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MACFADDEN'S ENCYCLOPEDIA OF PHYSICAL CULTURE

VOLUME II.

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YOURS FOR LONG LIFE,

Sanford Bennett.

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MACFADDEN'S ENCYCLOPEDIA OF PHYSICAL CULTURE

A WORK OF REFERENCE, PROVIDING COMPLETE INSTRUCTIONS FOR THE CURE OF ALL DISEASES THROUGH PHYSCULTOPATHY, WITH GENERAL INFORMATION ON NATURAL METHODS OF HEALTH-BUILDING AND A DESCRIPTION OF THE ANATOMY AND PHYSIOLOGY OF THE HUMAN BODY

By BERNARR MACFADDEN

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ASSISTED BY

Specialists in the Application of Natural Methods of Healing

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CHAPTER I.

EXERCISE THE TONIC OF LIFE.

THE dictionary definition of the word tonic gives one an entirely erroneous and false conception of its meaning. It says that a tonic, "in medicine, is that which produces and restores the normal tone," implying thereby that a tonic is used only in disease. At the very outset we protest against this perversion of the term. It is not necessary to become sick in order to be benefited by a tonic, provided the tonic is a right and proper one.

This perverted use of the word tonic has led to much unnecessary pain, distress and injury to the human race. Humanity, not living as it should in natural, normal healthfulness constantly has flaunted in its face a variety of false and deceiving "tonics." Every saloon has its various "tonics." A man exhausted with debauchery, blear-eyed and sodden, his body cursed throughout with alcohol and other liquors, his hand shaking as with palsy, goes to the barkeeper and in a husky voice asks for "a strong tonic." The habitual, respectable drinker likes his "tonic," or "bracer" early in the morning, or at eleven o'clock, or some other time of the day, until the vile habit is fastened upon him and he finds that he has cursed his life by becoming a slave to a poisonous drink.

Every drug store in the land fills its windows now and again with loudly advertised tonics. In the springtime, there are tonics for the blood; in malarial regions, they have tonics that keep away malaria; they have tonics for ailing females, and tonics for weakened men; they have tonics for the young and tonics for the old; tonics for the young miss attending school and tonics for the nursing mother; each and all of which are false tonics, and therefore, unnecessary, injurious and dangerous.

Many of those who do not patronize the drug stores or saloons consult their physicians, and every physician in the land has his little list of tonics for different classes of patients and different diseases. One needs a tonic for his heart, another

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needs a tonic for his liver, still another needs a tonic for his stomach, and another to drive away that drowsy feeling after he has eaten a meal hearty enough to send half a dozen men to sleep. These are the "respectable tonics," but, nevertheless, they are just as useless, as injurious and as dangerous as those peddled over the bar or retailed behind the counter of the drug store.

There is another class of tonic takers who, as a rule, patronize neither the saloon, the drug store nor the physician. These are the hearty livers who enjoy good food at the best of hotels. These men are healthy, vigorous and strong, so they say. They "never need a physician" and "never think of patronizing a drug store." They "know enough to take care of themselves" and "do not need anyone to tell them what they are about." But, before they begin their hearty meal, they believe that a little "bracer" will do them good. They "believe that it helps digestion." It "tones up the stomach." So they order a tonic in the form of a "cocktail" or other "appetizer" and thus, deceiving themselves as to their own actions, they fasten upon themselves a habit equally unnecessary, injurious and dangerous as those of the other classes we have mentioned.

I am unalterably opposed to each and every one of these kinds of tonics. However they may be regarded they are all in exactly the same class. They are deceivers and defrauders, liars and cheats, wolves in sheep's clothing, enemies masquerading as friends. Not one of them ever did any real good and not one of them ever will. The human race would be better off had they never been thought of, compounded and used.

Hence, it will be apparent, that we are not about to advocate the use of any tonic of this kind. Our conception of the meaning of the word tonic is entirely different from that which the foregoing interpretation suggests. To us it means the putting of the little extra snap into the actions, the livelier spring to the walk, the brighter sparkle to the eye, the finer velvet touch to the skin, the keener edge to the appetite, the more critical discernment to the palate, the heartier pressure of the

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hand-clasp, the quickening of the impulse to get to work, the adding of greater zest to the doing of one's daily duty. Our kind of tonic adds a cheeriness to the voice, a heartiness to the laughter, a vivacity to the demeanor, a liveliness to the walk. It produces vim, snap, spirit, dash, enthusiasm.

From our standpoint, the "toned up" life is a life full of health and vigor. It is the all-abundant, exuberant, abounding life described in Volume I,—that which makes every day's actions joyous, that renders the taking in of every breath of air a physical pleasure, the discharge of every duty a joy, the eating of every mouthful a delight. It is that which makes life "one glad sweet song," as beautiful as a perfect day in June, as sweet as the memory of golden deeds, as stimulating as the recital of heroic achievements.

Every man, woman and child that lives, consciously or unconsciously desires to live this toned up life. The very blindness in the use of the so-called "tonics" and the avidity with which they are taken is proof of the reaching out of all men to this happy state of body, mind and spirit. Every intelligent man and woman wishes to *really* live, to initiate, to endeavor, to achieve.

To the life that is normally healthy and "toned up" in accordance with our principles, this becomes possible in the case of every human being. To think becomes easy, to initiate becomes natural, to dare to be ambitious becomes reasonable. When a man is toned up normally and naturally, his will is active to initiate, his intelligence is alert to plan, and his mind and body are strong enough to set in motion the plan and carry out that which the will has projected. Perseverance becomes natural and normal, and the activities are quickened as the work of each day reveals that achievement comes nearer.

I think that the reader will now well understand what I mean by the statement that *the natural tonic of the healthful body is exercise.* There is no tonic in the world equal to it, for it is the only natural, God-ordained, perfect tonic. And by this we mean exercise in the open air and, as far as possible, in the sunshine. These are facts that cannot be emphasized

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Mercury Belvedere, a Statue Typifying the Greek Ideal of Strong and Symmetrical Male Figure.

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too forcefully or iterated too often. The secret of human energy is the *use* of human energy and the secret of healthful life is the *use* of healthful life. Exercise—the use of the muscles of the body—is the tonic of life.

I wish to repeat, with all possible force, that I always prefer *natural outdoor* exercises in the form of play rather than artificial indoor ones. While I devote a large part of one of the volumes of this series to indoor, or gymnasium, exercises, I wish to impress it upon my readers that these are only makeshifts for the more perfect exercises out-of-doors, which I shall also fully illustrate and explain.

I believe that a child's play should be of such a nature as to give all the muscles of the body sufficient exercise, and play should be so arranged for the child that this desirable end is attained.

The daily labor of many men affords them the requisite healthy exercise to keep the body in its normal, healthful condition. But, unfortunately, our civilization so divides and allots men's labors that some men get too much physical exercise, and others practically none at all. Hundreds of these latter men and women are doomed by the customs of civilization to indoor, sedentary occupations. If, to this kind of life, these people add insufficient and impure air and improper diet, sickness is inevitable. If, however, they would arrange a systematic course of either outdoor or indoor exercises, and faithfully carry it out, under reasonably favorable conditions, their health might be preserved, their happiness assured and reasonable longevity attained.

Let us again affirm the advantage of natural outdoor sports for exercise as compared with the artificial exercises of indoors. By all means choose the former whenever possible. One hour of outdoor walking, or rowing, or any other reasonable exercise is of greater advantage than double the amount of time expended on artificial exercise indoors.

There is no way so perfect for the adult to learn *how* to exercise as to simply watch an unconscious, natural, normal, uncivilized child at play. Yet the great difficulty is to find

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such a child. Certainly he is not the city child, shut in by walls and streets, circumscribed in space, and with little or no native grass to play on. Because of these restricting influences of civilization upon the play of the child it now becomes imperative on the part of the wise parent to see that, as far as possible, his child has opportunities for play of a reasonably natural character.

The healthy child should never have the idea put into its head that it plays for health. It plays because it is natural for it to do so. Childhood, with its freedom, its enthusiasm, its delightful anticipation, is the most joyous period of life. It is playtime. The exuberant spirits that are aroused by bubbling vitality are contagious.

Parents should watch their children play and seek to get into their spirit. If you wish to remain young there is nothing more advantageous than to join a band of wholesome, healthy, happy boys and girls going into the country for a day's outing. As a recent writer in *Physical Culture* has well said:

"It is the intention of Nature that children be both healthy and happy.

"We are in the habit of looking upon childhood as the playtime of life. A great many of us, however, are wont to consider play as unimportant and even frivolous. The fact is, play is a very valuable factor not only in childhood but also in later life. Parents and teachers ought to take more interest in play, both for the good of the children whose lives they are influencing and also for their own best development. A proper proportion of play tends to improve the quality of study and work. One tremendous defect in our educational system has been its failure to provide a sensible balance of activities and thus better promote the all-around growth of boys and girls.

"Healthy children at play furnish a study which is both interesting and inspiring. The nature of the games they like best, the degree of enthusiasm with which they enter into their sports, the spirit they show toward one another, all afford valuable suggestions concerning their different tastes and various characteristics. Sometimes these suggestions are complimen-

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tary to parents, and sometimes they are not. The training which a child receives at home does not have everything to do with his conduct when away from home; but it has a great deal to do with it. What is true of the deportment of a child when away from the immediate influence of parental supervision is probably true to the greatest extent of his behavior when engaged in unrestrained play with other children. The average child is more fully himself on the playground than in the school room or the nursery. Wise are those parents who use play as a prominent factor in the training of their children; and fortunate are those children who are not denied the privilege of play.

"In addition to the ordinary games and contests in which they engage with one another, children take pleasure in various forms of imitative play. These are carried on both with and without toys. Girls keep house, teach school, sew, 'dress up,' and imitate other occupations and customs of their elders, while boys play soldier, build barns, farm, break horses, and carry on many business enterprises.

"Then there are coasting, skating, sleighing, parties, picnics, boating, wading, swimming, fishing, and other kindred amusements, which many carry from childhood into youth, and which a few take on with them into mature life and even old age. All of these forms of exercise and play, and all other kinds of true recreation, tend to produce the smiles and cheerful spirits which ought to accompany exhilarating health and genuine happiness.

"A very good way to help keep from growing old rapidly is to take an interest in the various activities of child life, especially play. The smiling, ruddy faces, the cheery voices, and other expressions of vigor and enjoyment noticeable among children engaged in wholesome play all serve as a most excellent illustration of the value of play as a tonic. As we study the youthful enthusiasm of the little ones and note the freedom from worry, the spirit of fairness, the desire to achieve, we, too, get needed relaxation, increased ambition, renewed strength and determination. In memory, we stroll back to the happy experiences of our own childhood, and with the mind's eye we see the old home, the old schoolhouse, the 'ole swimmin'

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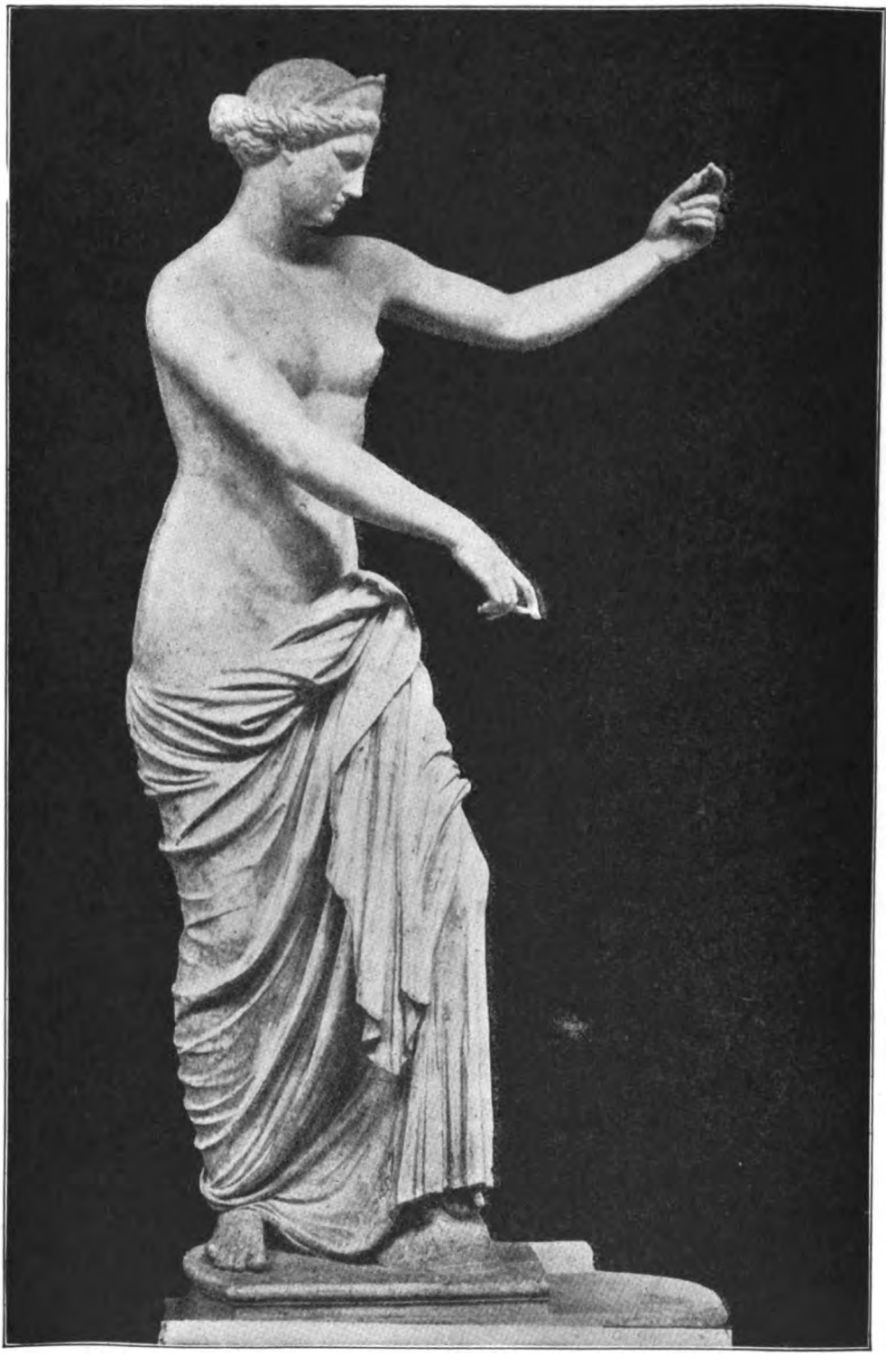

The Venus of Capua—Typifying the Greek Ideal of the Perfect Female Form Divine.

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hole,' and other cherished spots of long ago. We mingle with our home folk and playmates, tell again our favorite bear stories, tease the cats and go hunting with the dogs, and perhaps play a few pranks bringing consternation to our loving teachers and sacrificing parents. We forget for a few moments the terrific struggles of making a living honestly under the unjust conditions of our dollar-sign civilization. We enjoy seeing others enjoy themselves.

"The average child, used to healthy, interesting play, if given sensible encouragement, will soon learn to enjoy work. Furthermore, he will learn to take an interest in healthful, honorable employment, and will gain great good from the work he does. He will not need to be coaxed or kicked in order to put forth reasonable effort. Of course, he will expect and appreciate fair treatment; but he will not likely strive merely for material reward. He will be ambitious to produce something worth while. He will wish to work in such a way as to learn something, too.

"Many parents, although they desire to give their children the best advantages, make very grievous mistakes in trying to train them to work. They make such unreasonable demands that they influence the children to look upon work as a burden, and actually grow to hate labor. Others, equally foolish, either because they have been compelled to work too hard themselves or because they have come into possession of too much money, imagine that the best thing they can do for their cherished offspring will be to give them such an education that they will not need to work—that is, with their hands.

"A child, if rightly guided, will grow to love productive labor, both physical and mental. He will want to be able to do work which will entitle him to feel that he is really a useful part of the world.

"There are boys in both country and city, who enjoy having worthy employment during vacations and spare hours, and who grow up to be honorable, useful, industrious men. Some of us who had the fortune to spend our boyhood where there was an abundance of maple timber are able to recall how en-

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thusiastically we worked in the sugar camp mornings, evenings, and Saturdays, and how anxiously we hoped that our spring vacation would come before the "sugar-making" was over. Sometimes, too, we managed to stay out of school a day or two once in a while in order to work in the camp. There are several kinds of work, especially in the country, which are a source of pleasure to boys—yes, and girls, too. We have seen many girls get far greater enjoyment out of different forms of house-work than the average woman in the fashionable, high-flying society set finds in all her frills and frivolous functions."

With the ancient Greeks, as with some of our modern Indians, play exercises were developed to a high degree. The science of body-building was one feature of their religion, and the result was they developed the human body to the highest degree of perfection. They upheld the idea we have so often affirmed, that physical health is the first and best step toward mental and moral health. As another contributor of *Physical Culture* states:

"The boy of today little realizes as he plays that practically the same sports and games he is playing were practiced by boys over twenty-five centuries ago. We are told that among the ancient Greeks over one-half of all education was devoted to the .body. Aristotle well said: 'First in education will come gymnastics; but this is intended to make men athletes, not to develop brute strength. It is to produce courage, which is a means between the unbridled wildness of the animals and the sluggishness of the coward.' "

Slowly this Greek idea of the state providing healthful play exercises for its children and youth is taking possession of the leaders of our great cities. Everywhere throughout the country parks have long been provided, and now public playgrounds are being added by all the more progressive municipalities. New York, Boston, Chicago, Philadelphia, Buffalo, Los Angeles, San Francisco, Portland, are but a few which have gone heartily into this movement. We most sincerely commend it, and hope it will grow until every community in the nation has

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its public playground, and, where possible, its public instructors in healthful living and healthful play.

All this is as it should be. Provide all the opportunities possible for city children to obtain this perfect tonic of healthful outdoor exercise. But do not stop there. Educate the adult to the same kind of medicine. Teach him to stop taking "bracers" at the bar, or at the hands of the physician, druggist, or caterer. Nature's tonics are the best, and he is wise who prefers Nature to man in this regard. And there is variety enough to meet every class of mind and every condition of body.

There is not a word of what I have written, or shall write in this chapter, in regard to the "toning-up" effect of exercise that does not apply to women and girls with equal force as to men and boys. We believe there should be no difference whatever in the bringing up of boys and girls. *They should be dressed alike,* taught alike, allowed to have equal freedom, engage in the same outdoor sports and exercises, and be kept absolutely in a sex dormant condition until the age of puberty. Our present method seems especially designed to accentuate sex differentiation. The method of the aborigines of the world seems to us to be the ideal one, viz., to allow children of both sexes to run naked. They thus have no sex questionings or wonderings. Boyhood, girlhood are all the same to them. Then, when they begin to develop, clothe them rationally and wisely, allowing perfect freedom for full development of the body, and allow sex consciousness to grow as naturally and normally as the Divine Creator originally intended.

Hence, we say, we would give to girls and young women every freedom to participate in these outdoor exercises that we give to boys and men. For, as a well-known writer recently observed:

"Let it strike home to your heart that strong bodies are more necessary to women than to men. If the preservation of the race in health means anything to the United States everything should be done that can be done to have girls

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physically well born, and then reared so that they are physically developed to the highest degree. A weakly mother can scarcely expect to have vigorous and healthy sons, and a girl who enters married life with a frail body is not fitted to be anything but a weakly mother. If I had a family of girls I would spend more time in seeing that they gained health and strength than I would over boys. They should keep out-of-doors from the time of their birth, winter and summer, rain or fair (with provision, of course, for shelter); they should walk, run, skip and jump, climb mountains, ride horseback, ride the bicycle, learn to run an automobile, and do all the other things that athletic girls like to do. But in addition to these things I would do my best to train them to enjoy working in the garden, digging, raking, planting trees, irrigating, running the lawn-mower, and I should not even object to their learning to plow, harrow and cultivate the soil, harness and drive the horses themselves and attend to them in the stable. Of course, they would need to dress suitably for these purposes, but I venture to say we could find a costume—or invent one—that would be modest, proper and yet suitable.

"Naturally such a father would be called 'peculiar' and 'eccentric' and 'faddy' and the like, but what should I and my girls care if they were healthy, strong and happy? And when the time for wifehood and motherhood came they would be ready and capable both physically and mentally, and thus have no desire to shirk the responsibilities of parenthood. Men and women, wake up! Train your girls to be strong and physically vigorous. Do your part to send them into their future homes ready and willing for all of life's duties and responsibilities for, with healthy bodies, clear minds and pure souls they will be ready for motherhood, fearless and unafraid, knowing that there is nothing in this natural function to be afraid of, and fully aware that they can transmit health and vigor to their children. No race can be healthier than its girls, for the girls become the mothers of sons as well as daughters, so anything that tends to weaken the girl tends to the demor-

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alization of the race. Let the new slogan go forth: Physical culture for girls, even more than for boys."

Reaching out after this natural tonic, men have discovered many useful and helpful things. One takes a shower bath as soon as he wakes in the morning. He finds this quickens his intellect, stimulates the natural action of the heart, warms his body and sends him out feeling "like a lion" ready to devour all the work of the day. Some men and women take a horseback ride. Either before or after breakfast they mount their willing steeds and either ride around the park or go out into a country lane and take a hearty trot or gallop. The coursing through the air, the deep breathing caused by the exercise, the shaking up and natural massage of all the muscles and organs of the body, the exercise of the arms, legs, and spine in riding produces a natural normal tonic that is beneficial in the highest degree.

In the army, where the men desire a little stronger tonic, they go in for tent pegging—riding down a tent peg, holding a lance in hand and trying to drive it into the peg as they dash past at full speed. Sometimes they tilt at the ring, which is practically the same exercise, trying to drive the lance through a suspended ring. If this tonic is not strong enough, they play polo on horseback and thus secure the most powerful kind of tonic, for it exercises them from head to foot in the most healthful and stimulating manner.

