overexcitement.

4. Activity should be followed by a period of relaxation.

5. All activity should be conducted in a relaxed, quiet, leisurely atmosphere, free from tension or fear.

6. Avoid highly competitive activities or highly organized games.

7. Never make the child feel that he is "ill", rather that he is normal within his limits.

Activities that can be done in bed.

Crafts.-- Crafts can vary from the simplest form of paper work to elaborate construction or fine tooling. Work that is particularly suited to the bedfast child includes paper crafts, weaving, clay modeling, coloring, painting, leather tooling, beadwork, cutouts, and others. Although craft work does not generally entail strenuous physical activity, it can become very exhausting if carried on too long. Crafts that require particularly intricate work such as Indian beadwork or shell jewelry, is often very exhausting to many children and is a frustrating experience rather than a pleasurable one.
The creative value of crafts cannot be overemphasized. The satisfaction gained through successfully creating something gives a feeling of achievement to the child whose normal activity has suddenly been curbed. For the child who is going to be restricted in his activities throughout life, crafts may open up a new field of learning, pleasure, or even income.

Equipment for interesting and enjoyable crafts need not be expensive or elaborate. A child's hands and mind can be kept profitably busy with very simple things. Newspaper, string, milk cartons, and other odds and ends can become the raw materials of some fascinating craft projects by using a little ingenuity and imagination.

It is important that the patient's position be as comfortable as possible so that he does not tire from being in an awkward position. Few rheumatic fever patients during the convalescent stage need to be flat on their backs. If a patient cannot sit upright he can be propped up with pillows or a chair or a back rest can be placed under the mattress. A foot rest and support under the knees sometimes makes the child more comfortable if he is sitting up.

If the child is to work with ease and comfort, he should have a sturdy bed table on which to do it. This can be made simply with a table leaf across the back of strong chairs.
or a more permanent one can be made easily from smooth boards. Some suggested craft activities follow.

**Braiding.**-- String, cord, gimp, or twisted crepe paper are some materials that can be used to make a variety of objects. Three strand braids of twisted crepe paper can be wound round and pasted or sewed together making colorful and useful mats. Four strands of gimp make dog leashes, lanyards, and cords for many purposes. Any odd number of soft cords or leather strips can be braided by the "right over and under" method to make belts or bracelets. These are only a few of the many articles that can be made by braiding. If the cords are knotted or fastened together in some way and held in a notch cut in the top of a sheet of stiff cardboard and braced against a bed table, they will be easier for the child to handle.

**Modeling.**-- Clay, plasticene, or plastic wood are materials that can be used for modeling. Only the imagination and ingenuity of the child limits what he can create in clay. It is often advisable to make a framework of wire mounted on a wooden base on which to build the material, particularly for objects of any significant size that are in an upright position, i.e., tiny squat affairs do not need a frame. Kilns are often available, particularly to groups where the modeled objects can be taken to be glazed and baked.
Besides these materials for modeling, the dough and papier mache materials described previously can be used.

**Painting.**-- Painting is always popular with the bedfast patient. Finger painting, water color, poster paint, and spatter painting are particularly successful.

Spatter painting can be done with an old toothbrush, a small piece of screen wire, and colored ink. A leaf, flower, or some other design is pinned in the center of a piece of light paper. The screen is held about two inches above the paper and the toothbrush rubbed over the screen. A thin spray of ink will silhouette the design on the paper.

**Whittling.**-- For the older child who can safely use a sharp knife, whittling can be a fascinating activity. The knife should have a short, sharp, pointed blade with a comfortable handle. A heavy leather glove should be worn on the left hand for protection. Whitewood, soft pine, or red cedar woods are particularly suitable for whittling. Whittling requires manual strength. Therefore, extreme care should be taken in using this activity to prevent overexertion as well as injury from the knife.

