WINTER ORGANIZATION OF PLAYGROUNDS

Have you ever driven a timorous horse on city streets during hours when the savage hoards are no longer cooped up in the schoolroom? Did you ever see your stovepipe chase along over the drifts or have your "lid" lifted prematurely and involuntarily to some passing member of the fair sex while from behind a fence or around some corner you hear howls of derisive laughter and shouts of unholy joy? Do we need winter playgrounds? "Don't the streets make a dandy playground? Gee, but ain't it fun to flip on to brewery teams and swipe 'you know'? Did you see me soak that stiff with them snowballs? What do you suppose the guy says? We can coast on every street. I don't think. Cheese it, the cop. Soak him one in the ear when he ain't looking. Look out, he'll put you on the bum if he sees you." And this is the way children in the city occupy themselves outside of school hours. Do we need winter playgrounds?

Seriously, is there anything lawful which children may enjoy out-of-doors in the city in the winter time unless special efforts are made to provide them means and places where they may safely let off superfluous steam and secure the exercise which they must have in order to counteract the cramping, stifling, unhygienic influences of school-time confinement?

During the summer, baseball can be played in almost any vacant lot. During the winter time, these vacant lots are covered with ice and snow and the average city child has not energy or enterprise enough to clear them off. Hence, they take to the city streets, which are kept in such condition that they invite coasting and other delights of less wholesome nature, so that in winter time there is almost nothing for the child which is enjoyable except life on the streets, and the God-given instinct of play is indulged in at the expense of the property and happiness of others. Do we need playgrounds in winter or are they merely a summer exotic?

Is there any place except the streets where the God-given instincts of play may be indulged in in a lawful manner? The playgrounds for children, which are open in the summer time, as a general thing are closed in winter, and even though they be open, the equipment is not of the kind to be most valuable for
winter play. Most of the winter play activities of our playgrounds are confined to the gymnasium. It seems to me that exercise indoors is a very poor excuse for outdoor play and should be indulged in only during unseasonable weather when it is absolutely impossible to play outside. What our city children need is more fresh air; and gymnasium exercise carried on inside, with mats which are more or less dusty and in steam-heated apartments, will never go far in developing a hardy type of manhood and womanhood in the American race which is to be. We do not have a very extensive variety of games adapted to small spaces out-of-doors in the winter time.

Outdoor play should be made so attractive in all weathers that children simply have to go out-of-doors. Nothing will keep them inside. Clubs and social organizations, libraries, literary societies, et cetera, ad infinitum, are all right in their way, but they do not supplement our one-sided educational system.

As soon as the city child is four or five years of age, he is sent to school, and spends most of his time in school for a dozen years or more. What we need is not more culture, refinement, and literature, but a stronger emphasis laid upon the more barbaric virtues of loyalty, physical courage and endurance, and heroic altruism, which find their fullest development and expression, not in the schoolroom or in the home, but on the playground.

It seems to me that the properly developed out-of-door winter playground offers an unequalled field for the proper development of these instincts which our summer playgrounds are handling to good advantage, but which, during the winter time, are obliged to find their expression on the street and in unlawful places, through lack of proper equipment and supervision for their development.

For children in the country, winter is the best play time, with coasting, skating, polo, skiing, and other winter sports. However, for city children, conditions have changed so that unless special provision is made, there is little chance for winter sports and games. Our playground equipments of apparatus should be so designed as to adapt themselves to both summer and winter uses. For instance, the playground slide may be made so that it can be lowered in winter and sprinkled, converting it into an ice slide. A very good toboggan slide could be adapted for use from the ordinary playground slide. Cheap
toboggans may be made out of barrel staves, each child furnishing his own toboggan. Playground slides may also be used for sled coasts in place of hills.

A skating rink is very easy to maintain in cold climates and it is a most satisfactory means of amusing children. The fire departments and police departments in many cities maintain these on vacant lots. The baseball diamond and athletic field in small playgrounds should be made so as to drain for winter flooding. I have found, however, that unsupervised skating rinks, like unsupervised playgrounds, are quite apt to do more harm than good; but police supervision is more efficient on the skating rink than in the playground. With suitable equipment and a good skating rink, the opportunities for development of winter play are practically unlimited.