If cowboys took no other tonics than those they get when riding after cattle, they would be the healthiest and happiest men in the world. Who that has seen the Bedouin Arabs riding their proud and high-bred horses, going through their marvellous evolutions on the desert, and has witnessed them at their violent sword exercises can fail to see therein the secret of their strength, freedom from disease and healthful longevity?

To those who wish a more active tonic, tennis appeals, and many a woman and young girl finds that life is made buoyant and happy, filled with new power and energy by this natural and normal tonic. Less strenuous is the game of golf, and

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this is engaged in by many of the elder of both sexes, as well as the young. Would that it were kept free from the admixture of the tonics unfortunately too prevalent at the generality of the club houses connected with golf links. The human individual is so foolish, or does not possess critical discernment. He is not willing to let well enough alone. Having taken a perfect tonic in his exercise, he goes and spoils it by the false "tonics" and "bracers" that he orders from the club house steward. If every club house in the land could be blown up with dynamite and all its accompaniments banished from the golf field, golf would become an immeasurably greater blessing to its men and women devotees than it now is. For it is a rational, healthful toning up exercise of the greatest possible benefit.

By no means the least of the counts in our indictment of modern civilization is that one that charges it with driving the practice of walking into the background. With our bicycles, motorcycles, automobiles, added to horseback and carriage riding and street cars, thousands of our population will soon almost forget how to walk save for the few steps taken to and from the cars or other vehicles.

I am a strenuous advocate of walking. I believe in long walks, taken often—daily if possible. Walking is the best, as it is the simplest and most natural of all exercises. Given fairly good birth to start with, simple wholesome food, plenty of fresh air and sunlight, a healthy occupation, a reasonable amount of sleep and *a long daily walk,* we confidently assert that a man or woman could live in perfect health (provided, of course, there was no accident), knowing neither ache nor pain, physical distress or suffering, until the arrival of normal dissolution, which ought not to be before the age of at least a hundred.

Most people who still have to walk regard it as a misfortune. If they could afford it, they say, they would never walk. This influence of our civilization is much to be regretted. Such people are victims of pernicious delusion. The power to walk —like the fresh air and sunlight—is one of God's best gifts

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to mankind, and he only is wise who reasonably avails himself of this privilege so beneficently bestowed.

Whenever our work allows, we take a daily walk of from five to twenty miles in extent, preferably the latter. Wherever we can walk on grass, we do so, and if we are in a park, a grassy country lane, or any secluded place, where we are not likely to give offense to others, we take off our shoes and stockings and enjoy a walk barefoot. Especially do we enjoy this in the early morning when the grass is covered with dew or rain. Often in the frosty mornings, when the cold for a few minutes is severe, we find the most delightful reaction and glowing warmth reward us after a few minutes' persistence. Then, too, there is a thrill of pleasure in feeling the expansion of all the muscles and tendons of the foot in its unaccustomed freedom that makes barefoot-walking not only a healthful recreation but a pleasure and a delight.

One of the most strenuous exercises that is of great effectiveness in developing certain muscles of the leg, back and chest is steep hill climbing. By this we do not mean the ordinary hills up which one can almost walk, but the real, rough, rugged hills that one finds in the mountains and canyons of the West. People who live near these should take advantage of the wonderful muscular development that they offer. The clambering up the steep and rocky slopes brings into active and vigorous exercise what one might term the climbing muscles of the legs and back. The rapid lifting up also develops the lungs and lung muscles in the most effective manner. The exhilaration of this kind of exercise cannot be described. Of course it should not be undertaken by the invalid or weakling, except to a very moderate extent. But if either of these classes wish to build up physical vigor and strength, hill climbing is one of the best adjuncts to walking that could be devised and is a "bracer" or "tonic" of most powerful character.

Running, jumping, leaping, leap-frog, throwing the hammer are all excellent "tonics," totally independent of their being "sporting exercises." Quoit throwing—horseshoes will

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do as well—is a most excellent tonic for those who do not wish the more vigorous exercises.

Another healthful and beneficial outdoor exercise for both sexes is rowing. Pulling the oar not only develops several important groups of muscles, but it materially adds to one's general physical vigor. The deep breathing that is essential to good rowing means the clearing out and toning up of the nasal passages to the consequent invigorating of the brain, as well as the enlargement of lung capacity, flooding the lungs with vitalized air, aiding the body to eliminate impurities, thus purifying and at the same time increasingly vivifying the blood stream which in turn builds up the whole body. To those who have a weak back or think they have kidney affection, as well as dyspeptics, rowing is especially to be recommended.

While it is essentially a man's exercise, having been one of the national sports of both England and this country for scores of years, as the great boat races of Oxford and Cambridge, Yale and Harvard, etc., testify, it is equally an exercise beautifully fitted for the development of girls and women. Indeed, both in England and in some parts of the United States, during the last decade, or so, rowing has been just as much practiced by girls and women as by boys and men. Because of its peculiar strengthening and invigorating qualities, we should like to see it far more popular among women than it is. Indigestion, weak lungs and so-called "female complaints" are almost unthinkable in connection with a woman who is an expert with the oars. And, as a rule, the exercise can be moderated to suit the exact conditions of the rower. One may row as easily or as strenuously as she chooses and also stop for as long or short a period as she desires. This, of course, is presuming that the oarswoman has reasonably smooth and calm water to exercise in.

For old and young of both sexes skating is an ideal "tonic" exercise. Indeed, from a Physcultopathic standpoint, it is an ideal recreation, inasmuch as it is practiced in the open air, affords one's muscles and mind capital exercise, and breeds strength, health and grace. These admirable qualities are

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A crew of young women from the Girls' Sculling Club founded by the late Dr. Furnival, passing under Barnes' Bridge, near London.

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more or less in evidence wherever there is frozen water and a crowd of skaters upon it. One only has to note the wholesome glow on the cheeks, the sparkle of the eyes, the ready laughter and the untiring effort of those "shod with the ringing steel" to realize that skating is practically a perfect and most delightful "tonic." This is the "coming age" of the flying machine. In a comparatively short space of time the æroplane will be almost as common as the automobile. Until that time comes, and even afterwards, so long as man is unable to fly by his own unaided efforts skating will be the next thing to actual flying, and in point of beauty of movement is a close rival to the latter.

There are historical records which go to show that skating in some form or the other has been in existence for a thousand years or more. Hence it is a "tonic" hallowed by the ages and universal in all countries cold enough for its exercise.

While perfect skating can only be done when one is in good physical condition, it is an exercise that will materially aid in bringing one into condition. Hence it is well for the weak to go to the skating pond and quietly and gently reap all the benefit he can. Necessarily he will have to be careful not to exhaust himself at first, and this caution should be well impressed upon the mind before going, lest the pleasure of the exercise entice him beyond his strength. But do not be deterred from going because you are not well, or not as strong and robust as others. The way to get strong and robust, is to get strong and robust. In other words you cannot get yourself well and strong without exercise.

Tobogganing, sledding and coasting downhill are sister sports to skating, being winter tonics for cold countries. California is regarded as the land of sunshine and flowers, and so it is, but in the mountains there is endless sport in winter in these lines. But in the East and North of this great land of ours, and all throughout the Middle West, where snow falls freely in the winter, there should be more provision made for the enjoyment of tobogganing. Slides or shoots should be erected in our parks so that men and women would be in-

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duced to indulge in this most perfect of natural and healthful tonics.

Dancing is an exercise for young and old, weak and strong, that, *properly taken,* is most useful and beneficial. Of its abuses we need not here speak; they have been discussed from the platform, the pulpit and in many books. But it is useless to ignore the fact that dancing has existed in all ages, among all peoples, and that today it is the chief physical exercise and pleasure of many thousands of people. I have little or nothing to say in favor of the ordinary society dances, held at night in closed and over-heated rooms. They not only do no good to humanity but generally produce harm. But dancing in large open places, or on the lawns, or out-of-door locations—the folk dances of the peasants, Maypole dances, Russian, Swedish, Italian, Spanish, French, Welsh, Irish, and scores of other such dances involve large and varied muscular exercises, all of which build up the body and increase its power. The dancing schools of the cities should be placed under the control of the recreation centers, and there converted into open-air, or partial open-air places, with all the evil features, as of smoking, drinking, feasting and carousing, eliminated. Good music should be provided, and as much thought given to this department of the pleasurable recreation of the people as to any other. Thus the agreeable associations, the music, the exercise, the fresh air will combine to make public dancing schools means of great good. For dancing promotes grace of movement and requires good posture of the body, besides bringing into play all the muscles.

There is still another class of natural tonics, the healthfulness and pleasure of which cannot be overestimated. We refer to those outdoor occupations which men and women of every degree may indulge in when circumstances permit.

Gladstone, the great English statesman, used to find his tonic in felling trees. The exercise of swinging the ax in the open air and sunshine was one of the chief pleasures of his life

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and undoubtedly one of the great secrets of his robust health, vigorous mentality, and remarkable longevity.

A tonic for women and children, as well as men, which has been hallowed by the usage of all peoples in all ages is that of gardening. This is one of those natural and perfectly adjustable outdoor exercises that conforms itself to every sex, state and condition. One may take it in large doses or small, and each dose may be heavy or light, according to the will of the "patient." If one wants real vigorous exercise, he may dig with the spade or fork, and this is an exercise we strongly recommend to rather weakly girls who wish to increase their vital power, and "tone up" their internal organs. Most of the muscles of the body are exercised in this kind of digging, and a half hour's time at it in the morning before breakfast is better than all the "Port Wine," "Cod Liver Oil," "Beef and Iron" and other tonics that the misdirected energies of man have provided.

For those who do not wish such vigorous exercise, there is the more quiet working among flowers, and the advantage of this and all sister occupations is that it is not only beneficial to the body, but also to the mind and spirit. Many an overstrained mind has been brought back to normal and healthy condition by gardening; many a fit of melancholia dispelled; and many a fit of depression removed.

Dr. L. H. Gulick, in his *Physical Education by Muscular Exercise,* calls attention to a matter that the physical culturist should never overlook, and that is the overwhelming importance the muscles have had in the evolution of the race. He says: "During all the unnumbered years of evolutionary time, muscular exercise in labor, war or the chase has been one of the major elements of human experience." Without physical strength the individual died. To live, he had to be muscularly strong,—strong to war against enemies, strong to catch his food, strong to escape from danger, strong to bear the hardships of his primitive and uncouth life. In other words, the doctrine of the survival of the fittest in the earlier

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A Type of Muscular Athlete in Life's Earlier Years—Martin Sheridan, the Famous All-Around Irish-American Athlete.

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stages of man's development amounted to the survival of the muscularly strong.

From these facts Dr. Gulick draws another inevitable conclusion, which is that "those conditions under which the body of man was given his present size, shape and structure are in general the conditions to maintain the civilized functional activity." In other words that, man having been developed through all the unnumbered centuries of his evolutionary life as a muscular being, the functions of his body can today be best kept healthy by this same exercise of muscular energy. It is ingrained in every nerve, muscle and fiber of every human being, through century upon century of heredity, without which the bodily structure would not be as it is today, that *upon the maintenance of the proper balance between the nutritive, nervous and muscular tissues, normal health depends.* Nothing can change these facts, and therefore it is suicidal to ignore them. Upon these basic facts the structure of all our work has been built.

Before leaving this subject of exercise we wish to give one word of caution in regard to specialization. The great tendency of civilization and its distribution of human labor is to cause specialization. The tremendous development of steam, electricity and gas as motor power has taken away much of the need that used to exist for muscular exercise. Dr. Gulick says that the proportion of steam power to muscular power is represented by a steam engine of 11½ horse power to every male inhabitant. This, of course, implies a tremendous increase of average capacity to the human individual, but at the same time it unfortunately means a tremendous reduction in the *personal* activity of each individual. The major part of the work of the civilized world today is done by machinery. While in the aggregate, an immense amount of muscular labor is performed, it is comparatively small compared with what it should be, if the health of the race is to be preserved, and more unfortunate still, in that it is less exercised among the more civilized classes who need it most.

So much work being done by machinery there has natural-

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ly come about specialization in occupation. All that some men now do is to stand and watch a machine, occasionally lifting a lever. Practically no other part of the body is exercised. Thousands of people sit all day doing some one little thing that uses comparatively few muscles of the body and leaves the others completely at rest.

Unfortunately this same spirit of specialization seems to have entered even the voluntary sports and exercises of both young and middle-aged. It is an age of specialization. The thought is in the air, and contagious in every line of life. But when applied to muscular activity, it may lead to injury to the ordinary individual who seeks to build up the whole of his body into perfect health. We go to the vaudeville performance and we see there certain athletic performers. One is a contortionist; another a rope walker; another an actor on the trapeze bar. Among college athletes there is the same specialization. One is engaged in throwing the hammer, another in the high jump, another in long distance running and still others in baseball or football. Too often in the gymnasium there is the same tendency. And we can well see that it is a natural and normal tendency, and one, therefore, that nothing can ever remove. All improvement and progress is dependent upon specialization. Yet there is in it an element of danger, and against this we wish to utter our one word of caution. Whether in business or in athletics do your specialization carefully, being guardful not to overwork any one organ or function of the body. Beware of straining the heart, of overworking the lungs, of doing anything that prevents your getting a full supply of pure air, of displacing any of the organs, of suspending any of the functions. None of these things can be done with impunity. Pain, disease and death are their sure and certain consequences. See to it that your specialization does not develop one part of your body *at the expense* of the others. Even though you specialize see that all the body receives fair play, in a normal and proper share of exercise. As the authority I have just quoted says in effect, specialize all you like, remembering always that

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"when the specialization does not interfere with respiration, circulation, digestion, or the control of the organic life through the nervous system, it is not only harmless, but eminently desirable."

While I have by no means exhausted the list of outdoor "tonic" exercises in this cursory survey of the subject I feel that I have said enough fully to illustrate my standpoint. I wish this to be clearly understood. Get all the natural, simple, out-of-door exercise you possibly can. Give it to your children from the hour of their birth. Babies should be put in a denim wrapper as soon as they begin to reach out, stretch and creep, and allowed to crawl on the grass. Wet or dry, warm or cold, that is the way to "tone them up" and let them grow into that perfect health that makes them immune from all disease; that fills them full of the vigor of life so that work is a pleasure; that sets their feet in the path of righteousness and helpfulness.

In order to provide for the need of those who, unfortunately, are unable to take advantage of natural sports and methods of exercise, and who, therefore, need exercise more than any others so as to counterbalance the effects of their unnatural city life, I shall present, in a later volume of this work, with the fullest illustrated description a large variety of curative and body-building exercises for the home, suitable for all classes of men, women and children and adapted to all the varying conditions. I regard this matter as of the highest importance and have devoted a tremendous amount of thought and experimentation to the matter. I have offered nothing to the reader except that which has been thoroughly tested in thousands of cases and those who adopt these methods may be perfectly sure of the results.

Our first and chief exercises deal with the spine. Believing as I do that the spinal column and brain are the storehouse of humany energy, we begin at the beginning to seek to strengthen the spine in every possible way. The world has come to use the expression "He lacks backbone" as indicative of weakness of character, without strength of purpose. This common usage unconsciously demonstrates the importance of

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the spinal column, which keeps the body upright, enables the man to stand firmly, gives to him his grace, suppleness and dignity. We like to see a man with well-shaped and well-developed spine and accessories. Broad shoulders are attractive when they are the accompaniment of a well-set-up back. The stoop shoulders of the weakling, the lazy and the scholar are unpleasant to see. The position is an unnatural and unhealthy one and therefore displeasing to the eye. So in our exercises which seek the health of the spinal column, we are developing manly and womanly perfection of form.

Another reason why we seek to develop, by exercise, the spinal column is that contained within this marvelously articulated bony structure is the spinal cord, the largest accumulation of nerve ganglia in the body. If there is any displacement of the vertebræ of the spinal column, there is bound to be more or less pressure upon some part of this delicate organism, and where this is the case, pains that rack the body, headaches, and often paralysis ensue; so that disfigurements of the spine are not merely displeasing to the eye, but are seriously injurious to health.

When one first begins these exercises, he is likely at first to feel them slightly wearing, but it is scarcely necessary at any time to exercise any muscles of the body to the point of producing distress or lameness. The slight weariness that accompanies exercise is good. It is the intimation that the disintegrated cells that poison the body if not removed, are being carried away and new cells put in their place, hence, it is a most gratifying sign to feel healthily weary. It is a sure proof that you are exchanging old and worn out tissues for new and stronger tissues; that you are becoming stronger and healthier.

We then follow up with exercises that provide for the muscles of every part of the body. Nothing is neglected, nothing overlooked.

Reader, are you suffering from disease, and unacquainted with the secret of human energy? Are you ambitious to reach out, accomplish, achieve? Do you feel your inefficiency and lack of energy and wish to supply it? Let us endeavor in this chapter to tell you briefly how it may be done.

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1. Awaken your *hope*. Convince yourself that as others have accomplished this, so can you. A hopeless and disappointed attitude of mind never accomplished anything. Look up, not down. Gain courage from seeing what others have done.

2. Awaken your will. Be resolute, determined, zealous, combating your hopelessness, your indifference, your laziness. Say "I will!" and keep repeating it, then compel yourself to live in accordance with its commands. Do everything promptly. Put off nothing. If a thing is to be done, do it at once.

3. Arouse your enthusiasm. The original meaning of this word was, "God within you." Take hold of this idea and let the power within you work in a godlike way, reaching out after godlike things. You remember the story in the "Arabian Nights Entertainment" where a certain bottle was uncorked and a tremendous genie came out which ultimately overclouded the heavens. That genie was capable of great things as soon as he was released from the bottle. You are the bottle. You have the genie within yourselves. Take out the cork,—release the powers within yourselves. Be enthusiastic. Do with your might what your hand finds to do. You are in reach of the most needful thing in life—Human Energy. You want to be some one, to accomplish something, to produce results worth while. Then is it not worth the effort to arouse all the latent powers within yourself and to be enthusiastic in attempting to grasp that which is to be of so much benefit to you?

4. Be moral and pure. You cannot grasp and solve the secret of human energy if you lead an unclean, immoral and dissipated life. Be clean in body, mind and soul. Eschew drugs, tobacco and all unnecessary luxuries as injurious and harmful. Throw them from you just as a racer would throw aside clinging garments that prevent the free exercise of his limbs. Do not believe anyone who asserts that men and women who are engaged in arduous pursuits continuously lead immoral lives. The thing is impossible. We long for you that you should not simply gain the secret of how to possess human energy, but that you should learn how wisely and best to use it.

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You can succeed in no avocation in life unless you live a clean life. Immorality and dissipation destroy not only your possession of human energy, but will ruin whatever you may seem to have accomplished.

5. Seek to preserve, as far as possible the spirit and habits of childhood and youth. Too much importance cannot be placed upon this requisite. It means much, as we shall endeavor to show.

Normal healthy childhood is full of activity. The baby in its cot or on the floor untrammelled with too many clothes kicks, throws up its arms, rolls its head back and forth, wriggles its body, crawls and uses up an amount of energy that is as surprising as it is continuous. Normal and healthy boys and girls are in constant exercise from morning to night, except when restrained either at home or at school. Very little of this exercise is of a quiet kind. Where there is ordinary health girls object to being restrained and wish to be as vigorous, active, energetic, agile, vivacious and lively as their brothers. And this is as it should be.

What a tremendous amount of energy children expend in running, leaping, climbing, skipping the rope, romping, playing at football and baseball, swimming, riding bicycles, riding horseback, taking cross country tramps, rowing, boxing, wrestling, and a thousand and one other ways in which they seem to enjoy or—as we half insane older people too often put it—exhaust their vitality.

What numbskulls we elders are! Exhaust their vitality! Instead of exhausting it they are storing up vitality which enables them to overcome the repressions of the school room. They are supplying themselves with energy to help them along through life.

In these vigorous out-of-door exercises, they are exercising, in one way or another, practically every muscle of the body, inside and out. As they run, walk, jump, romp, scream, leap, their bodies are shaken up and every muscle gets its natural massage. The nasal passages are kept cool and in good order

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by constant influxes of pure air, the lungs are constantly inflated and the blood aerated with the life-giving properties of the sunladen and chemically pure atmosphere, thus enabling them to take up their work of eliminating impurities with greater energy and effectiveness, and at the same time, absorbing nature's life-giving power, which it rapidly incorporates into the blood to be pumped by the heart to every part of the body. As it courses through the veins it repairs the used-up energy cells and refills them full of surplus energy for the morrow.

Then, too, how exuberant, joyous, spontaneous and hearty is the laughter of childhood and youth. So long as we can keep our children simple, unaffected and normal, free from sex-consciousness, their laughter is simple and natural. And every intelligent man and woman, as well as every intelligent physician, knows that laughter is one of the best tonics, one of the most healthful stimulants to the lungs, heart and brain, and, therefore, one of the most important factors in the production of life energy.

Again, how the young sleep! How easily they drop off into slumber as soon as their heads touch the pillow, and unless they have been allowed to vitiate their healthy, normal appetites by overeating or unhealthy foods, their sleep is real sleep, and by this we mean the sleep that very few men and women know, namely, the dreamless sleep, which is the only natural and normal sleep. Perfect sleep means absolute rest to both mind and body, and where one's mind, even unconsciously, is at work, the body seeks to recuperate the energy expended during the preceding day against great odds. What is the result? One who dreams in his sleep wakes up in the morning unrefreshed, languid, with sluggish brain, incapable of undertaking the active work of vigorous manhood. But how different is this from the sleep of childhood. The child sleeps and sleeps perfectly and when he awakes, he wants to get up; and it is only after he has had a training of a few months or years from his parents that he acquires the habit of sleeping late or of staying in bed in the morning to conform his natural, normal desires to the unnatural and physically injurious habits of his later-rising

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parents. Sleep is the God-ordained manner of restoring expended energy and of storing up a new supply for the following day.

Again, how heartily and eagerly the youngsters come to the table to satisfy their hunger. And with the normal child, it is real hunger. There is no picking and choosing, no waiting for dainties, no objecting because the food is plain, simple and hearty. He may eat too fast, and perhaps too much, being unrestrained and undisciplined, yet with such a vigorous, active out-of-door life, he is generally able to digest his poorly masticated food without the slightest inconvenience or knowledge that there is such a thing as indigestion.