Soap carving is a good medium for sculpture that requires less physical strength. A sharp knife is not needed for this. Because it is easier and faster than whittling, soap carving is also more popular with the majority of the children.
Pipe cleaner construction.-- Pipe cleaners of various colors may be bought in packages. An innumerable number of objects can be made from these. Animals, flowers, or other designs can be made into clever lapel pins or party favors by combining them with buttons or beads. Whole miniature scenes can be made by assembling all sorts of odds and ends. Corks, small corn cobs, clothespins, toothpicks, pieces of ribbon and scraps of cloth, and paper, glue, thread, and paint are a few raw materials that go to make up fascinating miniatures. Pipe cleaners are easy to handle and do not break easily, and, because of their flexibility they offer a wide opportunity for creativity.

Paper craft.-- A package of colored construction paper and a pair of sharp scissors can provide hours of entertainment to the convalescent. Paper chains and springs can be made to decorate the bed. Paper springs are made by folding two strips of paper at right angles over each other. Masks, and hats of all sizes and shapes are fascinating for most children and easy to make. Holiday seasons particularly offer ideas for paper decorations.

Besides construction paper other types of paper offer many opportunities for unusual crafts. Scraps of gift wrapping can often be obtained very inexpensively from a paper manufacturing concern or from the gift wrapping department
of a department store. The heavy glossy finished papers are particularly attractive to children.

Aluminum foil is another material that is fascinating to work with. It can be molded to any desired shape. Three dimensional pictures can be made by shaping aluminum foil and mounting it on heavy construction paper. Three dimensional pictures can also be made from other types of paper by folding it in certain ways or by curling it over the edge of a scissors blade.

**Puppetry.**-- Puppetry is an excellent dramatic activity that can be used with many rheumatic patients. But even if they are never used in a production, they are fun to make. Puppets can be made from many materials. Some suggested materials are tennis balls, darning eggs, stuffed stockings or socks, plastic wood and papier mache. There are different types of puppets that can be made such as paper bag puppets, hand puppets, finger puppets, shadow puppets, marionettes, and rod puppets, depending on the way in which they are manipulated.

The easiest type of puppet is probably the paper bag puppet. The face is made on the folded bag with paint, colored construction paper, or crayons. The top of the head is placed at the bottom of the bag. The bag is then gathered at the top to form the neck.
The most creative type of puppet is the papier mache puppet. This can be made by using a light bulb as a base, and modeling a head on the bulb from clay. The clay is covered with vaseline and then with strips of absorbent paper toweling soaked in paste. After the papier mache dries it can be cut with a razor, removed from the clay, and pasted back together with strips of the toweling. This head can then be painted and a bag-like garment made so that the hand can be inserted to operate.

Puppetry combines several types of activities and can become more than just a fascinating pastime. Besides the construction of the puppet it involves making scenery, dramatics, and storytelling. It can be extremely creative in every phase and has been used successfully in many rheumatic fever hospitals.

Games.

Games are a normal activity for any child and for the child confined to his bed they are an entertaining outlet for his restricted emotions. There are scores of games that are played on a board, with paper and pencil, or with cards that are particularly suited to the child in bed. In all kinds of games those that stress perfection rather than speed and close competition should be chosen.
Card games. -- Card games are interesting and involve little physical activity. A lapboard or bed table provides sufficient play space. There are many games requiring special cards that can be purchased. Directions for playing games come with each pack. Some of these games are Old Maid, Authors, Rook, Touring, Pit, Flinch, Five-suit Rummy, and Canasta. Other games can be played with the regular playing cards.

One game that is popular with children using the regular deck of cards is Concentration. The cards are shuffled and then the entire deck is spread out on the board, face down. The players take turns exposing the face of one card at a time, but the card must be returned to its original position as soon as both players have seen it. When a player can match two cards he takes those two off the table and they form his "pile." The player with the largest number of cards wins.

There are many other games which can be played with regular playing cards. The directions can be found in any book of card games. A few that are popular with children are Fish, I Doubt It, Hearts, and Rummy.

Board games. -- There are literally hundreds of board games on the market that are favorites with children. Directions for playing these games comes with them. Board games are among the first to be played after the child has been
sick because they are particularly suitable to the lapboard. Some popular board games are Checker, Chess, Give-away, Sorry, Finance, Monopoly, Parchesi, Red Herring, Go to the Head of the Class, and many others.