**Games to be Played**

The game in which the greatest amount of exercise can be secured in the shortest space of time is the best adapted for winter use. There is a marked difference between warm weather games and cold weather games. Baseball, which is essentially a warm weather game, is as different from ice hockey as summer is from winter. As most of our winter games have developed in the country, they are not entirely adapted to city conditions. With very little effort, however, some of our best summer games could be changed so as to meet winter conditions and city spaces. These could be played at times when it is either too snowy or too warm for games which depend upon ice for success.

We will illustrate a few common games with winter variations:

**Snow Baseball**

While baseball is primarily a summer game, we think the following statement will change it into a successful winter game. This game is entirely theoretical at the present time, so far as we know, but we see no reasons, either psychological or physiological, why it should not be a success. The game is played by nine players on each side. In so far as possible it should conform to regular baseball rules. We have indicated on the diagram the positions of the players. The players marked with daggers are at bat. The players marked with stars are in the field. You see the playing positions are somewhat different from those of baseball, and more players are engaged in the game.
at one time. The first baseman and the third baseman play anywhere between home plate and first base and home plate and third base respectively. The catcher plays in the ordinary position. Right field, left field, center field, second base, and shortstop play in approximately their regular positions except that the in-fielders play a little farther out-field than in the regular game and the out-fielders play a little nearer in-field. The game is essentially one of running, dodging, and throwing. Instead of baseballs, snowballs are used. The batter takes his position as in the ordinary game. The pitcher delivers a snowball according to regulation style. If the ball strikes the rectangular backstop, a "strike" is recorded against the batter. If the snowball flies wide of the mark, it is a "ball". " Strikes" and "balls" are counted as in the regulation game. If the batter hits the snowball, smashing at least three-fourths of the same, it is a fair hit, and the batter immediately becomes a base runner. Either the catcher or the first baseman may put the base runner out between home plate and first base by taking a snowball from the ground after he has hit the one delivered by the pitcher, and hitting the runner with this snowball before he reaches first base. Meanwhile, a player on the batting side, the first base guard, is privileged to pick up a snowball and throw it at either the first baseman or the catcher, and in case he hits either one, the "out" is redeemed, and the base runner is declared "safe on first". The base runner between first and second base may be put out if right field or second base hits him with a snowball between bases. The snowball, however, must be on the ground until after the base runner has left the base. However, if the second base guard immediately throws a snowball, hitting the player who put the base runner out, the "out" will be redeemed and the base runner will immediately be allowed to proceed to second base. In running from second base to third base, the same method is pursued with the same rules except that those concerned are the shortstop, left field, and third base guard. In running from third base to home plate, the base runner will be subject to missiles thrown from third baseman, catcher, pitcher, and home guard covering his run. The center field and catcher may, at any time, put the base runner out after he has been hit by one of the opposing side and then put on side again by his own side if they hit the guard who effected the release.

Fouls.—It shall be a foul to hit any base runner above the
shoulders. A foul ball shall be declared when the batsman hits a snowball and only knocks a nick out of it. No player shall throw snowballs when nearer than fifteen feet of his victim.

This game combines most of the features of baseball, tag, and prisoners' base. The details, of course, will have to be played out experimentally. It seems to us that snow baseball gives as much opportunity for team play as baseball and also gives a much greater chance for exercise and includes most of the psychological concomitants involved in the ordinary game, and we have no doubt it will be a good antidote for unlawful snowballing.

Other games may be worked out as follows:

**Snow Bombardment**

The players are divided into equal sides. A line is drawn through the middle of the field. Instead of the Indian clubs and balls usually used for this game, each player should make a small snowman, at least 18 inches high. The object of the game is to demolish the snowmen made by the opposing side. Each player stands on guard in front of his snowman. At a given signal, play commences and each player makes snowballs
as fast as he can and throws them at the snowmen of the opposing side. Each player may guard his own snowman. As soon as all of the snowmen on one side are knocked down, the other team is declared "winner". In throwing the snowballs at the men, no man will be allowed to step over the center line, and stepping over this center line shall constitute a foul, and the player stepping over the line may have his choice of joining the other side or having his own snowman knocked over. This game may also be played by points, each snowman knocked over counting one point for the side knocking it over; the player whose snowman is knocked down being off-side until he puts his snowman up again or makes another one. The snowman must be made in parts, the lower part to be made heavy in the shape of a ball and the upper part being a sphere not over four inches in diameter. A snowman shall be declared down when his head is knocked off.