But we would have you preserve the spirit and habits of childhood and youth not only in body, but as far as possible in mind. We do not mean by this that you are to carry into old age the immaturity of youth. This is not our thought, but we would have you preserve the spirit of youth and never lose it. Do not allow yourself to believe that you are growing old. Think yourself young. Feel yourself young. Act yourself young. The country is waking up to provide playgrounds for the young. This is good. But more than playgrounds for the young we need playgrounds for the old, if happily, we could prevail upon the middle-aged and those who consider themselves old to go out and use them. As we become older we become what we call too dignified to play; we are ashamed to be seen exhibiting the exuberance of youth. And directly we get into this habit of dignity and sedateness, and curb with too tight a hand the exuberant spirit of youth, we begin to grow old speedily. That man is young who thinks and feels himself young.

6. Cultivate the play habit. If you think you cannot feel young, at least get as near to it as you can. We believe in golf and all other similar games which take elderly men and women out-of-doors and compel them to exercise in God's free, pure air and stimulating, vivifying sunlight. The only trouble is there are not enough of such games and not enough players. We would that we could multiply them many fold and then put

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the spirit into the hearts, as well as make it possible, for the middle-aged and elderly poor, as well as the middle-aged and elderly rich to enjoy these exhilarating and healthful games. But whatever your situation in life may be, whatever your position, however adverse your circumstances, seek as far as you can to cultivate the play habit. Get with young people when you can. Shake off your sedateness and dignity, and exercise, laugh, walk, run, romp, play in any way that you possibly can, for by so doing, you are helping yourself solve this wonderful problem of human energy.

7. If you are ailing, or even much diseased, determine to fully grasp and understand what I have elsewhere written about the self-curative power of the human body. Thoroughly grasp this fact, and then anchor your confidence to it. This will be of inestimable benefit to you. Assure yourself of the fact that God means good and good only to you; that your body is your friend and not your enemy; that disease comes to warn you, not to kill you; that you have the right to be healthy, happy, robust and strong and that you can and will be these things. Reach out after health. Begin to expend human energy. Do not be too rash at first, but expend and as you expend you will find that you are enlarging your capacity. This is one of the wonderful facts of life that many people are long in learning, namely: That we grow by growing; that we are more able to expend by expending; that we get strength by using strength; and that he is the unwisest of all men who thinks to retain his strength by not using it. Human energy is gained by expending human energy and, all things else being equal, you will find that, if you expend ten pounds of human energy today wisely and well, you will be able to expend eleven pounds tomorrow, and the eleven pounds tomorrow will give you the capacity for twelve pounds the following day, and so on. This is the law of life. He who withholdeth that which he hath, soon has nothing to withhold.

8. Use all the muscles moderately in healthy exercise every day. By healthy exercise, we do not mean overwork or strain,

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but quietly and easily exercise a little daily. As we have shown in the case of healthful children, their healthful play out-of-doors is a simple and natural daily exercise of the muscles. Try to emulate this healthful play of the child. If you can get the exercise out-of-doors, so much the better. Never stay indoors a moment when you can get out-of-doors, and especially never exercise indoors when it can be done in the open air and sunshine. There is no exercise in the world better than walking, as we have elsewhere explained. And when you walk, walk vigorously, even if you do not walk fast. Swing your arms, breath nasally and breathe deeply, expand your lungs, and you will in this manner begin to store up a large supply of nervous energy.

If, however, you cannot get the exercise out-of-doors get it indoors. Better there than not at all. I recognize fully that the gymnasium for exercise is a makeshift. It would be better if men and women would find out-of-door labor or play that would give adequate and healthy exercise to their muscles. Unfortunately, our civilized lives have given us somewhat abnormal and unnatural standards and the gymnasium is the best method we have yet found of meeting the requirements of the body in a manner suited to the standards of modern civilization. We have carefully prepared a list of exercises that can be daily taken which bring into active use all the muscles of the body. The experience of thousands of our students and patients has shown that when they put themselves into this environment and training, their bodies begin to grow. They become more supple, more active and more vigorous. In the expenditure of energy they find that they are storing up energy. Their enthusiasm grows. Exhilaration and delight take possession of them. They begin to live instead of merely to exist. There is a freedom of body, mind and soul that they never before experienced. There is a sparkle to the eye, a gladness to the smile, a heartiness to the hand-clasp they had not known before. There is an added clarity of vision, an awakening to higher ambition, a deepening of the emotions, a clearing of the intellect, a thrill to the everyday facts of life

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that makes life worth living as never before. They see now the difference between crawling and flying, between groveling and soaring. They have solved the problem of human energy.

There are those who say that they do not wish to build up strong muscles. Let me repeat what I have elsewhere affirmed, that all things else being equal, human energy is proportionate to human muscularity. I care not who you are, or what you are, if you have grown up to the estate of manhood or womanhood without healthful muscular development, you are not the man or the woman morally, emotionally, mentally or spiritually that you might be and that you ought to be. Your life lacks vitality, force, energy in as far as you have neglected your muscular development. Even your instincts are weakened. Your individuality is rendered less forceful, your life throughout less potent for good. Physical strength makes a good man better, more able to carry out his good impulses and desires. Equally it makes a woman more womanly and gives a greater power to her sweetness, beauty, gracefulness, charm and motherliness than she otherwise possessed. To a good man or woman muscular strength never proves other than a blessing. It means an increase of their vitality and energy, the enlargement of their perceptions, desires and ambitions for good and makes possible far greater achievements in these beautiful and uplifting endeavors.

We know there are objections raised to this advice. Let us look at a few of these briefly and yet seriously:

a. We are told that the gymnasium for exercise is unnatural. In a measure this is true. We have seen what is the ideal method for securing the complete and natural exercise of all the muscles during the period of normal, healthy childhood. There is no method better than this.

But unfortunately the restraints of modern civilization render it impossible for most people to be childlike and natural, even if they wished to be so. Hence the gymnasium is a necessity.

For those who cannot go to a gymnasium, we have arranged a course of physical exercises, published elsewhere in these

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volumes, that can be practiced at home, many of them in bed, all of which are designed to produce the desired results. Hence, well or ill, rich or poor, at home or in a gymnasium, any person of ordinary will and intelligence, hope and enthusiasm, may solve this problem of human energy.

b. But some object they do not have time to spend on these exercises.

This objection is scarcely worth replying to, for on the face of it, it is absurd. As if a half an hour in the morning and a half hour at night were not worth while in order to obtain this priceless gift of human energy. When John Muir was a poor boy, he compelled himself to get up at one o'clock every morning that he might have five hours for study before his father called him to work in the fields at six o'clock. Here was will power exercised for a purpose. If one *desires* human energy *enough* he will take an hour even from the most exacting business, or even from his sleep, if necessary, and thus produce far greater energy than he would gain in sleep, which in most cases men and women take in excess.

What is a man's business compared to his health? Get your health, and your business will feel that a new man—a man of power—is at its head. Better even to have health and a small business, than the largest business in the world and have to leave it through broken health. Harriman learned this lesson as thousands of others have done and would gladly have given all his millions for the health he had squandered in his too close attention to business. Do not be foolish. Take enough time to keep your health and fill yourself with energy. You take time to eat and sleep. Take time to exercise.

9. Under this head I shall give a few prohibitions which will be enlarged upon elsewhere, especially in the chapter entitled "Causes of Disease." Use no drugs. Submit to no surgical operation unless compelled to do so as the result of an accident or as a last desperate resort. Wear no injurious clothing. Eat no improper food. Breathe no impure air. Do no wrong to yourself or any other human being.

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You may ask what these things have to do with human energy. The writer has tried to show that all these things are causes of disease. All disease is a destroyer of human energy. If you would conserve your energy, avoid these things with desperate earnestness. Change your habits from bad ones into good ones. Wear only the lightest, best ventilated and easiest fitting clothes you can find. Eat moderately and simply of the purest and best food that you can get or prepare. Breathe all the pure air you can get *out-of-doors* and *indoors*. Live righteously, morally and physically.

10. We now come to the chief factor in what we have discovered as to the secret of human energy. It has already been referred to and somewhat discussed, but its main features will bear repeating here. In our studies upon the elimination of disease, the maintenance of health and the increase of human energy, we came to the conclusion, which experience has since demonstrated to be a fact, that the brain and spinal column are the great storehouses of human energy. It is not necessary to our purpose that we understand how energy is stored. It is sufficient that we know it is so stored and how we may increase both the storage capacity and the amount of energy to be stored. I have proved that by healthy stimulation of the spine and its attendant muscles, these desirable results could be attained. While the brain is not immediately subject to muscular action, we soon learned that it responds marvellously to increased muscular action and power. The brain is also nourished by the blood. I found that by increasing the purity, virility and life-giving properties of the blood stream, we reached the brain as directly as we reached the spinal column by our processes of natural stimulation.

Our experiments soon demonstrated the best way to stimulate the spinal column. Stretching the muscles of the neck by hanging; stimulation of the nerve centers by standing on the head; various neck, spinal, arm and leg movements; rubbing, massaging, slapping and other Physcultopathic manipulations of the spine and adjacent muscles, combined with hot fomentations, and alternate hot and cold douches; these were

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the direct methods that we found increased marvellously the power of the spinal column to store up human energy and also enlarged its capacity.

Following certain fundamental principles in diet, and setting into normally healthy action all of the muscles of the body, did the same for the brain, and thus brain and spinal column became not only storehouses of energy for the use of the will when called upon for extraordinary efforts, but also for rendering more vigorous and effective the involuntary functions of the body.

With the storehouses thus abundantly supplied, the muscles of the body kept in healthy activity, the blood stream kept pure by proper food and vitalized air, disease was eliminated, perfect health of body secured and the mystery of human energy solved.

This is within the reach of every living person who has vitality enough left to desire it. No matter how far he may be gone in disease there is still reasonable hope if he will follow out the principles this book is written to elucidate. They are simple, natural and easy for all to follow. We offer them freely and fully and with the utmost confidence to our fellows, whether sick or well, knowing that if they are followed, the tremendous joy will soon be theirs of possessing to a high degree this divine gift of superabundant human energy.

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CHAPTER II.

EXERCISES AND HOW TO USE THEM.

THE first volume of this work embraces a number of chapters upon the subject of diet, because of its prime importance in the building of health and energy. Following this, and next in importance as a means of building strength and promoting the general welfare of the body, is *exercise*. Activity is the law of life, and without a normal amount of physical exercise any degree of health worthy of the name is an absolute impossibility. In the use of the muscles, and in all of the functions of life, tissues are broken down and need repair, for which reason the most perfect and suitable foods are essential, as is also an adequate supply of the vitalizing oxygen of the air. But having attended to matters of nutrition, the next most imperative factor in the building of health and vital power is that which we will consider in this chapter.

This chapter is arranged in alphabetical form for the sake of greater advantage and convenience in reference. For the student, however, who wishes to make a thorough study of the entire subject, and who therefore purposes to read it all through, I would suggest taking up first the paragraphs under the heading, "Exercise and Its Essentials," presenting important considerations on the theory of exercise. After this the other subjects may be taken up in any order desired.

AMOUNT OF EXERCISE.—The question of the amount of exercise is a most important one, especially in the case of those who are very weak and who cannot afford to waste any vitality through excess in this or any other direction. One who is powerful and full of energy may seem practically tireless, and the greatest activity all day long may be none too much for him. But the man who is trying only to get strong should keep in mind the fact that it is his purpose to take only so much exercise as will increase his circulation, bring his muscles into play to a healthful degree, and ultimately increase

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his physical energy when he has recuperated from this moderate expenditure. It should not be his purpose to consume all of his available strength and vitality in his exercises each day, for if he cannot build up that much energy every twenty-four hours he will gradually get weaker instead of stronger. It is entirely a question of recuperative power, or the power to build up, and the essential purpose should be to build up more vitality each day than is expended.

Probably one of the most common faults among young enthusiasts in physical culture is the tendency to excess in exercise. They would really improve a great deal faster in many cases if they took just one-half of the amount of exercise that they have been accustomed to, or if they reduced the amount of violent exercise one-half and greatly increased the amount of walking and other moderate constitutional exercise in the open air.

In the chapter devoted to outdoor games and competitive sports, which includes a discussion of athletic training, I am also taking up the subject of over-training, which it would be well worth reading in the present connection. However, I would say here, briefly, that it is a very simple matter to determine just the proper amount of exercise in each case if one will watch himself closely. I do not propose to lay down any rules here, for various individuals differ widely in their requirements. I would insist in all cases, however, that it is better to take a moderate or suitable amount of exercise each day than to neglect it for several days and then to try to make up for it all in one day by taking several times too much. The best guide as to the amount of exercise is indicated in Chapter XVIII, of Volume I, in which reference is made to the limits of benefit in exercise. Briefly, as long as the exercise is pleasurable, and may be taken in more or less of the spirit of play, it is doing one good, but when it becomes painful or too laborious, it has ceased to be of value from a constitutional standpoint.

This consideration must be modified to some extent in the case of athletes engaged in special training for some

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definite purpose. If it is necessary to attain a certain degree of strength or of endurance, then it is necessary to gradually increase the amount of exercise in training until working up to the desired point.

ALL-AROUND ATHLETICS.—The term, "All-around Athletics," is used not only in a general sense to indicate the practice of various games, but is also used in a specific sense to designate a well organized and popular form of athletic competition, in which important championship contests are held each year. The all-around championship has to do with a series of ten events, representing practically the entire scope of track and field athletics, all competed for in one afternoon. These various events call for speed, elasticity, strength and endurance, and to be lacking in any of these qualities is to be unfitted for successful competition in the all-around game. The winner may not be placed as first in all events on the list, but he must make the highest total percentage in all of them. Each event is judged on a percentage basis, the athletic record in each one being taken as a standard of 100 per cent., and the merit of time or distance recorded in each event computed according to a standard scale devised for the purpose. Accordingly, one need not accomplish any sensational performance in any one of the ten events, but by a uniformly good average in all may secure a greater number of points than some other who may be brilliant in the sprints and hurdles, but very poor in the weight throwing events. It need hardly be said that the practice of all-around athletics is more healthful than the pursuit of some athletic specialty, and for the most part more interesting because of the variety. Symmetry of development is absolutely necessary and the versatility acquired through the practice of all-around athletics may often be valuable later in enabling one to get even better results in some specialty, because he has all the qualifications of the perfect athlete.

In training for an all-around contest, one may feel like doing a little of each every day, but this is not a satisfactory plan. It is much better first to work for strength and endur-

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ance, and then to practice specially on two or three events at a time, for two or three days.

The ten events used in the All-Around Championship of the Amateur Athletic Union are:

100 Yards' Run	Pole Vault
Putting 16-lb. Shot	120 Yards' Hurdle
Running High Jump	Throwing 56-lb. Weight
880 Yards' Walk (Half Mile)	Running Broad Jump
Throwing 16-lb. Hammer	One Mile Run

APPARATUS.—See *Gymnasiums.*

BREATHING EXERCISES.—I have discussed the subject of breathing and pure air in the general chapter upon the subject (Chapter X) in Volume I of this work. I have already pointed out the necessity for deep breathing at all times.

I wish here to refer especially to exercise for developing strength of the lungs and of the respiratory muscles, as well as lung capacity, and especially to take up the subject of breathing in exercise, or the relation of proper breathing to muscular exercises.

In our study of the anatomy and physiology of the lungs (Chapter VIII, Volume I), we have seen that deep breathing exercises, while invaluable at all times, are particularly beneficial when taken simultaneously with other muscular exercise, the latter creating a demand for the oxygen. Deep breathing does not necessarily mean that all the available oxygen taken into the lungs is also taken up by the blood, for this is the case only when vigorous exercise demands it. Wherefore the value of the combination of rhythmic deep breathing and walking, or breathing and other exercise, upon which I laid so much emphasis in Chapter X, Volume I. Of course, even though all the available oxygen in the air in the lungs be not consumed when one is not taking active muscular exercise, yet it is just as important that the lungs be kept full of vitalizing pure air, well proportioned in oxygen, instead of bad air deficient in this respect.

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In connection with all the exercises suggested in this chapter, therefore, as well as in all of the other exercises, and sports and games in which one may indulge, he should pay special attention to his breathing. It is true that vigorous exercise will naturally induce deep breathing, and that the lungs, working automatically, tend to take care of themselves in this respect, but at the same time one can usually accomplish an increase of physical power and endurance by conscious and special attention to his breathing. For instance, if engaged in cross-country running, you will find yourself breathing deeply and heavily, as the natural response to the demands of the muscles, striving perhaps through labored inhalations to get just enough air to keep the body in action without too quickly exhausting it. But if then you will concentrate your thought upon your breathing and make it a point to expand the lung spaces a little more than the natural unconscious impulse would accomplish, to breathe a little more deeply than may seem really necessary for the purpose, then you will soon find that you are running with less suggestion of distress or of effort, that your stride is stronger and your action generally more vigorous. And if you are getting tired, the musical rhythm of breathing to every four strides, every three strides, or two, will make the effort easier and enable you to ultimately accomplish more. Of course it is understood that it is not wise to carry your exertions beyond the limits of a certain comfortable fatigue, especially if you are not a trained athlete.

The same idea is to be carried out in connection with other exercises. If the exercise seems naturally to induce deep breathing to a certain degree, then voluntarily breathe a little more freely and deeply, accomplishing the change of the air in the lungs as rapidly and perfectly as possible, and you will find that you enjoy increased power and greater ease in accomplishing whatever the exercise calls for.

For similar reasons, it is unwise to make a practice of holding the breath unnecessarily long when making some physical exertion. Compressing and tensing the abdomen

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and other respiratory muscles, meanwhile closing tightly the lips and larynx and subjecting the lungs to more or less pressure of air for a few moments, will force the air into all of the cells, but this should not be continued too long. Athletes sometimes do this when concentrating on some violent or very vigorous effort, since it seems to help them in getting a "grip" on themselves, just as does clenching the fist, but holding the breath too long means poisoned air in the lungs, whereas the purpose should be always to change the air in the lungs as perfectly, rapidly and regularly as possible. Divers who acquire the ability of staying under water for a couple of minutes at a time develop a very great lung capacity, but their acquired ability in this direction is only an example of the remarkable manner in which Nature responds to special demands. With the most energetic efforts in under-water swimming, the diver cannot remain submerged more than a fraction of the time that is possible with only mild exertion, because he will exhaust the available oxygen in his lungs so much quicker.

Normal position of the body, allowing vital organs to gain freedom from all restriction.

Photograph showing point of expansion in deep breathing. Note that the body is greatly expanded in abdominal region.

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Holding the breath for very long is only another name for voluntary suffocation, and if continued long enough will end in fainting. The condition is absolutely the same as when one smothers through being choked by the hand of another, and therefore it is not advisable to hold the breath beyond a period of a few moments. There is no advantage in imitating the diver, for his special training in this direction is of use only in his under-water exploits or occupation.

I would advise every one to make a special effort toward the development of a full, deep and powerful chest, even if it is necessary to neglect the biceps and other muscles farther removed from the vital organism. Exercises for the chest as for all other parts of the body will be found elsewhere in this work. I do not place this emphasis upon the importance of a splendid chest development because chest breathing is especially desired, as might be supposed, for I would always insist first upon natural abdominal breathing, or, more correctly speaking, diaphragmatic breathing, as illustrated on the pre-

Drawing in abdominal region as an aid to deep breathing. Avoid this position except when it is desired to expel all air from lungs.

Full expansion of the abdominal region with hands clasped behind head. Position of arms elevates and expands the chest and deepens the breathing.

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ceding pages. The reason for developing a good chest is to provide space and freedom for the internal organs; a good chest means a good development of the heart and lungs, just as a flat and contracted chest indicates a sad deficiency in these organs and also essentially in the vital energy of the indivdiual. The man who lives long is the man with a full, round chest, and he it is who possesses the rich, strong, vibrant voice, expressive of virility and power.

It is not that the breathing in a normal state requires the expansion of the chest, but the chest should be so spacious and well built out that even when the exhalation of the breath has been completed, in natural diaphragmatic breathing, there will still be a great deal of room in the chest and a sufficient amount of residual air. It will be remembered that the lungs are never completely emptied. In other words, we do not expel all the air in the lungs with each exhalation, nor take in an entirely new supply with each inhalation. We simply ventilate or change a great part of the air in the lungs with each breath, and it is therefore important that the chest be large and the lungs well developed. It is for this reason, also, that the exhalation of the vitiated air from the lungs in breathing exercises should be given as much attention and carried just as far as the inhalation. It is just as important for changing the air in the lungs, and will create an instinctive impulse to draw in a very deep, full inhalation following. One might almost say that consciously forced exhalation is all that is necessary to stimulate deep inhalation, or deep breathing generally.

Chest-breathing is nothing for one to be afraid of, under circumstances which naturally induce or require it. I repeat that under ordinary circumstances, diaphragmatic or abdominal breathing is the natural, normal method, and neither man nor woman should ever be so attired as to prevent it or interfere with it. But this does not mean that chest breathing is always a mistake, for in time of very vigorous exercise the body makes such a heavy demand for air that the expansion of the chest is absolutely necessary. In fast running, hard wrestling and other very fast and strenuous exertions, it is as foolish as it is un

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natural to try to confine oneself to abdominal breathing just because one has been taught that it is the approved and best method for ordinary circumstances. Indeed, in the best culture of the lungs, in many special respiratory exercises for the purpose, it is advisable to include the chest as well as the diaphragm, commencing the expansion at the waist line and below, and as the lungs fill, allowing the expansion to proceed upward until the chest also is fully expanded.