Ghosts.-- This is a game that requires no material except perhaps a dictionary. It is popular with children eight or older. The object of the game is to add a letter to a word that is being spelled out but to avoid finishing it. A player starts by saying any letter of the alphabet. The second adds a letter that can be used in spelling a word but will not finish it. When a player finishes a word, he becomes one-third of a ghost. When he is three thirds of a ghost he must drop out. When a word is finished another one is started. The shortest word made makes a player a third of a ghost. Thus if the first player said B and the second player said E, thinking of "beat" he would become a third of a ghost because "BE" is a word itself.

Hearts.-- This game is played with six small cubes marked with the letters H, E, A, R, T, S, on their sides. The players take turns in rolling all the cubes at once. Each is awarded one point for any word that can be made from the letters that come up. No letters can be used more than once but it is not necessary to use all the letters each time. Ten points are scored if "hearts" can be spelled.
Cootie.-- This has long been a popular game and is now being sold commercially. The game on the market has plastic parts that are put together forming a cootie. However, it can be played just as successfully with two potatoes, match sticks, pipe cleaners, and two upholstering tacks used as head and body, legs, feelers, tail, and eyes respectively. Or the cootie can be drawn on paper as shown below. The game is played by throwing a cube marked with the letters B, H, E, F, L, and T for body, head eyes, feelers, legs, and tail, or with a dice, assigning numbers to each part. Players take turns rolling their cube and constructing their cootie. A player must first have a B, then an H, before he can use the other letters. He may continue rolling the cube five times if he gets letters he can use. The player that first completes his cootie wins.

Figure 4. Diagram for Cootie.
Box 'em and tic-tac-toe.-- These are two simple paper and pencil games that are fun for all ages. Box 'em is played with a series of dots arranged in lines on the paper. Players take turns connecting the dots with horizontal and vertical lines. The object is to see which player can complete the most squares.

Tic-tac-toe is familiar to everyone. It is now being sold commercially in three dimensions. This is very popular with many patients. It is played the same as with paper and pencil only disks are arranged on shelves marked with squares. This way a player may win by placing his disk in a row vertically as well as horizontally.

Scavenger hunts.-- This popular activity can be played in bed by giving the patients a number of old magazines from which they have to find a list of articles. They can work individually, in pairs, or in teams. In this game, as in all games, the activity must not be too long, and the leader must watch carefully to avoid overexcitement or fatigue.

Other activities.-- Many interesting hobbies have been started while a child was convalescing from rheumatic fever. Encouragement and interest from the parents and other adults will help the child to develop an enthusiastic interest in his work. Cloud study is a fascinating hobby that can be
carried on from a bed near a good window. There are several interesting books on the subject that will be informative and stimulating for the child. If the child is really interested, he may want to acquire some instruments and become adept at weather study and prediction.

Bedside gardening can be done in a window box or flower pot. Sweet potato plants and carrot tops, because of their rapid growth, make interesting plants to tend and observe.

Collections of all types can be started in bed. This is a good time to correspond with other collectors all over the world and exchange items. Postcards, stamps, coins, postmarks, buttons, and matchbooks are a few of the hundreds of hobbies that have been successfully carried on from a bed.

**Activities requiring some physical activity.**

When a child can move about rather than staying in bed all the time, a whole new area of activities are open to him. Knowing and keeping within his limitations is still of utmost importance. Many modifications can be made on activities to make them available to the rheumatic fever patient.

Many of the activities described previously for children with cerebral palsy can be successfully used with rheumatic fever patients. Hand hockey, squeeze hockey, and balloon volleyball are some. Jackstones and marbles are familiar activities to all children and are good for convalescent patients because they require little physical activity.
Dramatics.--Dramatic activities can be used with groups of patients. Charades is a popular form of creative dramatics that is successful with many groups. Storytelling, skits, and stunts can also be used.