**Snow Duck on the Rock**

This game is played exactly like ordinary duck on the rock, but frozen snowballs are used as missiles and a frozen snow duck is used as a target. The duck keeper is privileged to keep on hand a stock of soft snowballs which he throws at those players who run up to gather the snowballs which they have thrown at the duck. Otherwise, the game is played as in the usual manner.

**Snow Dodge Ball**

Of any even number of players, half of these form a large circle while the other half stands inside the ring facing outward. Those in the center make and throw snowballs at those on the outside circle. Those on the outside dodge the balls. Whenever any one is hit, he is obliged to take his place with those in the center circle. When all have been put out but one, he is titled "king", after which the players exchange places—those who are in the center form the outside ring. Boundaries must be maintained over which those in each circle are prohibited to run.

In all these games it must be ruled a foul when a snowball hits above the shoulders or where frozen or loaded snowballs are thrown at players.

A large number of games may be altered in similar fashion so as to suit all kinds of weather. These games, which we have...
mentioned, are essentially snow games, and may be played on warm days in the winter when there is too much snow for skating. For the skating rink, polo is perhaps the best game for boys; preferable, we think, to ice hockey, for all except high school boys. All kinds of tag games receive added interest when played upon the ice, boys and girls of all ages playing the most childish games with the greatest pleasure. Among these, I will mention puss-in-the-corner; ham, ham, chicken, ham, bacon; running for places; fox; together with all kinds of races, prisoners' base, and other games too numerous for mention. There is no dearth of games for winter use. A selection should be made of those which the children know best, and of games which are best suited to local conditions; and special emphasis should be laid upon these games.

We should endeavor to teach the children games which will become popular all over the neighborhood, as the usefulness of a playground can be increased a hundred-fold if a fad for playing certain games is created. It is absolutely impossible for all the children or for the greater part of the children to be influenced directly by any playground, but if we can train up leaders in play who will take home with them the games which are taught upon the playground to be duplicated on vacant lots and in backyards, our work as play inspirers can be considered successful.

The best way to create this interest is through the organization of certain games. I will outline a plan which has been very successful in creating interest in playground attendance and also in increasing attendance at school and interest in school work. It is similar in its scope to that of the Public Schools Athletic League, but it has its center in the playground, rather than in the public schools. In treating of this, I will not only include an organization for winter time, but an organization for all seasons' athletic sports during the school year.

Organization of Grade School Games

The organization, which I have used in playground games, is a combination of the ideas of a Playground Athletic League which I organized in Louisville and some of the ideas of the Public Schools Athletic League of New York City. The activities of the league are divided into three periods, fall, winter, and spring sports. The series includes both inter-school and
inter-playground competition. Each grade school in the city is assigned to a certain ground as a play center. A series of preliminary games is played at each playground in order to ascertain the district champions. After these preliminary games are completed, a series of championship games is carried on, participated in by the championship teams from each playground. We have tried to make up these teams for the championship series by picking the best players from all the teams which have engaged in the preliminary games at each ground, but while, theoretically, this would seem to be a good thing and should develop team spirit and heal breaches made in personal feelings by intense local rivalry, in spite of this good philosophy, it has not always been successful in its working, and we have found that the best plan is to continue the team through, taking the winning team intact from each playground to compete in the championship series. We should have preferred the other way if it would work.

The complete plan of the league calls for the following games for fall, winter, and spring, and the winning of them counts the number of points assigned to each game. The points go to the playground where the teams practise, and the playground winning the most points each year keeps possession of the Playground Athletic Championship pennant. The school teams winning the championship in each of the games keep the game pennant until it is won away. Any school or playground winning a pennant three successive years keeps it permanently.

### THE SCORING

<table>
<thead>
<tr>
<th>FALL GAMES</th>
<th>NUMBER OF POINTS</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1ST</td>
</tr>
<tr>
<td>Girls' Basket Ball</td>
<td>100</td>
</tr>
<tr>
<td>Boys' Basket Ball</td>
<td>75</td>
</tr>
<tr>
<td>Boys' Field Hockey</td>
<td>100</td>
</tr>
<tr>
<td>Girls' Field Hockey</td>
<td>75</td>
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<tr>
<td>Boys' Association Football</td>
<td>100</td>
</tr>
<tr>
<td>Track and Field Sports, for Boys and Girls</td>
<td>100</td>
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</tbody>
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Of this list, the only games which we were successful in carrying on were girls’ basket ball and boys’ field hockey. These were very successful, and the contests were so close that in the final game of the Boys’ Field Hockey League it was necessary to play three days before a result was reached. No doubt we would have been successful in carrying out the entire schedule had we been able to secure sufficient help in organizing the games.
For the winter playground, we would suggest the following organized games:

<table>
<thead>
<tr>
<th>Games</th>
<th>Number of Points</th>
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<tbody>
<tr>
<td></td>
<td>1ST</td>
</tr>
<tr>
<td>Boys’ Ice Polo</td>
<td>100</td>
</tr>
<tr>
<td>Boys’ Snow Baseball</td>
<td>100</td>
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<tr>
<td>Girls’ Ice Polo</td>
<td>100</td>
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For the spring games, we have used the following:

<table>
<thead>
<tr>
<th>Spring Games</th>
<th>Number of Points</th>
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<tbody>
<tr>
<td></td>
<td>1ST</td>
</tr>
<tr>
<td>Boys’ Baseball, Senior League</td>
<td>100</td>
</tr>
<tr>
<td>Boys’ Baseball, Junior League</td>
<td>75</td>
</tr>
<tr>
<td>Girls’ Croquet League</td>
<td>50</td>
</tr>
<tr>
<td>Girls’ Ring Toss League</td>
<td>50</td>
</tr>
<tr>
<td>Track and Field Sports, for Boys and Girls, both Senior and Junior Divisions</td>
<td>100</td>
</tr>
</tbody>
</table>

The eligibility rules of the games were as follows:

In order to represent his school in any playground contest, the contestant must have been a regular attendant of the school from which he is entered and must have an endorsed blank certifying this fact, signed by the principal of the school and by the director in charge of the playground from which he is entered. We have been informed by the principals of schools that this rule has benefitted the school attendance on the parts of the boys who have always been prone to play “hookey”.

With regard to games for girls, we are undecided as to whether public games for girls are best or not. So far as the players are concerned, we have had no difficulty in these leagues. At first, of course, there was some hard feeling, but as the girls became used to playing, this feeling disappeared. The last game between the two championship teams was one of the best games of basket ball which I have ever seen. The most commendable spirit prevailed throughout the whole contest. Although both teams were eager to win, they observed the rules very conscientiously. At the end of the game, the losing team, who lost on account of their inexperience, of their own accord and without any suggestion from any one, gave three cheers for the winners. This is the spirit of fair play and clean sport which we are striving to cultivate by means of the playgrounds. However, on the way home from the grounds, certain hangers-on from the district from which the defeated team came, raised a “rough house” with certain hangers-on from the district of the winning team, which caused some bad feeling. If we can give
our teams sufficient protection while passing through hostile districts, we are sure that there will be no disorder or bad feeling, provided our games are in charge of competent officials, but in order to carry out a league like this successfully, the management must be in the hands of a clean sport enthusiast, who has the ability to create in others the ideals for which he stands.

The director in charge of grade school children's athletic leagues, such as these, must rule with the hand of a dictator, but with the heart of a diplomat. When the season ends, it is quite probable that only one-quarter of the teams who made a beginning will finish. The emphasis which is placed upon certain games and sports will be determined by the children who will participate in those sports which are the most popular. Different cities are different in this respect. For instance, in Louisville we carried on several very successful general programs of track and field sports with no difficulty whatever and with much interest. We broached the same programs in St. Paul and Denver, but the children would not take hold. We carried on a basketball league for boys in Louisville, but found ourselves unable to carry out the program in the other two cities. We found ourselves unable to introduce field hockey in Louisville, but after three years of effort, we made this game popular in St. Paul. We were successful in organizing baseball everywhere. Perhaps, however, our greatest success in this was in St. Paul, where for some time we carried on twenty-four games a week.