Mouth-breathing. Nor can I agree with some self-appointed interpreters of Nature who declare that mouth breathing is radically and utterly wrong in any and every circumstance, for this, like chest breathing, is a matter of occasional necessity. It is true that in ordinary circumstances mouth breathing is detrimental to a high degree and carefully to be avoided, as I have insisted upon elsewhere, but in some forms of very energetic effort, such as sprinting, tug-of-war, or anything else which taxes all of one's powers to the utmost, one simply cannot get enough air through the nostrils. There are those who teach nasal breathing even under such circumstances —indeed, will not tolerate any deviation from it in any case, but when one is forced to the limits of physical exertion such restriction of breathing is partial suffocation. In such a case one needs air in large quantities; he must get it in great gasps, without loss of time and without allowing the rapidly consumed oxygen in the lungs to become too much depleted by failure in rapidly ventilating or changing the air therein, and so mouth breathing becomes both necessary and natural. In other words, it is a sort of emergency method, and not to be condemned under such circumstances. All animals breathe naturally through the mouth when undergoing great exertion. It is true that in long distance running at a moderate pace one can breathe through the nose, and if he does so with comfort it is to be advised, but if he quickens his pace and really needs air in great quantities, he should not interfere with his vital functions by restricting his breathing to the nose. It is true that the air is not partially strained or filtered, as it were, as it is when passing through the nasal passages, but in this rapid

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and somewhat violent mouth breathing the expulsive power is very great and one expels from the lungs any unfriendly organic matter and other refuse which in milder breathing might not be got rid of so quickly. The forced, strenuous mouth breathing that attends the most energetic exercise is a splendid means of cleansing the lungs, though naturally it would be prohibited to consumptives, because of the danger of hemorrhage in their cases. All vigorous breathing through either nose or mouth naturally has this lung cleansing effect.

Naturally, wherever possible or comfortable, nasal breathing is the thing, and it should be made habitual.

Exercise for Strengthening Respiratory System. Aside from the simple requirements of ordinary deep breathing, for oxygenating the blood and developing a large and healthful lung capacity, the best way actually to strengthen the lungs and respiratory muscles is by offering resistance, and it is well to take a couple of simple exercises for this purpose. Consumptives, however, should not attempt these.

First contract the lips, in a manner not unlike the position assumed for whistling, but more firmly, so that there will be a very tiny opening, and then draw in the breath very slowly and forcibly through this small opening until the lungs have been filled to their fullest capacity. This exercise can be made as mild or as vigorous as desired by making the aperture in the lips larger or smaller, and thus decreasing or increasing the resistance. If desired a clean pipe stem or other small tube may be used, but is unnecessary. The same result can be accomplished, and perhaps more satisfactorily, by inhaling through the nose, and partially closing the nostrils with the fingers.

Next, reverse the process, exhaling through the same small opening in the lips or nostrils, and forcing the air out slowly but with power against the resistance thus afforded. After taking two or three breaths in this way, alternate by taking three or four deep breaths without such restriction, and continue the exercise. Drawing in the breath in this manner will give strength and power to those respiratory muscles used when inhaling, while exhaling in this manner will strengthen the ex-

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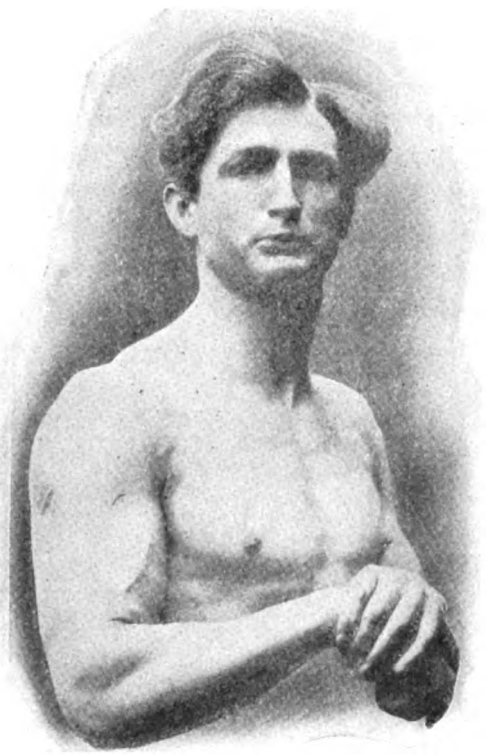
pelling muscles. Like other breathing exercises, these should be taken either out-of-doors or in a room with windows wide open. They can be taken with advantage before commencing your regular muscular exercises, between the latter, and at odd times through the day, alternating with other breathing exercises.

The use of lung testers can sometimes be recommended as a means of stimulating interest in breathing exercises, though they are truly unnecessary. One can acquire just as perfect and satisfactory development of the lungs without them. They are really of more value as a means of occasionally testing the lung capacity than as exercises, but it is certainly true that many enthusiasts will find a certain fascination in breathing into a device that will measure in cubic inches the amount of air expelled from the lungs with each breath. And such an apparatus will enable one to see his improvement from time to time.



Contract the lips so that there will be a very tiny opening; then draw in the breath very slowly but forcibly until the lungs are thoroughly inflated. If desired, a small pipestem may be used, or by pinching the nostrils with the fingers you can partially close them, thus offering a similar resistance. After several repetitions, expel the breath in the same way, thus strengthening all of the respiratory muscles.

There is no need, however, to strive for a record in lung capacity, for an abnormal development possesses no advantage. One can even do himself harm by over-exertion in this direction, and after seriously straining the lung tissues it is necessary to avoid all full breathing exercises for a time. One should work for the maximum of normal lung development,

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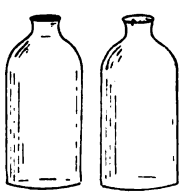
for this means power and vitality, but beyond this one will simply waste energy and time in his efforts. It is not wise to develop lungs cells that may not be used in the future, after losing the enthusiasm which led to such abnormal development. If the lung tester is to be used for striving to break all records in human lung capacity, it had better not be employed. It is true, however, that there is not much danger of going to excess in this direction. The great danger is through neglect of the lungs, and we can hardly say enough to encourage the general practice of deep breathing either with or without the help of apparatus.

It is entirely unnecessary to go to any lavish expenditure of money for machines for this purpose, since a home-made device can be constructed with little expense and trouble. Water is displaced by the air from the lungs, making it a simple matter to measure it.

The following articles are required to make the first device illustrated. If your lung capacity is large, secure two bottles of one and one-half or two gallons in size. If your lung capacity is very moderate, a gallon bottle will do. A piece of rubber tubing, five feet in length, with an opening of about one-quarter of an inch. A large rubber tube, about eighteen inches or two feet in length, capable of stretching over the necks of the bottles. A slip of white cloth or surgeon's adhesive plaster for pasting on the outside of the upper bottle to provide a means of measurement.

After having secured the above articles, take one of the bottles to a glazier and have the bottom part of it cut off, or else cut a hole of sufficient size to admit the small tubing. Now take the two bottles and fasten them on the wall as shown in second illustration, tacking a strap around the neck, and around the upper part of each bottle. The bottle with the hole in the bottom should be placed at the top. Next place one end of a large piece of hose over the neck of the lower bottle. Now force the small hose in through the free end of the large hose until



Bottles for lung tester.

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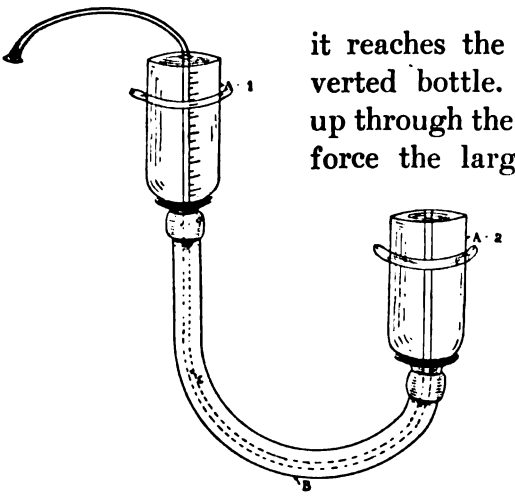

How bottles should be arranged.

it reaches the upper end of the lower inverted bottle. Then pass the small hose up through the neck of the upper bottle, and force the large hose over the neck. The device should then look something like the illustration. After pouring in water until it has reached the full swell of the upper bottle, you are ready to mark down the measurement in cubic inches. Be sure that the water reaches the bottom of the slip of cloth or paper which you have pasted on the bottle for marking.

Ascertain the number of quarts contained in the bottle and then place the total number of cubic inches up at the top; after which, you can divide it as often as you please. If you have no means of weighing at hand put down your figures as follows: A quart of water contains 57.6 cubic inches. Pour a quart of water in the bottle and mark down on your measure at the point which the water reaches 57.6. Put in another quart and mark 115.2; another quart, marking 172.8, and continue on in this manner. Of course, each quart can be divided into halves and quarters and tenths, if you desire to get the exact number of cubic inches you are able to blow.

After having completed your measurement data, remove from the bottle the exact amount of water poured in for measuring purposes. Now fully fill the lungs, and with one breath blow slowly all that you can into the small tubing. The air will displace the water in the lower bottle, and the latter will be gradually forced upward into the upper bottle and the number of cubic inches noted on the measure will give you the amount of air that you can expel from your lungs.

In order to secure a perfect spirometer, all you need is

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to invent some method that will enable you to measure the quantity of air that you expel. In making the second device here illustrated, provide yourself with two large tin cans that will hold from a gallon and a half to two gallons. One should be less in diameter than the other, and the narrow can should fit snugly within the other. Each can should be open at one end and closed at the other. At the closed end of the smaller should be a little opening with a thin spout. These cans or buckets can sometimes be bought at a hardware store, but any tinsmith will make them for a very small sum of money. If your lung capacity is large, the cans should be made to hold from a gallon and a half to two gallons. If small, cans of a gallon or a little more will be sufficiently large.

To complete your device, purchase two or three feet of small rubber tubing that will fit tightly over the spout. Now fill the larger can nearly full of water. Place the can with the spout to which the rubber tubing is attached, inside of the larger can, open end down, spout and tubing end up. You will then have a device such as appears in illustration No. 3, which shows the lung tester ready for use. You can provide your spirometer with a measuring device in the following manner:

Procure some surgeon's adhesive tape, or some thick, smooth white cloth on which you can use a pen. Now paste this cloth or tape around a narrow piece of cardboard of nearly the entire length of the inside can. This cloth should be slightly longer than the smaller piece of cardboard around which it is pasted. The free end of this cloth should be fastened with glue, or in some other way tightly secured to the top of the can with the spout, as is shown in the illustration. You are thus provided with a measuring rule which will rise and fall with the can attached to the tube, as the air is blown in or escapes from the can.

Now, if you have no method of measuring the number of cubic inches contained in the inner can, you can arrange your measuring rule in the following manner: Place the can in which the nozzle or spout is fastened upside down on a table. Be care-

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ful to let the nozzle extend over the edge of the table, stop it up, then pour in water to the depth of about half an inch. Secure a quart measure that is absolutely accurate. Now place a long slip of stiff paper on the inside of the can containing the water, extending from the bottom to the top. Just at the top of the water make a mark on this paper with a lead pencil. Next carefully pour a quart of water into the can. Then with a lead pencil, mark on the paper the exact point where the water comes after having poured in a full quart. There are, as said, 57.6 cubic inches in a quart of water. You will thus be able to place at this line the figures 57.6. Put in another quart and mark down twice 57.6, equalling 115.2, add still another and mark it three times 57.6, equalling 172.8. Continue until your can is very nearly full. Next take out your paper and transfer these data to your measuring rule.

An excellent type of lung tester.

CALISTHENICS.—(Gr. *kalos,* beautiful, and *sthenos,* strength.)—Calisthenics is the name applied to free movement exercises, without apparatus, frequently practiced in class drills. As one may gather from the derivation of the word, it originally had reference to exercises for promoting both gracefulness and strength. However, nearly all exercises make for beauty of body and gracefulness as well as strength, so that the word now has reference to all-around free movements. Calisthenics are well suited to the needs of the average man or woman, of moderate strength, and may be recommended to anyone for their constitutional benefit, though for

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developing robust strength more vigorous exercise is desirable. (See *Class Drills.*)

CAMPING.—The subject of camping does not come strictly within the category of athletic sports or games, and yet it is such an important phase of outdoor life that it is not to be forgotten in the general discussion of topics of this nature. Camping is the ideal method of spending a vacation, for there is no means of recuperation from the wear and tear of business or professional life more effective or more enjoyable than getting out into the heart of Nature, among the trees, and alongside of some delightful lake or stream which offers the pleasures of boating and swimming. One seems, as it were, to get away from civilization and to get back to that simplicity and natural order of life in which the race has grown to its present stature, and in which has been developed that superb vitality which we have inherited, and without which we should have been able to endure the debilitating influences of our artificial, civilized life for but a very brief period at the best.

In the camp there is not only the outdoor sleeping and general open-air existence, but the opportunity and stimulus to all kinds of healthful and strength-building activities. One may climb trees, indulge in long walks and runs, play games, in addition to the boating and swimming. The value and benefit of camp life is attested by the fact that even the most conservative of mortals, those who have never given a moment's thought to the great general scheme of physical culture as we are teaching it, realize the value of camp life and are able to make a remarkable physical improvement in spite of the dietetic crimes and errors in which they persist during the entire period of camping.

If one cannot actually live in the country and as close to Nature as possible, all the year round, then at least he should try to spend his vacation in such a manner. Getting back into the primitive and roughing it for a while will do every one good.

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CLASS DRILLS.—On the following pages are presented some very useful series of exercises intended to be of special value to clubs and schools where physical training is taken up in classes. Taken altogether, they offer a most comprehensive system of exercise for the general development of the entire body.

Class work in physical culture at the present time represents a very large proportion of the attention given to the subject throughout the whole world, and practically all schools and colleges now include a certain amount of such physical training in their courses. In many cases this is optional with the student, and in other schools it is compulsory. It should be compulsory in all schools, in order that any special defects may be overcome in childhood or youth, and that all graduates may be as sound physically as it is hoped that they will be mentally.

Outside of the schools there are many clubs and societies in which class work in physical training is taken up for the improvement of the entire body. In such cases the various drills which I am presenting will be of very great value, giving a splendid variety in exercise and stimulating interest to a high degree.

There is a certain pleasure and interest in working in company which one cannot experience when taking solitary exercise, and the privilege of working in a class, though not a necessity to one who is persistently determined to get health and strength, is nevertheless a great advantage in most cases. Different members can compare their improvement in certain intervals, and may also do a great deal in the way of encouraging each other.

There are a number of people who fail not only in the matter of physical improvement, but in many other phases of life through the lack of the quality now known, in the vernacular, as "stick-to-it-ive-ness," and who may tell you that once upon a time they started the practice of physical culture and kept it up for a few days, during which time it did them good, but that gradually they neglected it and the first thing

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they knew they had dropped it entirely. Such an experience is usually the result of a lack of real interest in the beginning, and is truly unfortunate in view of the benefit that is lost. In many cases it is just those who lack the ambition to keep up the exercises, who are most sadly in need of them. If they could have continued long enough to get past a certain point, whereat they might have developed a certain amount of energy, they might have then enjoyed the exercise so much that nothing could persuade them from it. The interest of working in class with others is of great value in such cases. There are the specified hours at which the class meets, one is expected to be there, and being there, he goes through the exercise with pleasure, when if left to solitary initiative in his bedroom, he might neglect it altogether. It is very easy to excuse oneself on the plea of lack of time, no matter how much time is wasted every day.

Fortunately, most of those who become interested in physical culture and the betterment of their health shortly become so enthusiastic that there is no need of any special inducement to keep them at it. It is only the occasional one who easily gives it up, while with the others it becomes a fad, sometimes almost a passion But in such cases, though the class work is not necessary, yet it so increases the joy of the thing that they eagerly grasp the opportunity of working with others.

If there is no opportunity for joining a class one can always take up these various exercise series for private practice at home. Very little space is required and any bedroom will supply the opportunity. But better still, after mastering all of these drills, it is a comparatively simple matter to organize a class or a little club in which a number can share the benefits, the student who has mastered these drills acting as instructor, and using this Encyclopedia as a reference and guide.

One thing is most important, and that is that the class room or hall, if the exercises are performed indoors, should be thoroughly ventilated. This means that the windows should be opened, not an inch or two, but all the way. Remember that when taking exercise a person consumes several times

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more oxygen than in a state of rest or quiet. If a breeze blows through the room, the better. The old objection to gymnasium work was that so few of them were properly ventilated and this objection still holds good in some cases. One of the oldest gymnasiums in New York City, up to a few years ago, was located in the basement instead of at the top of the building, and was practically without means of ventilation. The building is now torn down and such conditions are likely never again to be duplicated.

I am offering herewith some photographs of classes executing drills, illustrating the open formation necessary for such work. The instructor should always stand well apart and in front of the class, and if a small platform can be provided for this purpose so much the better, though it is not necessary for small classes.

A little marching drill is sometimes an advantage, and especially in large classes, as a means of getting pupils in position. Having marched around the gymnasium in single file, turning the corners square, let the class "Halt!" at command, across one side, turning on the near heel to face the instructor. To arrive at open formation from this point let class count in fours. Then at command to "March," let number "ones" remain stationary, number "twos" stop at two paces, number "threes" at four paces and number "fours" at six paces. If there is space and a more open formation is desired, the advancing files may stop at intervals of three or four paces, as stipulated. Another method of placing the class may be adopted, but this one is simple and convenient. The command might be "Open formation, two paces, March!" The class is then ready for the exercise drills.

Music adds greatly to the attractiveness of exercise in class, and wherever a piano is obtainable some arrangement should be made for suitable accompaniments for the drills. The expense, divided among a class, will be practically nothing, for a high-priced musician is not needed. An ordinary march, played in good time, will suffice.

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LESSON ONE

General position: Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

Simple Free Movements

See description of movements on opposite page.

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LESSON ONE.

EXERCISE No. 1.—Flex the arms rigidly, close hands tightly, strike vigorously straight in front, then return to original position. Count, 1-2.

EXERCISE No. 2.—Begin the same as above. Strike straight downward. Return to original position. Count, 1-2.

EXERCISE No. 3.—Begin the same as above. Strike straight upward. Return to original position. Count, 1-2.

EXERCISE No. 4.—Begin as previously described. Strike outward and backward as far as possible; then return to original position. Count, 1-2.

1st, 2nd, 3rd and 4th exercises are especially for developing the muscles of the upper arms—biceps and triceps.

EXERCISE No. 5.—Elbows rigid. Raise arms from the sides to level with shoulders. Return to original position. Count, 1-2. For the muscles of the lateral portions of the shoulders.

EXERCISE No. 6.—From sides, bring arms straight forward on level with shoulders; then return to original position. Keep elbows rigid. Count, 1-2. For muscles on anterior portions of shoulders.

EXERCISE No. 7.—With elbows rigid, bring arms from sides backward and upward as far as you can. Return to original position. Count, 1-2. For muscles of posterior portion of shoulders.

EXERCISE No. 8.—From the position with the arms held out from the body, elbows rigid, bring arms in front of the body as far as possible, crossing one over the other. Return to original position, and then repeat the exercise. Alternate the position in crossing the arms each time. Count, 1-2. For large muscles on front of chest.

EXERCISE No. 9.—With the arms held out from the body, elbows rigid, swing arms behind the body, crossing one over the other. Return to original position, and repeat, alternating the position of the arms at crossing of each exercise. Count, 1-2. For the muscles of the back, latissimus dorsi, immediately beneath the shoulder.

EXERCISE No. 10.—Bring the shoulders as far forward, then as far backward, as you can. Continue back and forth. Count, 1-2. For the muscles of the breast and the back between the shoulders.

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LESSON ONE

General position: Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

Simple Free Movements

See description of movements on opposite page.

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LESSON ONE—*Continued.*

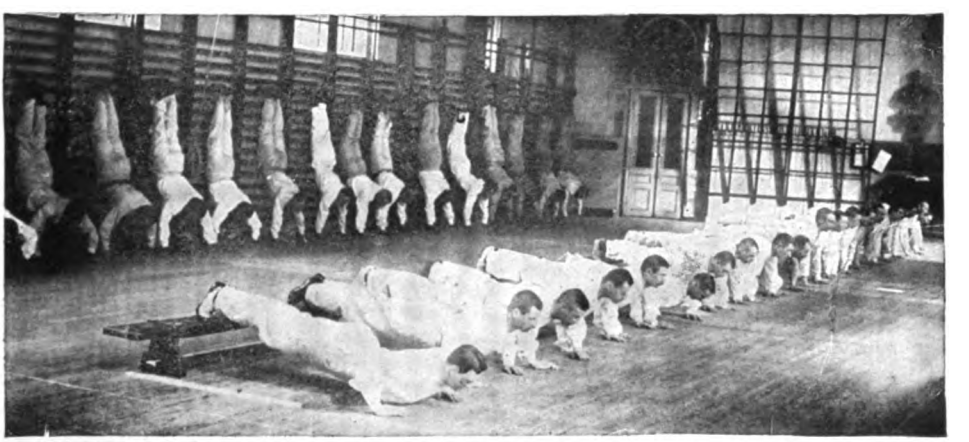
EXERCISE No. 17.—Raise the right leg upward as high as you can, bending the knee. Return to original position. Same exercise with the left leg. Continue alternating from one to the other. Count, 1-2-3-4. For muscles of the extreme front part of the upper leg.

EXERCISE No. 18.—With the knees rigid, bring the right leg outward to the side as far as possible. Return to original position. Same exercise with the left leg. Return to original position. Count, 1-2-3-4. For the muscles on the outside of the extreme upper part of the legs.

EXERCISE No. 19.—With knees rigid, bring the right leg over in front of the left leg as far as possible. Return to original position. Same exercise with the left leg. Return to original position. Count, 1-2-3-4. For the muscles on the inside of the extreme upper leg.

EXERCISE No. 20.—Knees rigid. Raise the right leg upward and backward as far as you can. Return to original position. Same exercise with left leg. Return to original position. Count, 1-2-3-4. For the muscles on the upper part of the back portions of the legs and hips.