Shuffleboard.--Shuffleboard is an excellent activity for these children. The length between the two goals can vary according to the abilities of those playing. For the older children particularly, archery is a good sport requiring little physical exertion. Again the distance can be varied depending on those playing.

Clock golf.--This game is played in a circle 15 to 40 feet in diameter, numbered around its circumference like a clock face. A putting hole 4 inches in diameter is placed anywhere within this circle. The players take turns putting from each of the figures on the circle. The object of the game is to "hole out" in the smallest number of strokes. This game is the most popular with the oldest children.

Dancing.--Folk dancing, square dancing, and social dancing are all adaptable to this group. In most cases, it will probably be popular with only the oldest children. Square dancing can be done without running, skipping, or hopping to a slow tempo and still the children derive pleasure from it. Slow waltzes, fox trots, and even rhumbas can be done with cardiac cases on a limited scale. Jitterbug dancing, fast square or folk dances, and tap dancing should be avoided.
APPENDIX
APPENDIX

SUMMARY OF MEDICAL CASE HISTORIES

1. Cerebral Palsy

The following cases are taken from the files of the cerebral palsy clinic of Children's Hospital, Boston, Massachusetts.

Case 1. P.S. Female. 8 years.

P.S. is a severely handicapped, eight year old girl of the athetoid type. She can do nothing for herself in terms of self care. She cannot stand or sit alone. Her arms, legs, and head are in constant motion. Speech is unintelligible to strangers but it is understood by her family.

P.S. is the daughter of a college professor and has an excellent home condition. Although a true picture of her mental ability cannot be achieved by standardized tests, yet her responses seem to indicate an above average intelligence. She attends a cerebral palsy nursery school and, after a few sessions, commented to her parents that the activities were too childish. This stimulated the staff to give her more complex activities to which she responded very well.

Case 2. R.R. Male. 10 years.

R.R. is a 10 year old spastic boy who lives with a foster mother. His spasticity is evidenced in dorsal kyphosis and some scoliosis, tight heel cords, adduction and tightness in...
external rotation of legs. He has a disabling gait, caused by walking with flexed hip and knees and a distinct lurch. He is able to get about with crutches and braces.

R.R. is a friendly spontaneous lad but seeks security and encouragement in his personal relationships, obviously a result of his home situation. Psychological tests show an intelligence quotient of 85-90.

Case 3. B.N. Male 10 years.

B.N. is a 10 year old boy with spastic lower extremities. His upper extremities are normal but awkward with finer movements. His heel cords were extremely tight and at the age of 5½ years he had them lengthened by surgery. There is hyperextension of the knees and internal rotation of the legs. His treatment, besides the heel cord lengthening, has included physiotherapy, braces, and crutch walking. B.N. spent one summer at a camp for crippled children where he received excellent gait training. He goes to a public school and at nine years was in grade 2.

Case 4. K.C. Male. 7 years.

K.C. is a spastic, seven year old boy, who was born a twin, prematurely by Caesarian section. The other baby died after three days. K.C. has marked foot deformity and tight heel cords. He began walking with crutches and braces at the age of six years. Hand motion is slow and awkward but
nevertheless he works carefully and effectively.

K.C. is a lad full of energy, ideas, and conversation. He shows originality, enterprise, and imagination in his school work.

Case 5. E.K. Female. 7 years.

E.K. is a sociable, outgoing, seven year old girl who has spastic monoplegia in her right leg. Her feet are pronated and she has a lumbar lordosis and lumbo-dorsal scoliosis. She has only slight trouble in her right arm. She started walking at 19-20 months and was first seen by a physician at one and one-half years. She had an operation performed to lengthen her heel cord and has had excellent muscle training. At present she wears a brace on her right leg and is able to get about fairly well.

Case 6. S.F. Male. 10 years.

S.F. is a ten year old boy in grade four. His mother is in poor health and an extremely nervous individual. S.F. has spastic right hemiplegia. His right arm is smaller than his left and operates with less dexterity. His feet are pronated; his right leg spastic. Speech is typical, being awkward and thick.