Conditions in local playgrounds will also affect the games which will be most popular. For instance, we have found that field sports and football and the more active games are most popular on the playgrounds whose constituency is made up of the middle and better classes of children, while baseball is most popular on the grounds used by newsboys and by the poorer children. In one playground which we had in Louisville, the only sorts of amusement which we could popularize were punching bag and boxing gloves. After having four young college athletes successively run out of the grounds, we placed them in charge of "Kid Parreto", a rising young prize fighter. Even though his ideals were not particularly high, we felt that his ability to enforce what ideals he did have would do more good than higher ideals which could not be enforced.
PRACTICAL POINTERS ON THE PEDAGOGY OF GAMES

The director in charge of a series of games should, whenever possible, secure some one other than himself to referee and umpire all local games, because disputes and ill feeling, either temporary or permanent, are quite apt to occur, and if these have arisen through some decision of the supervisor, his influence will be lessened. The supervisor should train a corps of officials and should act as teacher and as a final court of appeals in regard to all decisions. His attitude in regard to district championship games should be judicial rather than executive. However, in championship games, the supervisor of playgrounds can, with dignity and effect, keep the position of an active official.

Work the newspapers for all they are worth. Make personal friends of the city and sporting editors of all your papers, and keep their pages full of playground athletic news. Keep records and percentages of games on the sporting pages, publish pictures and reports of the games in the news columns, and this newspaper work will be well repaid in the creation of public sentiment for playgrounds and in developing interest among the children in outdoor athletic sports. In all the cities in which we have organized playgrounds, we have had permanent invitations to come in and use the typewriters for our copy, as if upon the regular staff. We have found it an advantage to write our own articles, for, by doing this, we have been sure of our stuff appearing in print just as we would have it. We pursued this plan except upon some special occasion, when the papers would always be glad to send photographers and reporters to write up the games. We find it is a great advantage on the part of male instructors to learn the lingo of the streets and to use the same whenever talking with the boys. It creates a fellowship between coach and player which we have been unable to secure in any other way, even at the expense of corrupting the purity of our English language. Like the apostle of old and the pagan philosopher, "we must be all things unto all men" and "when in Rome, do as the Romans do."

Although the work of organizing games among children is strenuous to the extreme, nothing can give greater satisfaction than to observe the rapid progress from disorderly chaos and anarchy to the organization and good fellowship which can only
be obtained among groups of heterogeneous children by organized play.

**QUESTION:** Is there an age limit for representative teams?

**MRS. LELAND:** We raise them in different places. In school games it is under fifteen, and then, of course, we have outside games for older children; but we did not have them on the regular playgrounds when the other children were there.

**QUESTION:** From what officials do you get the best results, from boys or adults?

**MRS. LELAND:** We usually have one older person as umpire. The older boys vote and choose their own boys. We usually have the two teams elect some one person. We always have one of our own people at the head to supervise, but we find that the boys hold very closely and carefully to the decisions of their own members.

**MR. TAYLOR:** It seems to me that this is a subject to which we should give a great deal of attention. Criticism has been made against the public schools that they are being used for only part of the time. It seems to me that it could be even more strongly made against some playgrounds that are used only through the summer.

**QUESTION:** Did I understand that the work which Mrs. Leland describes is confined to school children, or is it open to all boys and girls?

**MRS. LELAND:** To all boys and girls. Of course, we do not have the games for small children going on at the same time as those for the larger ones. You will see on the tracings in the other room about the slides of which I spoke. The base of the slide can be turned around and the slide can be lowered in winter for toboggans and in the summer it may be lowered for use with these little wagons. So one piece of apparatus really answers for about five purposes.

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**THE CHAIRMAN:** Dr. E. H. Arnold will now speak to us on "Some Inexpensive Playground Apparatus."

**DR. ARNOLD:** On entering these portals this morning, I was met by a well-dressed lady from Washington who reflected upon my appearance by saying that I had not changed much, except that I had become more portly, and that she did not see why I should be in the playground movement; and I think being so and
having become older and more portly, I think I am entitled to reminisce. I think there is room for reminiscence here. You are dealing with the most modern conditions for children and it is well for an old man with young features to guide you back a little. Having a very short paper and being a very bad reader, I may precede my paper with remarks at which they say I am most happy!

The pieces of apparatus of which I am to speak make me look back a considerable space of time; and they show me that the playground movement, the child labor movement, the movement for the improvement of the conditions of the poor have been practically always the same. These pieces of apparatus stand in most municipal playgrounds. I have not time to show you pictures and illustrated drawings. Dr. Gulick says it is so much better to have pictures: "they show so much better than you can say it!"