EXERCISE No. 21.—With the knees rigid, raise the right leg upward and forward as far as you can. Return to original position. Same exercise with the left leg. Count, 1-2-3-4. For the muscles on the front part of the extreme upper leg.



Phot Paul Thompson, N. Y.

Swedish army men at work in the gymnasium.

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7

LESSON TWO

General position: Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

8

ADVANCED FREE MOVEMENTS

See description of movements on opposite page.

9

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LESSON TWO.

EXERCISE No. 1.—With elbows rigid, bring arms outward to the sides, then high over head, slapping palms together. As arms go upward, step far out to the right with foot. Alternate with right and left leg. Count, 1-2-3-4.

EXERCISE No. 2.—Bring arms forward and high over head with elbows rigid. Step far forward with the right foot as arms go upward. Return to original position. Repeat; stepping forward with left leg. Repeat entire exercise. Count, 1-2-3-4.

EXERCISE No. 3.—With left foot far forward, (sparring position), strike as far out as you can with the left arm. Return; then strike far out with right arm. Alternate from one to the other. Count, 1-2.

EXERCISE No. 4.—Raise shoulders as high as possible, at the same time rising high on the toes. Count, 1-2.

EXERCISE No. 5.—With arms flexed, fingers resting on shoulders, bend forward and touch the fingers of the right hand near the right heel, at the same time striking upward with the left hand. Return to original position. Repeat exercise at opposite side. Count, 1-2-3-4.

Ladies' dumb-bell drill, showing open formation. An instructor not shown in photograph, stands apart in front of class. This class practicing for an exhibition drill, the central column executing a different movement for the sake of picturesque effect.

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Lesson Two—*Continued.*

Exercise No. 11.—Raise right arm with elbow rigid out to the side and high over head, bending far over to the left as the arm goes upward. Same exercise with the left arm. Alternate from right to left. Count, 1-2-3-4.

Exercise No. 12.—Hold arms high over head. With elbows rigid, palms together, bring them downward and far backward vigorously. Return. Count, 1-2.

Exercise No. 13.—With feet far apart, hands on hips, bend the right knee, keep left knee straight, go over towards the right. Return. Alternate. Count, 1-2-3-4.

Exercise No. 14.—Starting with arms on level with shoulders in front of body, elbows rigid, palms together, swing the left arm obliquely downward and backward, and the right arm obliquely upward and backward. Return and alternate. Count, 1-2-3-4.

Exercise No. 15.—Bring right leg upward with knee bent, and bring the head far back at the same time. Return. Alternate. Count, 1-2-3-4.

Exercise No. 16.—Jump slightly and transfer the weight of the body from right to left foot. Continue, keeping time with the hands.

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LESSON THREE.

Consisting Chiefly of Floor Calisthenics.

Complete Illustrations, Exercises 1 to 12 appear on pages 652 and 653

General Position.—Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

EXERCISE No. 1.—Bend knees, assume a crouching position, retain this position and swing arms high over head, elbows rigid, touching palms together. Repeat. Count, 1-2.

EXERCISE No. 2.—Crouching position. Hold arms forward, elbows rigid, on level with shoulders, palms together. Swing arms vigorously out to the side. Return. Repeat. Count, 1-2.

EXERCISE No. 3.—From a crouching position, place the hands on the floor as far back as you can reach. Bring the feet far forward sitting on the floor. Now raise the body as high as you can, resting the weight on the heels and palms. Return. Count, 1-2.

EXERCISE No. 4.—From a crouching position, place the hands on the floor, shoot the feet out, resting the weight on palms and toes, body rigid. Now bend the body allowing the hips to rest on the floor, now raise body as high as you can. Repeat. Count, 1-2.

EXERCISE No. 5.—Standing erect, swing arms forward, then high over head, reaching up as high as you can at the same time rising on toes. Count, 1-2.

EXERCISE No. 6.—With hands on hips, step far forward with the right foot, bending the right knee. Return. Same with the left foot. Count, 1-2-3-4.

EXERCISE No. 7.—From a crouching position, with arms tightly flexed, strike upward reaching as high as you can, straightening the legs and rising at the same time.

EXERCISE No. 8.—From a crouching position, place the hands on the floor, and shoot the legs out to the right side, resting the weight of the body on the palms of the hands and left side of left foot. Let the hips touch the floor, then raise the central portion of the body as high as you can. Return. Repeat. Count, 1-2.

EXERCISE No. 9.—Same exercise as preceding. Resting weight on the palms of the hands and the right side of the right foot. Return. Count, 1-2.

EXERCISE No. 10.—Rest weight of body on the toes and palms of hands, face downward, body rigid, raise right leg as high as you can. Return. Same exercise with left leg. Count, 1-2-3-4.

EXERCISE No. 11.—Assuming same position as preceding exercise, bring right leg far out to the right. Return. Same with the left leg. Count, 1-2-3-4.

EXERCISE No. 12.—Assume position described in preceding exercise, jump off the floor with the strength of the arms. Count, 1.

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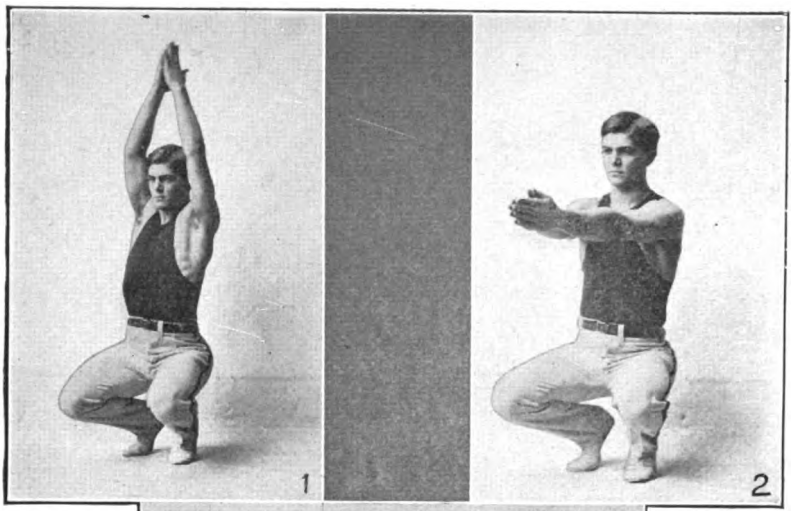
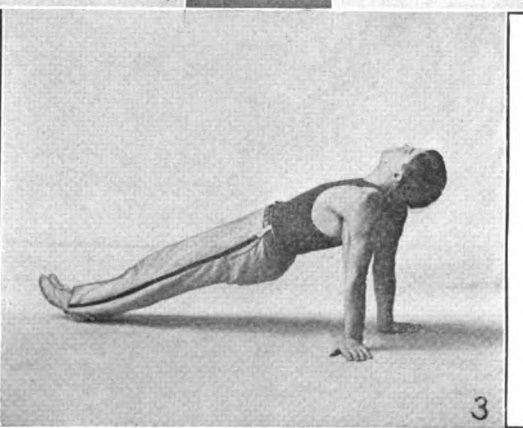
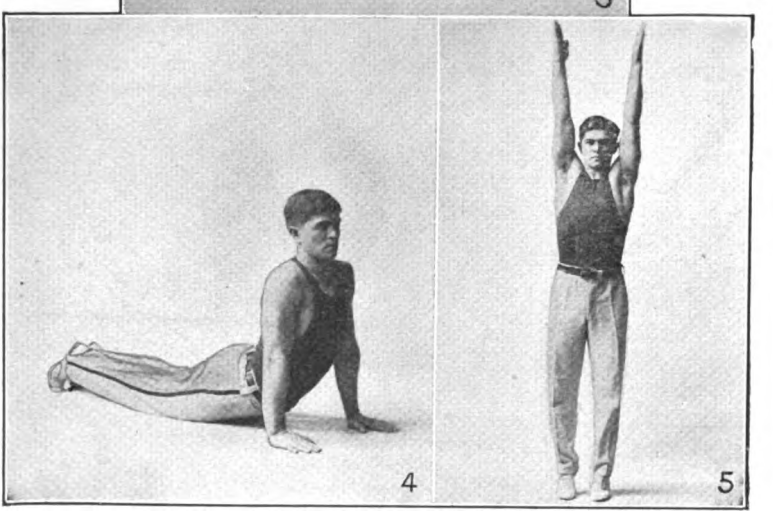


LESSON THREE
General position: Body erect, shoulders back, eyes to front, chin in, arms at sides



CONSISTING OF FLOOR CALISTHENICS

See description on page 651



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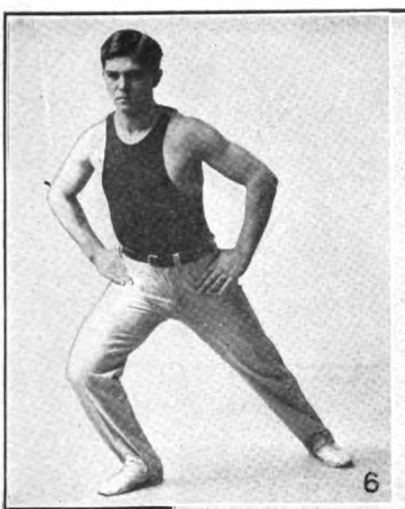
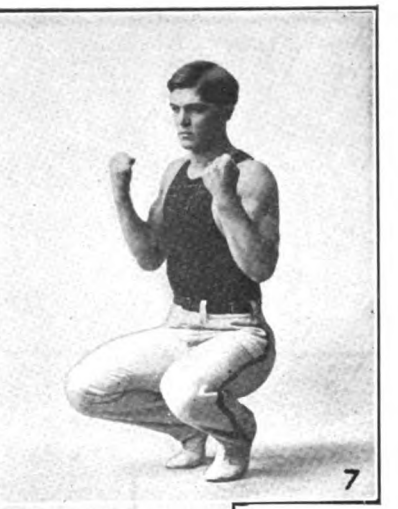


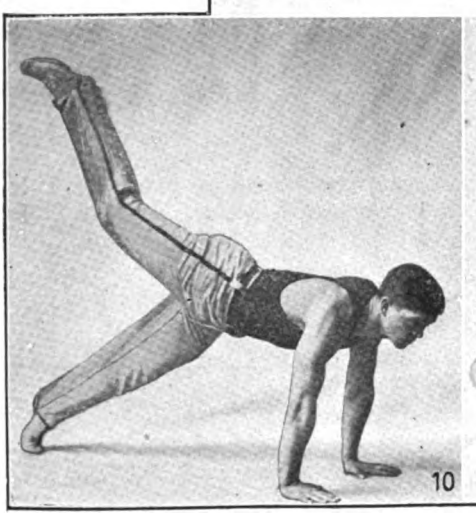


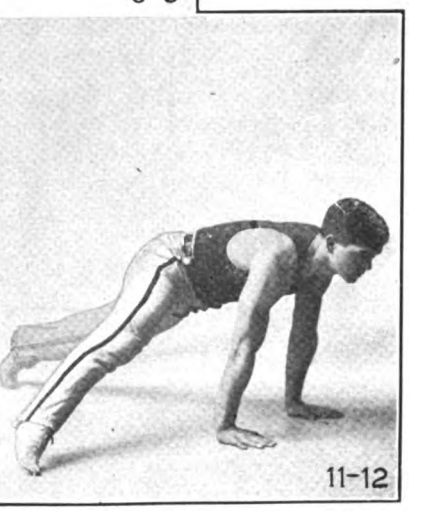
LESSON THREE

General position: Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides

CONSISTING OF FLOOR CALISTHENICS

See description on page 651





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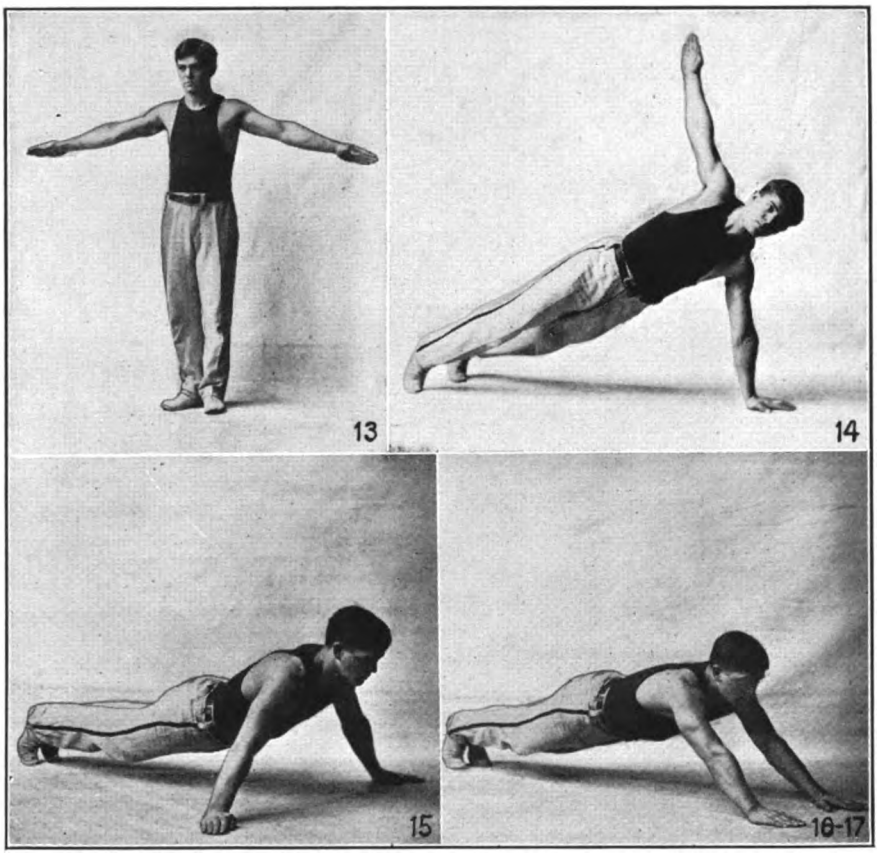

LESSON THREE

Consisting Chiefly of Floor Calisthenics.

General Position.—Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

EXERCISE No. 13.—With arms straight out to the side, on level with shoulders, move the arms in small circles. Count, 1.

EXERCISE No. 14.—Assume position, weight on toes and palms, face downward, body rigid, move the right hand from the floor and swing it as high outward to the side as you can. Same with the left hand. Count, 1-2-3-4.

EXERCISE No. 15.—While resting with the weight, face downward, on hands and toes, body rigid, slowly bring hands outward to the sides as far as you can.

EXERCISE No. 16.—Assume same position as above, slowly bring hands as far forward as you can, elbows and body rigid.

EXERCISE No. 17.—From erect position, crouch to the floor, bending knees and assuming a crouching position. Place hands on floor and shoot legs behind, resting weight on palms and toes, now with the body rigid, bend arms and touch chest to the floor. Bring legs up to crouching position. Rise to erect position. Count, 1-2-3-4-5-6.

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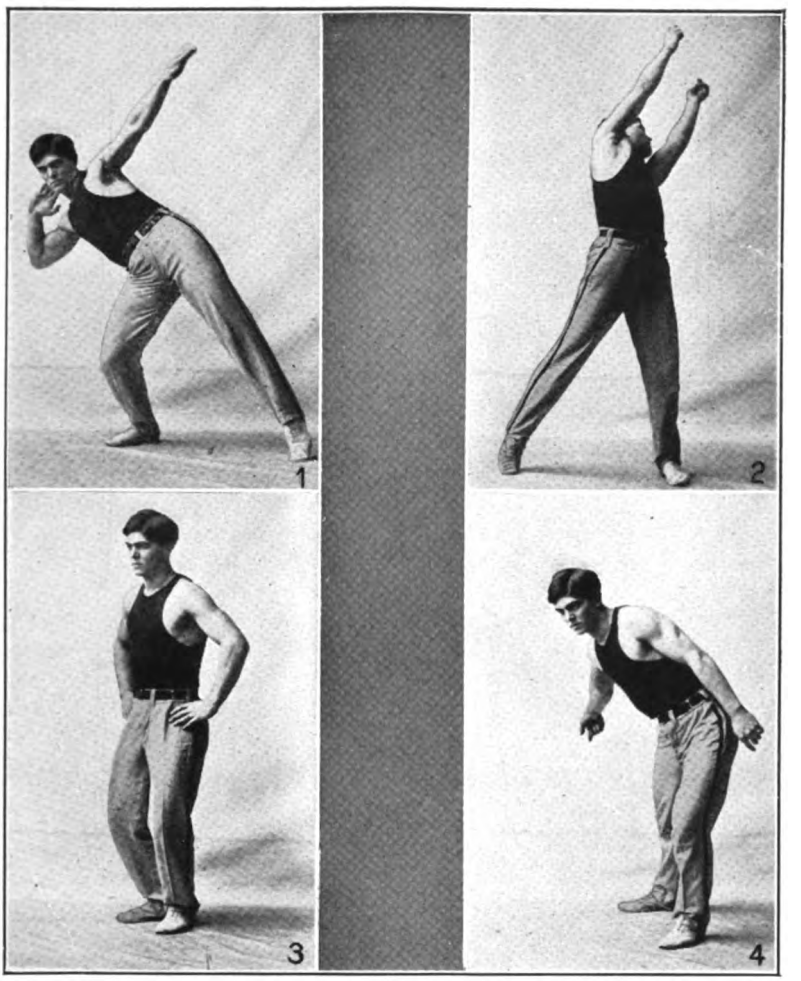

LESSON FOUR.

Consisting of Athletic Calisthenics.

General Position.—Body erect shoulders back, eyes straight to the front, chin in, arms hanging at sides.

EXERCISE No. 1.—*Putting the Shot.*—Assume the general position taken in this exercise. In the action of throwing the shot reach out as far as you can. Take the exercise throwing with the right hand and with the left. Count, 1-2.

EXERCISE No. 2.—*Throwing the Hammer.*—Clasp hands together in front; swing arms around twice and then throw over the left shoulder as though you were throwing the hammer. For drill purposes this exercise will be better if the arms are swung in a circle, first swinging to the right and then to the left. Count 1 for each circle.

EXERCISE No. 3.—*High Jumping.*—Jump moderately in the beginning, gradually increasing to high, until jumping as high as you can. Count, 1.

EXERCISE No. 4.—*Bowling.*—Assume position as in bowling. From far back bring the hand far forward, just as if throwing the ball down the bowling alley. Same exercise with position reversed. Count, 1-2.

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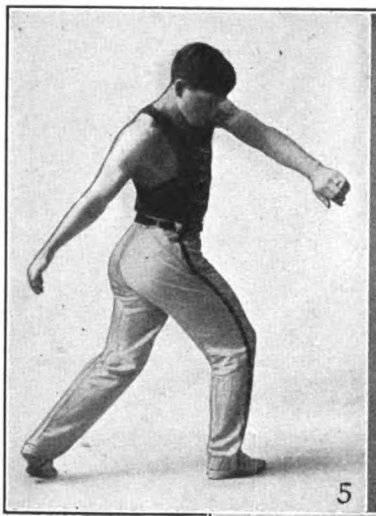

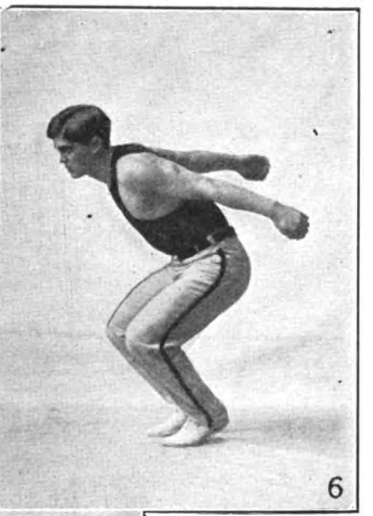

LESSON FOUR

General position: Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

CONSISTING OF CALISTHENICS

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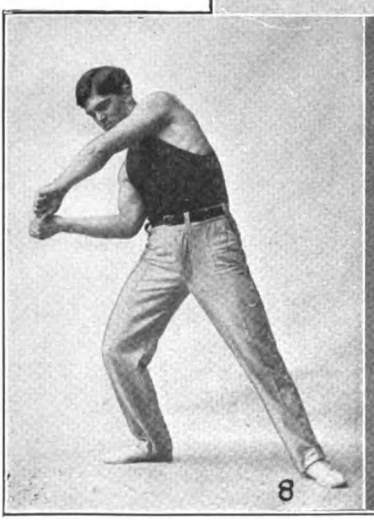

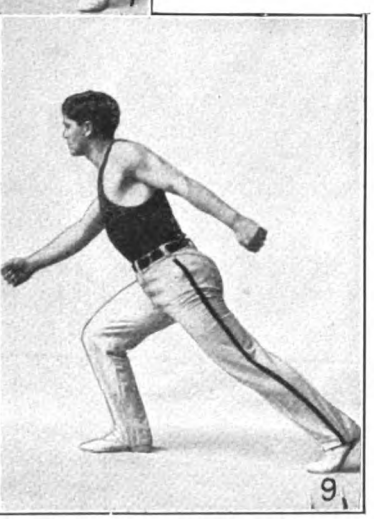

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LESSON FOUR—*Continued.*

EXERCISE No. 5.—*Lawn Tennis.*—With an imaginary racket in the right hand strike a low ball, then a medium and then a high ball. Same exercise with the left hand. Count, 1-2-3.

EXERCISE No. 6.—*Distance Jumping.*—With hands on hips jump about one or two feet forward and then backward. Count, 1.

EXERCISE No. 7.—*Ball Throwing.*—With an imaginary ball in right hand throw underhanded; then out from the side and from overhead. Same exercise with the left hand. Count, 1-2-3.

EXERCISE No. 8.—*Golf.*—With an imaginary golf stick in hand swing arm upward and backward, and then strike at an imaginary ball on the ground. Count, 1-2.

EXERCISE No. 9.—*Running.*—Shift weight from one foot to the other, bringing right and left leg up as high as you can each time weight is shifted. Count, 1-2.

EXERCISE No. 10.—*Swimming.*—Bend far forward until upper body is nearly in a horizontal position. Now shoot hands out forward and bring them out to the sides as in swimming. Count, 1-2.