S.F. is well adjusted to his handicap. He wears a brace and is able to get around fairly well. He has spent some time in a summer camp which seemed to help his attitude toward his handicap as well as being beneficial in gait training.
Case 7. P.M. Female. 6 years.

P.M. is a six year old girl who was born deeply jaundiced. Two days after birth she received six blood transfusions. Growth and development were slow and she did not walk until 2½ years. She developed athetoid tendencies which seemed to increase slowly as she grew. Speech was slow in developing and is still quite impaired. She walks with a wide awkward gait, has hyperextension of the knees, and falls frequently. She wears a supporting corset and braces and is able to attend nursery school. Doctors predict that her athetosis will increase as she grows older.

She does work well with her hands though it is difficult and awkward for her.

2. Rheumatic Fever

The following cases are from the files of the House of the Good Samaritan, Boston, Massachusetts. Each of the children was in the hospital at the time the histories were read by the author.

Case 8. L.M. Female; Age at admission-11 years, 2 months; has been hospitalized for 2 months.

L.M. is the fourth child in a family of five. She has three older brothers and a baby sister. The five children live with their parents in an extremely crowded apartment on the fourth floor. The mother and children appear very well dressed; in fact, they seem to dress beyond their apparent
means for no one in the family is working. The father is an unemployed fisherman.

L.M. is in the seventh grade in school where she had been doing excellent work. According to her parents she had always been a healthy child until two weeks before her admission when she was extremely ill with fever and pains in her arms and legs.

An examination upon admission revealed many dental caries, poor nutrition, and also indicated a probable diagnosis of rheumatic fever with carditis.

She was treated with cortisone and after only a few weeks responded dramatically to the hormone treatment, with complete recovery of the rheumatic status. She shows some signs of heart damage. At present she is not allowed out of bed.

Case 9. E.M. Female; Age at admission 7 years, 1 month; has been hospitalized for three months.

E.M. is a well adjusted child who comes from an apparently happy home situation. Her father is a laborer earning $65 a week.

E.M. has a medical history which describes a frail, delicate, underweight child who tires easily and is very susceptible to colds. Her diagnosis is rheumatic fever. At present she is confined to her bed.
Case 10. P.R. Female. Age at admission--7 years, 2 months. Has been hospitalized for nine months.

P.R. comes from a home with extremely poor living conditions. Her parents are very resistive to all medical advice or care. On May 25, 1952 P.R. was taken ill with a sore throat and developed swollen, red, tender, ankles. Her diagnosis upon admission to the House of the Good Samaritan was acute definite rheumatic fever with mitrol involvement and carditis, and borderline rheumatic heart disease. She had fever, swollen and tender joints, and the appearance of nodules.

After ten days of cortisone treatment the nodules began to disappear and her temperature subsided. She remained quiet, sad, and apprehensive. At the end of a month her condition was generally improved and she was more cheerful and talkative but there was considerable heart damage which would call for long convalescence. At present she is allowed five hours out of bed a day.

Case 11. C.T. Female. Age at admission--11 years, 3 months. Has been hospitalized for 12 months.

C.T. is an extremely shy, sensitive, colored girl who lives with her unmarried mother and her grandparents in a four room apartment. C.T. shares a room with her grandmother who seems to have an extremely intense attachment to the girl. She has no siblings. Her mother earns approximately §30 per week.
C.T. was first seen by a physician on March 1, 1951. She has a medical history of repeated sore throats, colds, and nosebleeds. On each occurrence she was in bed for several days and as a result missed much school and has been kept back one year. She is now in the fourth grade.

Her case was diagnosed as rheumatic heart disease with mitral involvement and mitral stenosis, and later as chronic active rheumatic fever. She has now been hospitalized one year. She has no apparent acute distress and is allowed one to two hours a day out of bed.

Case 12. R.P. Female. Age at admission--12 years, 4 months. Has been hospitalized 4 months.

R.P. lives with her mother and brother in the second and third floor apartment of a two family house. Her parents have been separated for five years, her father is now in a state prison. She is described as a 'B' student in the seventh grade.