In a little town of 50,000 inhabitants, suffering from all the effects of the Thirty Years' War, the conditions of the poor were so appalling that a minister of the Gospel, being appointed to a parish in the outskirts of the town, found the poor so deplorable in physical, mental, and moral conditions that he thought something should be done. In a stirring address to his congregation he called attention to that condition. Next Sunday he found in the contribution box two dollars. It must have been an unusual occurrence at that time, for it is a matter of history which has come down to this day. Now he could not do much with two dollars. (Notice the title of my paper, "Some Inexpensive Playground Apparatus.") When I was a boy I entered this great institution which he founded with that two dollars. There were no multimillionaires around at that time to endow the school. It grew to a large extent because of his own efforts, little by little. The man had considerable foresight and his institution was a large one in a short time. It is of the same dimensions yet, while the city is nearer the 200,000 than the 50,000 mark. In the midst of that city full of industry the school still retains thirty acres of free ground—that against very alluring offers made by real estate people. Part of that ground was at that time already used for formal gymnastics and industrial training. He instituted a playground which is intact until this day. That playground is perhaps eight acres long, surrounded by a large wall—solid wall, no fence. (A fence wouldn't do for
those boys at that time; it won't do now.) There were shade trees on one side and turf in the borders, and sand in the borders on another side.

On this playground, which antedates all other efforts in that direction and which has stood time well, the children of the school still play. This playground was not especially for formal, for organized play. It is a playground for that too, and for gymnastics even, but it is to a large extent a playground where the pupils (at the time I attended there were 8007) played at various times. It was for free play, for the pupils' recreation just when they wanted it. There was no supervisor needed to direct the play, except in the gymnastic lessons. There we had certain of these apparatus.

In looking at some of the pictures that have been shown here, I have been struck by one shortcoming of organized play. Some of the pictures show ten boys playing and three hundred looking on; and that picture was repeated several times. In passing one of the playgrounds this morning, I saw two nines playing, twenty boys. They were occupying a tremendous space of the playground and the others were sitting on the fence doing nothing. That may be good for them, but it is not the most inexpensive way of playing. In general there is nothing but the bare ground; what we need is some apparatus that will give the children an opportunity to play often and to improvise play. There is no playground that you can have that equals the improvised playground. I do not know how many of you have ever played in a lumber yard. That is the place to play; or in a cooper's yard or on a building half finished. It is against the law and regulations and occasionally one breaks one's nose. I have done even worse. We played on the railroad. I was brought up in a railroad town and we played railroad, and I still have all of my ten fingers and even my toes. Those are real playgrounds. I do not want to preach here. There are not many children whom I would advise to play on the railroad. It is against the law. We broke the law without compunction; they do nowadays. No officer could catch us then; they don't nowadays. Times repeat themselves pretty much and opportunities.

Now, your playgrounds should have some provision for that kind of a play space; you must have some place where children can play in their own way. Improvised play makes for ingenuity.
Look at the ingenuity I have developed by play and see what an inducement that is to have my boy play in the same way!

These pieces of apparatus I miss. You may look at them askance and with contempt and at my effort likewise; but if you do, I cannot help it. Now here goes the paper.

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SOME INEXPENSIVE PLAYGROUND APPARATUS

Paper of Dr. E. H. Arnold

The financing of a public movement of any magnitude is always a serious problem. Especial difficulty attends this problem if the movement sets in quite suddenly and without preparation and makes rapid progress. The playground movement has been and is of this latter sort. It has come over us like a thief in the night, and its progress has been all that could be desired. Whatever may be the urgency of any public movement, rapid progress is not always attended with happy results. Many mistakes born of inexperience, and which often prove costly not only in a financial sense, often accompany fast growth. The playground movement is a fairly costly one. While the ground itself and direction and supervision may be the main items of expense, equipment and maintenance, nevertheless, are considerable ones. It is with the idea of diminishing as well the cost of first equipment as that of maintaining a playground, that I wish to bring before you a few examples of inexpensive playground apparatus or contrivances. Before attempting the description of a few of such contrivances, which I wish to submit as a type, and upon which no doubt many of you can improve, we should first make it clear to ourselves as to what constitutes an inexpensive apparatus.

An apparatus is inexpensive if it can be installed at little cost. In general it may be said that such apparatus as is manufactured en masse can be gotten cheapest from dealers. An apparatus which is out of the ordinary, and which, therefore, has to be made to order, is cheaper if home-made. Apparatus which can be gotten ready-made from the manufacturer or dealer, but which costs a great deal to erect or adapt to a special location, would be cheaper home-made. The cost of apparatus which is