EXERCISE No. 11.—*Throwing Football.*—Take up an imaginary ball from between feet and make a motion as though throwing it back of you overhead. Count, 1-2.

EXERCISE No. 12.—*Hopping.*—With all the weight on the right foot jump as in skipping a rope. Same exercise with the left foot. Count, 1.

EXERCISE No. 13.—*Sparring.*—Assume sparring position, with left foot forward and body well braced. Strike out with the left and right hands alternately, reaching out as far as possible. Count, 1-2.

EXERCISE No. 14.—*Throwing the Discus.*—Assume the usual position as taken in this exercise. With an imaginary discus in the right hand throw it forward in the usual way, but without the turn used by athletes. Same exercise with the position reversed. Count, 1-2.

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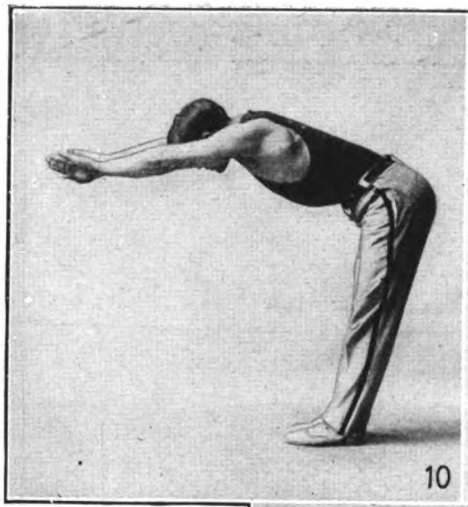
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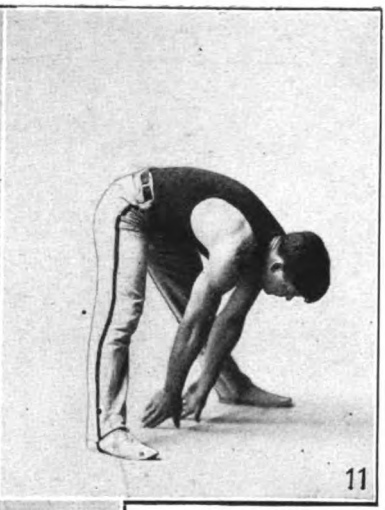
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LESSON FOUR

General position: Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

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CONSISTING OF CALISTHENICS

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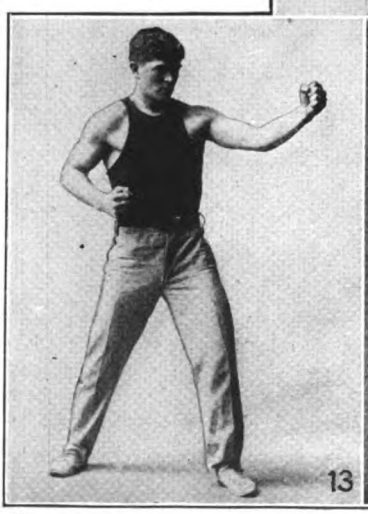
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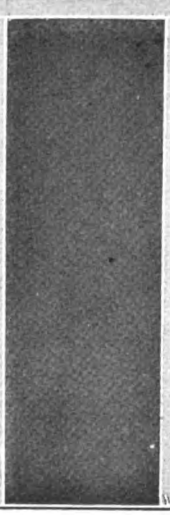

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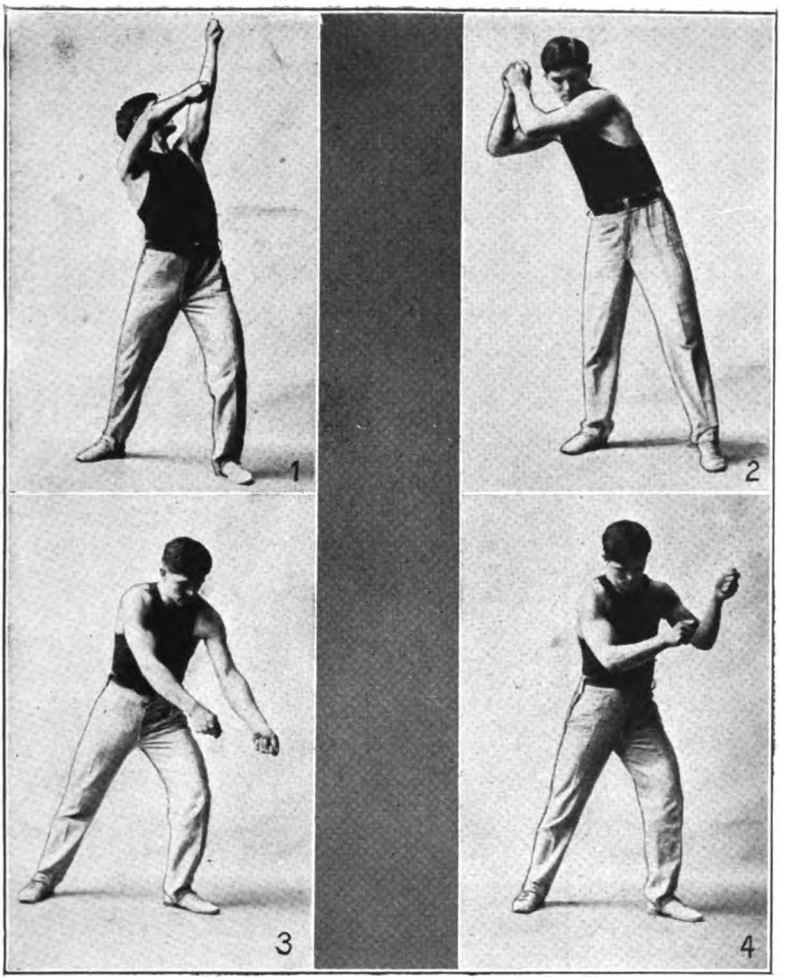

LESSON FIVE.

Calisthenics Embodying Same Motions as Farm Work.

General position.—Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

Exercise No. 1.—*Pitching Hay.*—Assume appropriate position, with left foot forward. Thrust hands downward as when using pitch-fork. Swing arms up over left shoulder, rising on toes. Same exercise with position reversed. Count, 1-2.

Exercise No. 2.—*Chopping Wood.*—Take grip of imaginary axe, right hand in front of left. Place left foot forward, twist body to right side, and swing arms upward and backward, then downward and forward. Count, 1-2.

Exercise No. 3.—*Raking.*—Place left foot forward, bring both hands to right side, left hand in front of right. Lean forward, bending at waist, and straightening arms, then pull backward, bending both arms on right side of chest, also the back, resting weight upon rear leg. Count, 1-2.

Exercise No. 4.—*Hoeing.*—Place left foot forward, bend body forward from hips, left hand in front of right, raise imaginary hoe about one foot from the earth and bring down forcibly. Same exercise with position reversed. Count, 1-2.

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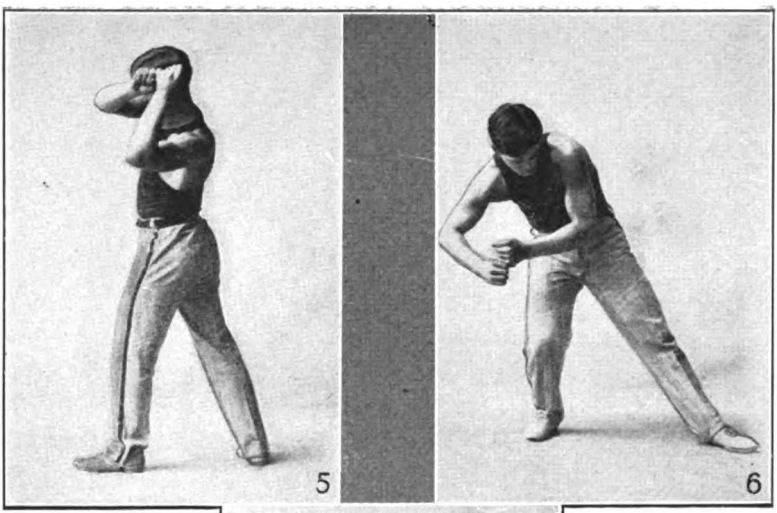
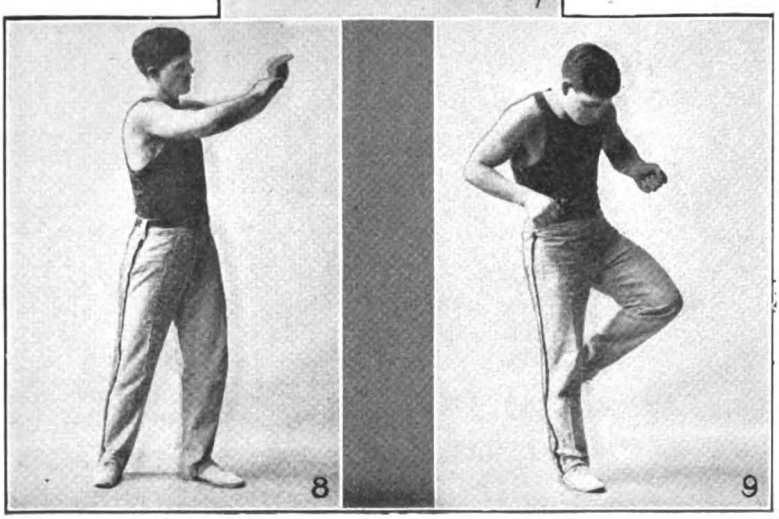


LESSON FIVE

General position: Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

FARM CALISTHENICS

For description see page 661



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LESSON FIVE.

Calisthenics Embodying Same Motions as Farm Work.

General position.—Body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.

For Complete Illustrations, See pages 660 *and* 662

EXERCISE No. 5.—*Swinging the Maul.*—Assume position as in chopping wood. Bring arms upward and backward in a long, sweeping circle and down forward, swinging hard on downward movement. Same exercise with position reversed. Count, 1-2.

EXERCISE No. 6.—*Sawing with Cross-Cut Saw.*—Place left foot forward, rest weight on right leg, bend body forward and grasp imaginary saw handle, push and pull as far as possible in each direction. Same exercise with position reversed. Count, 1-2.

EXERCISE No. 7.—*Turning Soil with Garden Fork.*—Place left foot forward and grasp imaginary fork. Thrust forcibly as if far into the soil, lifting, turning over and throwing imaginary soil forcibly to the earth as in breaking lumps. Same exercise with position reversed. Count, 1-2.

EXERCISE No. 8.—*Currying and Brushing a Horse.*—Grasp an imaginary curry-comb in the left hand, and a brush in the right, bending the arms at the elbows, raise hands in front of chest and bring comb downward, following with brush. Count, 1-2.

EXERCISE No. 9.—*Using Buck Saw.*—Place left knee on an imaginary log, grasp saw with the right hand beside upper chest and work upward and downward. Same exercise with position reversed. Count, 1-2.

EXERCISE No. 10.—*Sowing Wheat.*—From an imaginary sack filled with wheat hanging at left side, take out a handfull of imaginary wheat and extend arm sidewise, using a circular, forward movement of right arm to left side. Same exercise with position reversed. Count, 1-2.

EXERCISE No. 11.—*Picking up Potatoes.*—With an imaginary basket on left arm, take a full knee bend, picking up potatoes with right hand. Same exercise with position reversed. Count, 1-2.

EXERCISE No. 12.—*Swinging Scythe.*—Extend right and left arms obliquely sidewise and downward, grasping an imaginary scythe, spread feet, twist body to right and swing with straight arms in a circle. Same exercise with position reversed. Count, 1-2.

EXERCISE No. 13.—*Milking a Cow.*—Assume squatting position, grasping teats with left and right hands, squeeze alternately, beginning with forefinger and thumb of each hand. Count, 1-2.

EXERCISE No. 14.—*Chasing Chickens.*—Act as if running, but without moving from station, and swing arms in all directions. Count, 1-2.

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WAND DRILL—*Continued.*

d. Flex forearms first count, extend vertical second count, bend down and touch floor without bending knees third count, vertical position fourth count, flex forearms fifth count, position sixth count.

No. 4.—Grasp wand on ends.

a. Bring the wand overhead to small of back, first count, position second count.

b. Right hand over head first count, small of back second count, left hand over head third count and position fourth count.

No. 5.—Wand placed on back of neck, arms wound over wand.

a. Bend left and right side in two counts.

b. Rotate left and right in two counts (as illustrated).

c. Bend forward and backward in two counts.

d. Rotate left first count, bend forward second count, straighten third count, rotate to front fourth count. Alternate.

e. Bend forward first count, rotate left second count, back to first position third count and position fourth count.

No. 6.—a. Right arm vertical, left hand to right shoulder as per illustration first count, position second count. Alternate.

b. Position as per illustration first count, bend left second count, straighten third count, position fourth count. Alternate left.

c. Charge forward right to position six first count, bend to left side second count, straight third count, position fourth count. Alternate.

No. 7.—a. Right arm front horizontal, left hand on right shoulder, as per illustration, in two counts. Alternate left.

b. Position illustrated first count, rotate half turn, right, second count, front third count and position fourth count. Alternate left.

c. Charge forward, left, position of wand as per No. seven, first count; rotate half turn second count, front third count and position fourth count. Alternate.

No. 8.—a. Position illustrated in No. seven first count, position illustrated in No. eight second count, first position third count and position fourth count. Alternate, left.

b. Charge forward right to position illustrated in No. seven first count, position illustrated in No. eight second count, first position third count and position fourth. Alternate, left.

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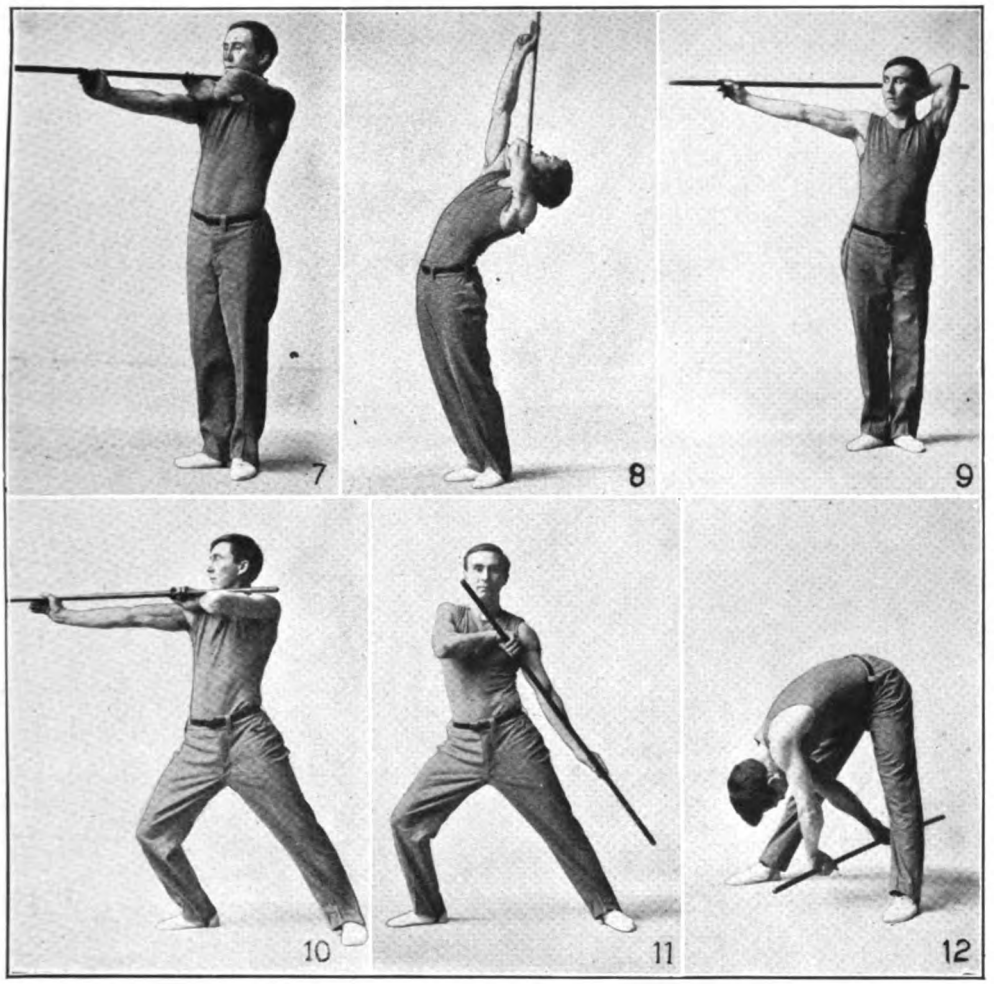

WAND DRILL—*Continued.*

No. 9.—a. Right arm side horizontal, left hand on back of head as per illustration, first count; position second. Alternate, left.

b. Charge sideward right, wand as illustrated in No. nine, first count; bend right second count, straight third count, position fourth count. Alternate, left.

c. Charge sideward right, wand as per illustration in No. nine, first count; bend left second count, straight third count, position fourth. Alternate, left.

No. 10.—Charge sideward right, flex the arms first count, thrust right arm side horizontal, left hand to shoulder, second count; flex arms on chest third count, position fourth count. Alternate, left.

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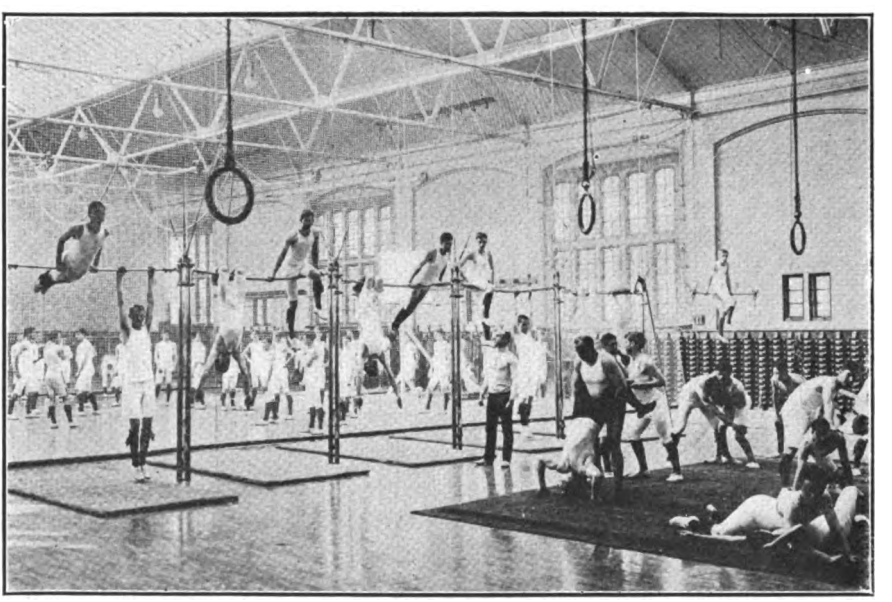
WAND DRILL—*Continued.*

a. Flex arms on chest as per illustration No. three, first count; charge sideward right, thrust right arm side horizontal and left hand to shoulder, second count; recover charge and flex arms to chest third count, position fourth.

No. 11.—Charge right, left arm obliquely downward, right hand to left shoulder, first count; position second count. Alternate, left.

No. 12.—Stride stand, legs straight, wand front horizontal, first count; right end of wand between thighs, left end forward as per illustration, second count; wand to first position third count and position fourth. Alternate, left.



Showing various "Squads" engaged in different forms of exercise in a large modern gymnasium.

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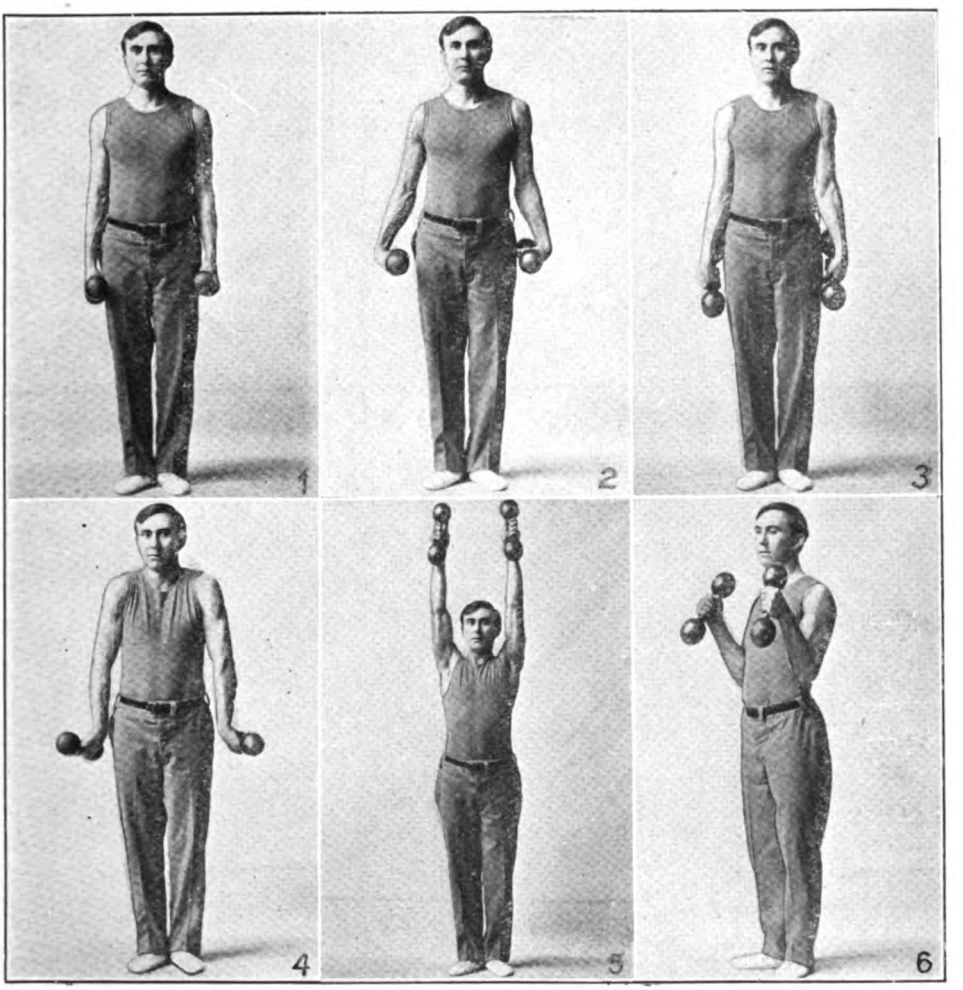

DUMB-BELL DRILL.