R.P. had been well until three weeks before her admission when she complained of sore joints and fever. Her diagnosis is rheumatic heart disease. She is being treated with cortisone and ACTH. At present she is not allowed out of bed.

Case 13. C.P. Female. Age at admission--6 years. Has been hospitalized 17 months.

C.P. is of Portuguese extraction, living with her mother and brother in a low rent area. Her parents are separated and
her mother works to support the family. Her father has only recently been killed in California.

C.P.'s medical history goes back to the age of two and one half years when she was hospitalized for bronchitis. Because of poor home conditions, and because of her malnutrition and anemia, she was transferred to a convalescent home to be built up. Four years later she was rehospitalized for a similar condition. It was discovered that she had an enlarged heart and liver. She was again transferred to the convalescent home after treatment. One month later she suffered joint soreness and swelling. In another month her condition was diagnosed as acute rheumatic fever and rheumatic heart disease.

She has now been at the House of the Good Samaritan for 17 months. At present she has no apparent distress and is allowed five hours a day out of bed.

Case 14. L.C. Male. Age at admission--6 years, 6 months. Has been hospitalized for 10 months.

L.C. lives with his widowed mother and two siblings--9 and 11. His mother owns and operates a small store and his eleven year old sister cares for the house and the smaller children. L.C. had been sick one week when he saw a physician. A physical examination disclosed a systolic heart murmur and possible rheumatic fever. Symptoms included fever and severe pain in his heels. Three weeks after his initial sickness he was admitted to the House of the Good Samaritan.
Examination showed an enlarged liver and heart, nodules, and a distinct heart rumble. He was treated with cortisone and ACTH and after three weeks his heart size had decreased and his condition seemed greatly improved. He showed the characteristic toxic reactions to the hormone treatment. Four months later there was, what seemed to be, a rebound of rheumatic fever. He was pale, listless, and had sore throat and fever. This condition improved under treatment and he was again active and cheerful. In two months he was able to be up two hours daily.

His condition seems to continue to go up and down so that he cannot yet be discharged. At present he is allowed five hours out of bed a day.

Case 15. J.K. Male. Age at admission--8 years, 7 months. Has been hospitalized 3 months.

J.K. is one of eight children living in five rooms on the fourth floor in a low rent area. This was J.K.'s second admission to the House of the Good Samaritan, the previous one being from July to September in 1951 with a diagnosis of acute rheumatic fever and rheumatic heart disease, mitral involvement and cardiac enlargement.

After treatment he was sent home for complete bed rest, and had a home teacher for one year. The next fall he entered grade three but was taken sick in January with pain and swelling in the knees, nausea, headache, and nosebleed--what seemed
to be a recurrence of rheumatic fever. He was treated with ACTH and his condition improved. At present he has no complaints but seems to have no outside interests. He has considerable heart damage and is likely to be hospitalized for some time. He is allowed one-half hour out of bed each day.

Case 16. W.P. Male. Age at admission—9 years. Has been hospitalized 2 months.

W.P. lives with his parents and grandmother in a neat, well-furnished, happy home. His medical history dates back four years when he was examined by his family physician and sent home to bed for five months, with what apparently was a type of rheumatic fever. Three years later he was admitted to the House of the Good Samaritan with a diagnosis of chorea. He was discharged in four months and readmitted two months ago. He had developed marked personality changes, manifested in irritability toward parents and associates, and the symptoms of chorea reappeared. At present he is allowed one-half hour out of bed.

Case 17. A.S. Male. Age at admission—ten years, seven months. Has been hospitalized for 9 months.

A.S. is a well adjusted, musically talented lad from an apparently good home situation. He had been well until the age of eight when he began to have severe nosebleeds and frequent sore throats. His nosebleeds persisted until in an
emergency he had to be rushed to a hospital to be treated. He was examined and referred to the House of the Good Samaritan under suspicion of rheumatic fever.

Examination showed acute rheumatic carditis. He responded to treatment but still has some heart damage. At present he is allowed up to five hours out of bed a day.
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