No. 1.—Position of Attention.

No. 2.—Flex hand on wrist in two counts, from position with arms at side of body or front horizontal, side horizontal and vertical.

No. 3.—Bend the hands side to side in two counts. From position, front horizontal, side horizontal and vertical.

No. 5.—From position illustrated large outward circles, and large inward circles and large parallel circles left and right in two counts.

No. 4.—Rotate arms inward and outward, from position, the front horizontal, side horizontal and vertical in two counts.

No. 6.—Flex arms on chest in two counts, then front horizontal and side horizontal.

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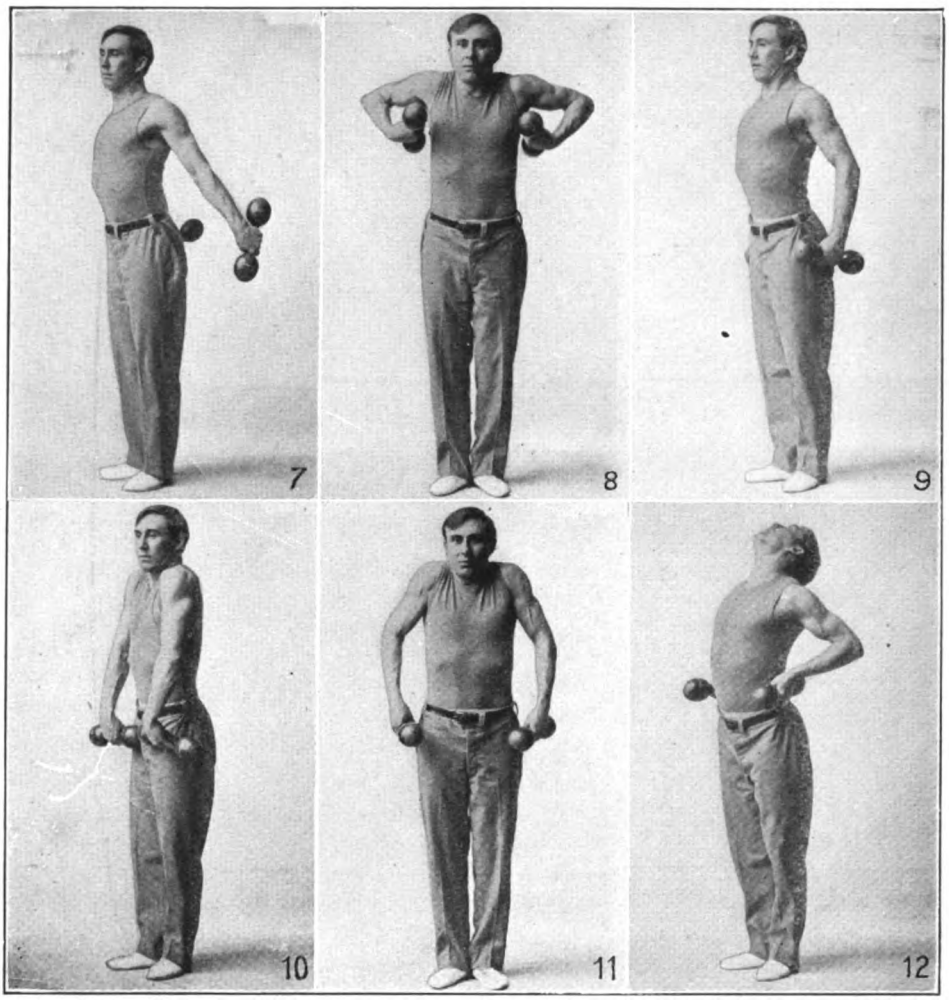

DUMB-BELL DRILL—*Continued.*

No. 7.—From vertical position as shown in No. five, to rear as shown in No. seven in two counts.

No. 8.—Curl the arms in two counts.

No. 9.—Shoulder shrug up and down in two counts.

No. 10.—Shoulder shrug forward and backward in two counts.

No. 11.—Exercise for lifting the chest, count eight while inhaling and eight during exhalation.

No. 12.—Hips firm, head forward and backward, bend in two counts.

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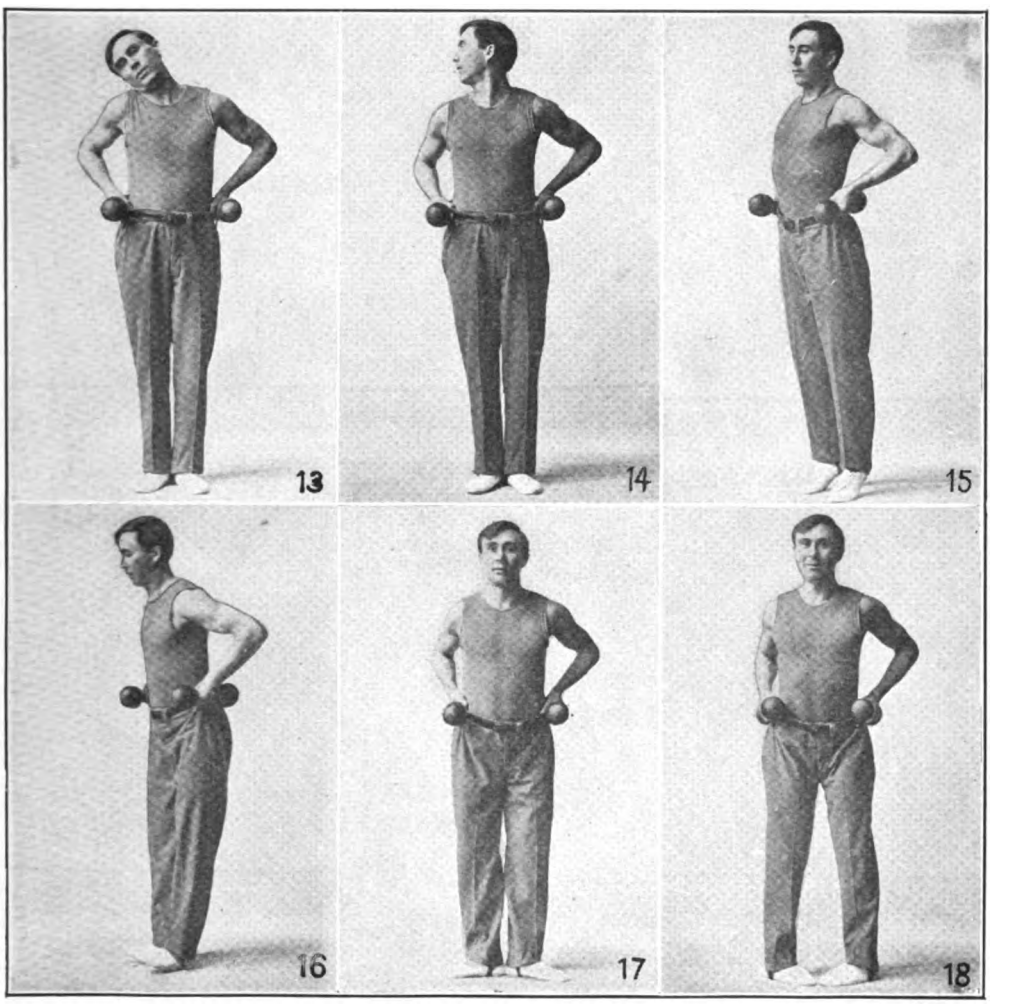

DUMB-BELL DRILL—*Continued.*

No. 13.—Hips firm, head sideward left and right, bend in two counts.

No. 14.—Hips firm, head left and right rotate in two counts.

No. 15.—Hips firm, rise on balls of feet in two counts.

No. 16.—Hips firm, raise balls of feet in two counts.

No. 17.—Hips firm, toes inward and outward and rotate in two counts.

No. 18.—Hips firm, heels inward and outward, rotate in two counts.

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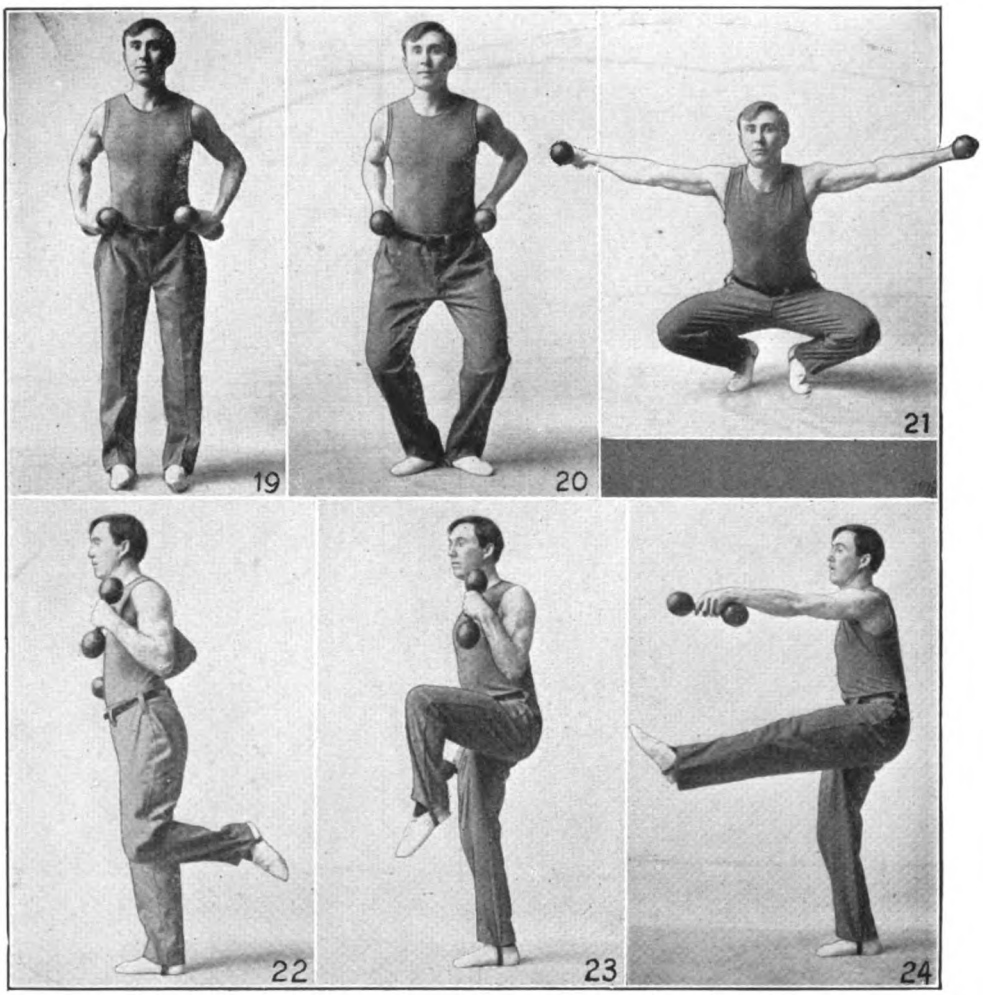

DUMB-BELL DRILL—*Continued.*

No. 19.—Hips firm, feet inward and outward, bend in two counts.

No. 20.—Hips firm, half knee bend in two counts.

No. 21.—Arms side horizontal, full knee bend in two counts.

No. 22.—Left arm and left leg flex in two counts. (Alternate right.)

No. 23.—Left arm and left leg and thigh flexed in two counts (Alternate right.)

No. 24.—Left arm front horizontal, left thigh flexed, leg and foot extended in two counts. (Alternate right.)

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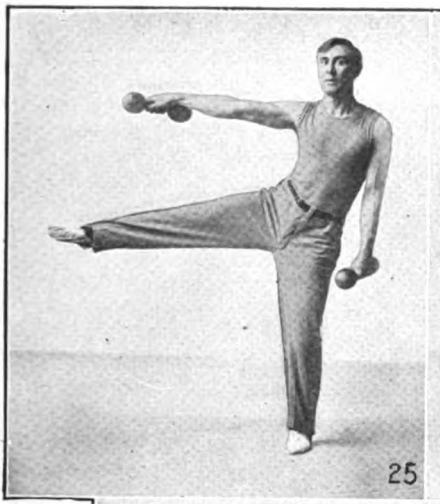

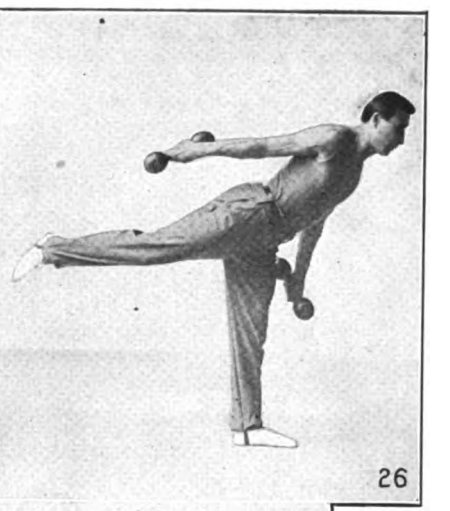

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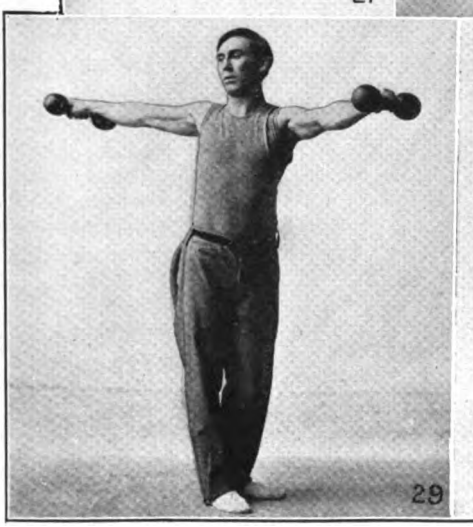

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No. 25.—Left arm side horizontal and left thigh abducted, leg and foot extended in two counts. (Alternate right.)

No. 26.—Left arm extended to the rear and left leg extended in two counts. (Alternate right.)

No. 27.—From position 5, to position 27 as illustrated in two counts.

No. 28.—From position 5, to position 28 as illustrated in two counts.

No. 29.—From position rotate left and right in two counts.

No. 30.—Stride stand, arms from position five bells clasped above head, swing between thighs in two counts.

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One of the classes organized among Chinese children by American missionaries engaged in dumb-bell drill.

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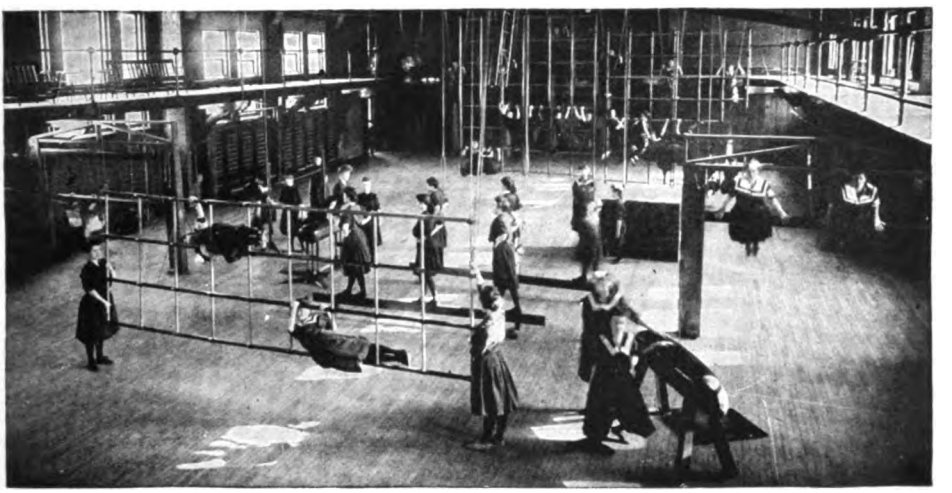

Gymnastic sports are very popular among modern girl collegians.

INDIAN CLUB DRILLS.

PHOTO. No. 1.—General position: Body erect, heels together, elbows at sides, with clubs held in a vertical position in front of shoulders. Illustration; general position, assumed at the beginning of all movements.

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INDIAN CLUB DRILL—*Continued.*

Exercise 1.

EXERCISE 1. — This is a full-arm swing. From position the club is sent slightly upward and outward to the side, the arm when fully extended being in oblique line upward as illustrated. Then without stopping continue downward, across the front, then upward in the direction of arrows, to a point slightly more to left of head than shown in photo, around to the starting point. As the diagram of illustration two shows, the completed movement describes a heart-shaped circle. Continue movement until slightly tired, and then repeat with other arm.

EXERCISE 2. — This exercise is very similar to the first, except that instead of returning to position to complete the heart, another and smaller circle is described *back* of the shoulder (instead of in front of shoulder as diagram may seem to indicate). This is a combination movement, which, besides exercising muscles of shoulder and upper arm, as does the first, also exercises those of the forearm and hand. This also is to be done, first with one arm, then with the other.

Exercise 2.

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Indian Club Drill —*Continued.*

Exercise 3.—In this exercise, the procedure in part is the same as for the first. A large, continuous sweeping circle is described with both clubs, one arm following the other, round and round, again and again without cessation until slightly fatigued. Swing first to the right, when having done the movement as often as desired, change the direction of the swing to the left.

Exercise 3.

Exercise 4.

Exercise 4. — Place hand back of you at waistline and describe a circle with wrist movement. See illustration five. This exercise is valuable for rendering wrist strong and supple.

Exercise 5.—Bring club back of head to position shown in sixth illustration. Then with wrist movement describe circle around the back of the head. Continue without pause until arm is slightly fatigued and repeat with other.

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CONCENTRATION.—An important element of success in exercise lies in concentrating the mind upon the work in hand. This is so obvious that it hardly seems to require saying, for anyone must realize, if he stops to think about it at all, that one cannot expect to get much benefit out of his exercise if he is meanwhile thinking about the latest improvements upon internal combustion engines, his brother-in-law's new hat or what he would like to have for dinner next Fourth of July. The mind should be upon the exercise every moment of the time devoted to it, and more than this, should be centered locally upon the particular muscle or muscles involved in the exercise.

In some forms of exercises, the *Tensing* and *Resistance* exercises, everything depends upon the application of the mind to the muscles involved, and one can make them as powerful as he chooses according to the degree of nerve-force or mental energy expended in them. As pointed out in my remarks on *Tensing,* however, this form of exercise is not the most satisfactory for purposes of mental concentration, because the energy of the mind is divided between the two opposing muscles or sets of muscles. There is better opportunity for the concentration of the mind upon the muscles, where it is devoted to a single muscle or set of muscles acting against some external resistance, or perhaps that afforded by the weight of the body itself. The natural function of a muscle is the movement of the member to which it is attached at its point of "insertion," or the movement of any external object with which that member has to do. If there is sufficient real resistance, this situation offers the very best opportunity for the exercise of mental concentration.

One should enter into his exercise with energy and spirit, and when he executes a movement he should do it thoroughly. As soon as he reaches a point where he cannot concentrate his mind, and where his efforts are careless or lackadaisical, he had better stop. When I say that exercises should be executed with energy I do not mean that they should be performed with

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a jerk, for this is as undesirable in many cases as executing them with a swing. Rather should they be executed with a steadiness that insures the normal operation of the muscle throughout the entire movement.

While speaking of the necessity for mental concentration, I might as well refer briefly to a phase of the relation of the body and mind that is not very clear to a great many people. I have heard the opinion expressed, sometimes by those who might be expected to know better, that the development of either the mind or the body must necessarily be at the expense of the other, so that if one devoted himself assiduously to physical training his mental powers would deteriorate as though to compensate for his acquisition of brawn! Nothing, surely, could be more absurd than such a notion. The mental qualities of the individual primarily depend upon the gifts of his inheritance, after which everything will depend upon the education or, as we would better say, the development of his powers. The power to think comes with the practice of thinking, or the exercise of the power, and this is largely independent of the matter of muscular development, so far as the health is such that the brain may be properly nourished. Even the greatest excess of muscular development could not detract from one's natural intelligence or the development of his brain, if he cultivates his mental powers. I have known athletes of tremendous physical energy who were also exceptionally alert and gifted mentally. And I have known others of great physical strength who were not what one would call exceptionally bright, but the development of muscular strength was no hindrance in any case. The minds of the latter would probably have been even less brilliant if they had neglected their bodies and had degenerated into physical weaklings, because in this case they would have missed the element of mental training which is found in the training and use of all parts of the body. The mental possibilities of the individual really depend upon what is born in him, his temperament or inheritance, as it were, and physical training, far from impeding the develop-

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ment of the mind, is always a tremendous help in this direction. In early infancy, the first and entire training of the mind comes through the use of the muscles and through the muscles of the various members of the body.

CONSTITUTIONAL EXERCISES.—The term "constitutional" may be applied to a certain class of exercises which are of special or peculiar value for building health and general constitutional vigor, as distinguished from other forms of muscular exercise which are noteworthy for accomplishing a splendid development and a condition of powerful strength in the muscles. It should be said that practically all exercises are constitutional in their effects, influencing the circulation and the tone of the functional system and serving to improve and maintain the health, and the distinction made here may seem a bit fanciful in some cases. And yet the term is justified in its application to some forms of exercise which would never bring about the development of an athlete, but which keep the blood in active and prolonged circulation, induce free breathing, stimulate the functional and depurating organs and in other ways serve to develop vitality and nervous energy. They may be regarded as purely health-building exercises, as distinguished from strength-building exercises, though it must never be forgotten that strength-building activities are also health-building, and absolutely essential to a complete scheme of body culture.

The subject of walking will first of all occur to anyone as a most satisfactory form of constitutional exercise, and I would refer to the discussion of walking in another chapter. It is one essential that no one can afford to overlook. Under this classification also might be included many forms of exercise in the open air, and especially those which are not of a violent or strenuous character and which require vigorous athletic strength and training. Among these are golf, horseback riding, cycling (in moderation, not racing), mountain climbing, canoeing, rowing (for pleasure and not as a form of competitive athletics), skating, snow-shoeing and other ac-

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tivities of a like nature. Even farm-work and gardening may properly be included under this head.

No matter what one may select in the way of special strength-building exercises, it is most important that he should also adopt some form of milder constitutional exercise to be carried out preferably at some other time of day. There are some occupations involving active muscular effort throughout the day which will take the place of this constitutional exercise, and in such cases it will be necessary to take the special systematic exercises only. But in the vast majority of instances, which means, in other words, all cases in which the occupation is sedentary, and also many of those into which some form of manual labor enters, a certain part of the day should be set aside for this constitutional exercise. Walking is highly recommended for this purpose, but one may substitute some of the other open-air pastimes named for at least a part of the time.

There are some forms of vigorous strength-building exercises which are so energetic that only a few minutes devoted to them will be sufficient. The strength and development of a muscle, as we have noted in another place, depends not so much upon the number of times it is employed as upon the degree of resistance offered to it and the energy and power with which it contracts in overcoming that resistance. And while in some cases fifteen minutes daily will be found sufficient to devote to such strenuous exercises for development, and while these very exercises will be advantageous from a constitutional standpoint, yet this small amount of time out of twenty-four hours is not enough to accomplish all of the physiological results which we desire to bring about through physical activity. Even this much time given in this way will mean far better health than would be possible with no exercise at all, but for the most perfect physical condition one should endeavor to see that his physical activity and his life in the open air is a matter of hours rather than of minutes, and he should try to spend at least two or three hours in this way.

The essential advantages of exercise from the standpoint of

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health are to be found in the rebuilding of tissues and cells, the increased circulation required for this purpose, the free breathing and thorough oxygenation of the blood, and the effect of all these upon the elimination of accumulated wastes and upon the activity and tone of the various functional and vital organs. For these reasons some moderate form of exercise which will keep the circulation active and vigorous for a long time will be more effective than violent exercise continued for a short time, though this is saying nothing against really strenuous or violent exercise for those who are strong and fit for it. But the average man seeking health cannot continue the most energetic effort for two or three hours without consuming too much nervous energy and producing a condition of depletion and collapse which leaves him worse off than before. Walking, for instance, would be just the thing for him, in the way of constitutional exercise, to be supplemented at some other time of day by a shorter period of exercise with special movements for development and strength-building, with perhaps some movements of a corrective nature to overcome any defects or peculiar weaknesses.

I would recommend for constitutional purposes any open-air exercise which involves the moderate use of all of the muscles of the body or of the larger and more important ones, without placing undue strain upon any. The most powerful contraction of the muscles of the forearm and hand will not have so much effect upon the heart and the circulation generally as the moderate use of the large muscles of the legs. Furthermore, in the latter case there will be less expenditure of nervous energy.

In connection with the subject of constitutional exercise I would refer the reader to Chapter I, page 585, of this volume, and also to Chapter XVIII, of Volume I.

It should be said that the term, "constitutional exercises," is often used in connection with the daily practice of ten or fifteen minutes of exercise in the morning as a means of maintaining health, and especially among business men who have no interest in gaining any special degree of strength, but who feel

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that a few minutes of free movements each morning will keep them in good condition and better fitted for their work. The term is rightfully applied in such cases, for, as I have said, all exercises are constitutional in their effect, and yet prolonged but moderate exercise in the open air, walking, for instance, is so much more important and effective as a means to health than a limited few minutes of free movements, which may after all be intended chiefly for strength-building, that it is better to regard the former as one's chief constitutional exercise and to take it faithfully every day, no matter what else you may do in the way of special movements.

DIET AND ATHLETICS.—The average person imagines that an athlete is a mysterious person, gifted with remarkable powers. This is an error. Every man and every woman should be an athlete, for to be an athlete means that one is capable of handling the body easily and gracefully and utilizing the muscular power to the fullest possible extent. It means the ability to run and jump, and the possession of strength of the arms and body. These manifestations of strength in the body of an athlete do not indicate possession merely of extraordinary muscular strength. They usually also indicate nervous energy and internal functional strength. To the average individual, when one speaks of muscles he is supposed to mean the biceps of the upper arm. This is a mistake. Muscles are used in every function of the body, whether voluntary or involuntary. The most perfect athlete is the one whose nervous and muscular systems are the best nourished and under the most perfect control. Therefore, I believe that every man and every woman should be an athlete.

The fact that athletes generally put themselves under a course of training, which includes rather severe dietetic restrictions, has fostered the idea that the athlete is different from the ordinary person. But the reason for this training in reality is to overcome the evil results that have followed from improper dietetic habits, habits that no person at any time should allow himself to yield to. The athlete's body is subject to exactly the same laws that govern the body of

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every other person. Hence, it is very evident that there are no foods that have any special influence on an athlete in increasing his powers in one way or another. The only manner in which diet can influence one's athletic ability, is by its effect upon his general health. Hence those foods which are most satisfactory for ordinary purposes are also the most satisfactory for athletes. The foods that build the greatest amount of energy and enable one to acquire the greatest possible degree of vitality to be used in mental work would be equally useful for purposes of physical activity of any kind.

The dietary of the average man contains many articles of food which are neither wholesome nor strengthening, and while they are unsatisfactory for use at the training table of the athlete, they are equally unsuitable for food at every other table. One of the greatest mistakes of the average athlete is his habit of eating too much. This is a great drawback to one's success, and sometimes has much to do with growing "stale," which is rather a frequent experience among athletes. It requires all one's functional energy to digest surplus food. In my own experience, I found that the best work could be done on two meals a day, and I feel convinced that greater endurance can be secured from a vegetarian than a mixed diet. Hard athletic work may require a greater proportion of nitrogenous elements in one's food than usual, and these can be secured from peas, beans, lentils and nuts, instead of from meats, while eggs and whole-grain cereals are also satisfying. I would not advise one to drink water too freely immediately before strenuous exercise of any kind. Eat your usual foods when training for an athletic contest, for if you tried some unaccustomed article it might disagree with you. Eat your last meal at least four to six hours before the contest. It is absolutely necessary to have the stomach empty and in perfect condition when starting on a contest.

It is pretty well understood nowadays that the vegetarian athlete is not only the equal of his flesh-eating brother, but usually his superior. Time was when the "raw-beef" régime was largely followed, but intelligent trainers are gradually re-

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ducing the percentage of meat, and in some cases, eliminating it entirely. It has been demonstrated in thousands of cases that while meat is a stimulating diet, it makes a greater tax upon the assimilative and depurating organs, and consequently is not a food that gives as great endurance as a less stimulating, but equally nutritious diet which does not tax the powers of assimilation and depuration.

It may be well to recall the fact that vegetarians in late years have many times evidenced their superiority in a variety of contests, some of which have already been referred to in these pages, and a few more of which are here recorded:

"Mr. C. Allen, the well-known amateur pedestrian of England, walked from Leicester to London, about one hundred miles, in twenty hours and twenty-two minutes, finishing in a singularly fresh condition, and without any blisters on his feet. His fare was vegetables, bread, oatmeal and a little fruit.

"Some years ago a Miss Rosa Symonds rode a bicycle for ninety-eight miles a day for eighteen and a half consecutive days on a non-flesh dietary.

"Two youngsters, Kurt Pfleiderer and Erich Newman, fourteen and fifteen years of age, respectively, neither of whom have ever tasted meat, covered a distance of one hundred miles on their wheels in England in six hours, seventeen and a half minutes, and six hours, forty minutes, respectively. Other remarkable performances by vegetarians on the bicycle include those of J. E. Newman, 175¼ miles in twelve hours, and T. H. S. Younge, one hundred miles in five hours and twenty-three minutes. Chas. Miller, the well-known ex-cycling champion, never touches flesh food during training, his trainer being a strict vegetarian.

"Yet other athletes who religiously endorse a vegetarian diet are Eustace Miles, the ex-amateur tennis and racket champion; Miss M. A. Scott, until recently the holder of the swimming record for one hundred yards and sixty-six yards; W. de Creux Hutchison; H. E. Bryning, the champion pedestrian; and a number of equally prominent British athletes.

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"C. B. Fry, who, according to Arthur F. Duffey and other authorities, is the greatest all-round athlete that England ever produced, asserts that a vegetarian diet, consisting of cheese, nuts, grain-foods, fruits and salads, is ideal for athletes.

"In April, 1904, the members of the London Trade Organization of Outfitters had their annual walk from the English Metropolis to Brighton, fifty-two and one-quarter miles. The winner covered the distance in nine hours and twenty-four minutes, doing the last five miles in fifty-one minutes and forty-five seconds. He was a vegetarian and through a misunderstanding walked the first twenty-five miles of the journey without food.

"The French long distance bicyclist, Huret, a few years since, rode 545 miles in twenty-four hours on the Paris winter track. His speed averaged twenty-two miles an hour from the start to finish. During the contest, his food consisted of thirty eggs, three quarts of boiled rice, milk, some tapioca, chocolate, fruit and Vichy water.

"Marcus Hurley, of New York, ex-one-mile bicycle champion of the world, has been a strict vegetarian for a number of years. He won the title in question in a contest which took place at Crystal Palace, Sydenham, London, his opponents being J. S. Benyon and L. B. D. Reid, both meat-eaters. Mr. Hurley is also captain of the Columbus Basket Ball Club.

"One of the most remarkable pedestrian performances was that of a vegetarian athlete: that of Mr. Allen to whom allusion has already been made. In the fall of 1904 he started from Land's End Hotel in Cornwall, England, and walked to John O'Groat's, Scotland, a distance of 908½ miles, which he covered in sixteen days, twenty-one hours and thirty-three minutes. The average mileage was fifty-three miles a day. In the last five days the enormous average of sixty-three miles a day was attained, and in the final two days, 140 miles were covered. Mr. Allen beat the best previous record for the distance by seven days, finishing in splendid physical condition. He is, as already said, a consistent vegetarian. It should be added that up to the age of sixteen years he was extremely

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weak and sickly. Having overheard the doctors say that he would never be strong, he determined to confute the assertion, which he did by becoming a vegetarian and a physical culturist. With the adoption of a non-meat diet, he began to improve until he became the athlete which he now is.

"A well-known Scotch amateur athlete, J. Barclay by name, a strict vegetarian, won during one year eleven firsts, seven seconds, and five thirds, in running races which included distances from two hundred yards to ten miles. His fastest mile was done in four minutes, twenty-four and two-fifth seconds. He is the ex-holder of the half-mile running Scottish championship.

"Another enthusiastic vegetarian athlete, J. Miller, of Larkall, Scotland, has walked ninety-five miles in twenty-two hours."

In the great six days' bicycle race held in 1890 in Madison Square Garden the winner who rode about three thousand miles in six days ate absolutely no meat during the entire race.

More recently some of the most successful and brilliant of Marathon runners have been vegetarians, attributing their success to this fact.

Hence it will be seen that actual experience has demonstrated that meat-eating is not essential to the success of athletes. The vegetarian diet is found to be all-sufficient to produce all the energy needed for the most violent contests, and therefore it is not unreasonable to assume that it can satisfactorily meet the demands of the most exacting occupations.

To these names must be added that of Fred Welsh, a boxer of championship caliber, who is equally known on both sides of the Atlantic, and who has contributed a series of boxing lessons to this work, as well as a host of other celebrities in the athletic world, who do not pin their faith to the meat-diet as a means of developing energy and strength.

DELSARTE SYSTEM.—The so-called "Delsarte system" is not truly a system of physical training, as is often supposed, but a system of expression, intended chiefly for students of dramatic art. Delsarte formulated a very elaborate system of

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"Æsthetic Gymnastics," but while valuable in the way of gaining control of the body and for the promotion of grace, they have no special advantages in the building of health and are therefore not illustrated here.

DUMB-BELLS.—Small dumb-bells are very popular and much used in exercise drills. Large dumb-bells and their uses are discussed in connection with *Weight Lifting.*

The small dumb-bell is, on the whole, a very satisfactory form of apparatus, taking up little space, being inexpensive, and adding to both the interest and effectiveness of free movements and calisthenics. Almost all such exercises which are taken without apparatus may be made a little more vigorous by the use of dumb-bells. In ladies' drills, wooden dumb-bells are often used, having very little weight, but iron bells are usually more effective, in weights from one and a half pounds up to five pounds. They are especially valuable in arm exercises, but bells above five pounds in weight are seldom to be recommended for all-around exercises, since they tend to make the movements slow and to stiffen the muscles. The weight suited to each individual will depend upon his or her strength, but in all cases they should be such that the exercise may be performed freely and with pleasure. It is easier to make a mistake in getting them too heavy than too light, in most cases. The dumb-bell has the advantage of offering a uniform resistance at all points or positions of a movement.

EXERCISE AND ITS ESSENTIALS.—As the student has already seen muscular exercise is absolutely essential not only for the development and strength of the muscular system itself, but for the sake of maintaining that tone and activity of the functional system which makes for perfect health. There are many of those who have such good health that they lose interest in the thought of health for its own sake, forgetting that there is such a thing as ill-health, and whose chief active interest in exercise has to do with the desire for robust physical strength. But yet others there are, who, lacking in physical energy and health, are merely anxious to gain the

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latter, who simply wish to "feel well," so that they may accomplish their work and enjoy their pleasures, but without any special interest in the attainment of bodily strength. To such it is necessary to make clear and to emphasize the fact that health and strength really go together, that they cannot be so readily divorced, and that in order to enjoy anything like a normal condition of health or of nervous energy, working energy, it is essential to take such daily muscular exercise as will build up and strengthen the body until it is physically perfect, a robust and splendid example of animal life.

There are many forms and systems of exercise which answer the purpose with absolute satisfaction, and though there are some which have faults and are inferior to others, it is because they depart from the natural order of normal physical effort. In the endeavor to offer something unique and distinctive, various mail order specialists have devised what are supposed to be remarkable methods of muscular development, their advantage and value being greatly exaggerated by the necessities of advertising and selling, but in no case will one secure any instruction along this line more helpful or beneficial than the advice and suggestions for exercise presented in these volumes. I am not in any way opposed to the enterprises of correspondence instructors in physical culture, for they stimulate interest and unquestionably accomplish a great deal of good among people who might otherwise neglect their bodies entirely, but as a matter of truth and fact, some of the systems advised and taught are too one-sided or narrow in their scope to accomplish the best results. But aside from some of these ingenious but limited "systems," almost any method of exercise which thoroughly uses all of the muscles of the body in a natural way, and in accordance with some of the essential conditions which it is my purpose to point out here, will prove satisfactory. Sometimes it is well to turn frequently from one method of exercise to another for the sake of variety, in order to be certain of using all muscles in every possible way and thereby acquiring the most symmetrical development of all parts.

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I have always made it a point to emphasize the importance of the play spirit in exercise and to recommend the practice of outdoor sports and games. However, even these are not entirely sufficient in most cases, and nearly every one needs at least a certain amount of special systematic exercise for the sake both of symmetrical muscular development and of health. Most games afford good all-around exercise, but yet they often neglect certain muscles and leave the individual far from symmetrical or perfect. A close observation of athletes will disclose the truth of this, for one will often see an athlete successful in his particular specialty who is round-shouldered and flat-chested, or otherwise one-sided or defective in build. One will sometimes see a good ball player standing in a most awkward and ungraceful attitude. He needs special training. It is true that he already has just sufficient muscular power for the requirements of ball playing, but he would greatly improve his playing if he perfected his development, neglecting not a muscle of his entire body, and thereby developing a degree of strength, co-ordination, accuracy of movement, ease, grace and speed that he never enjoyed before. Special training for various individual defects is sometimes as necessary for the athlete as for the business man.

The reasons for this lie not only in the necessity for using all of the muscles, but also in using them properly and thoroughly. The movements of everyday life are usually more or less limited in their scope, and even when a muscle is called into play for some purpose, the chances are that it is used for only a partial rather than a complete movement of the member concerned. Suppose that the construction of the joint and the muscles having to do with the movements of a certain part is such that the member may be moved through an arc of one hundred and eighty degrees or more, then an exercise for the muscles concerned, to accomplish the best results, should bring about a complete movement of the part throughout the full scope of this arc. In the ordinary movements of everyday experience, the member is probably moved, when at all, through a small segment of forty-five to ninety degrees, or

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even less, which certainly would not be sufficient to keep the muscles affected in good condition. And if the special exercise is such that movements are *incomplete* in this way, or in other words, if they operate through only a segment or fraction of the full arc representing the action *possibilities,* then such exercise is unsatisfactory to just the extent that the movement falls short of its possible full scope.

Many outdoor games which are invaluable for constitutional reasons fail of satisfying all the requirements of exercise and development because of this incompleteness of movement, as well as the complete neglect of certain muscles in some cases. Special exercises, therefore, should be such as require the most complete extension of the affected members, when they are extended, and the most perfect flexing when they are flexed. Halfway movements are of little value; every action should be carried just as far as the anatomy of the parts will permit, so that the contractile power of the muscle may be just as great at any one point as at another. A manual worker may be so employed that he is accustomed to use the biceps with the arm bent at an angle of ninety degrees, and he naturally finds that he can use his biceps best with the arm in that position. In such a case he should take special exercises which will give him as much contracting power when the arm is extended and when it is tightly flexed, and, preferably, the resistance should be the same in all positions of the part.

For this reason, elastic exercisers, of either spring or rubber construction, in which the resistance increases rapidly with the distance of the stretch, are not strictly ideal. Even with this drawback, these wall exercisers are valuable to those who otherwise might neglect their exercises. This difficulty was very largely overcome in some elastic wall exercisers of the writer's own invention years ago, but in comparison with most spring and elastic devices the so-called chest-weight pulley machines are preferable. The weight used provides for a uniform resistance at all points of the movement. Exercises which employ the weight of the body itself as the form of resistance are ideal in this matter of uniform resistance, and

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where the movements are complete, they offer an absolutely satisfactory form of exercise.

From the foregoing the reader will see clearly that exercises which call for the contraction of exertion of the muscles in a more or less stationary position, no matter how vigorous, are less satisfactory than those which involve movement. Stretching exercises, referred to elsewhere, can be recommended for their complete extension and flexion of the parts, but they lack the element of movement. The ideal movement exercises, however, should involve the principle of stretching at the termination of each movement. In other words, with each extension or flexing of any part of the body in systematic exercise, the various members should be brought to a point of momentary *stretch.* This is a most important consideration, and one which should be applied to all exercises. Exercises for development should not be made in such quick succession that they limit the scope of the movement.

Another essential of the ideal exercise is the provision for frequent relaxation rather than prolonged contraction. Alternate relaxation and contraction is the most perfect scheme, both for the health and the strength development of the muscles. A period of relaxation after each contraction allows for the free circulation of blood through the meshes of the muscle, the capillaries being suffused and the muscle cells given the advantage of a fresh and adequate supply of oxygen. Long continued stress or tension, especially when there is little or no motion, seriously interferes with the blood supply, the muscle becomes rapidly fatigued and does not recuperate so readily. It is like a condition of "cramp" which is a violent and involuntary contraction lasting for a considerable time. Most of us have experienced such cramps at one time or another and know how painful they are, but they are just as antagonistic to the welfare of the muscles as they are painful. Physiologically a muscle is spoken of as "tetanized" when it is so cramped, and exercises which involve long continued and vigorous contraction may be termed "tetanizing." They decrease the irritability of the muscle, interfere with its

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best nutrition and even cause more or less atrophy. Holding a weight at arm's length as long as one can endure it, is an example. It may be a test of endurance and will power, yes, a test of strength, in a way, but as an exercise it is an absurdity if not an injury.

The important principle of relaxation is one to be kept in mind always, both with reference to exercise and other matters. My comments upon the subject on page 743 of this volume should be carefully noted. In exercises for developing speed it is essential that each movement should commence from a relaxed condition. A series of movements in opposite directions in quick and immediate succession would be unsatisfactory for the purpose, because one movement would interfere with another, opposite muscles working against each other a part of the time. Before one motion is completed the antagonistic muscles are already at work to commence the next and the movement is likely to be incomplete. A moment of pause and relaxation would enable one to move with much greater speed as well as with greater power. Scientific boxers know this, as do also sprinters who have mastered the fine points of starting.

Exercises for muscular development should be neither too slow nor too fast, though if in doubt it is often better to favor the slower movement. There are two difficulties that one is likely to fall into when trying to do exercises too fast, that is to say, when not actually training for speed, and these are the tendencies to do the movement with a swing or a jerk. In training for grace and ease of action, it is well to learn to do things with a swing, for it is the most economical as far as the expenditure of energy is concerned. In handling weights or other objects, and in many athletic pastimes, it is the swing which counts, for it means ease and consequent power. But if the purpose of an exercise is to develop a muscle, that purpose will be largely defeated if the movement is executed with a swing, in which mere momentum will carry through the movement, once it is started. Muscular action and not momentum, should be the moving force, and in case of such a

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tendency the movement would better be made slowly, so that the muscles may "feel" the resistance, as it were, all the way through. The same thing applies to doing things with a jerk, in which all the effort is made in the beginning of the movement, and probably in part by other muscles remote from those intended for use in the exercise. For instance, in pushing a weight over the head with the hands it may be the intention to use the deltoid and the extensor muscles of the arms. In executing the movement slowly these muscles would be in action all the way up, or through the complete movement. But in the jerk, in nearly every case the body will be lurched upward by a jumping action of the legs, giving sufficient power and momentum in this way to send the weight all the way up, and without employing the arm and shoulder muscles as planned. Jerking and swinging are legitimate elements of weight lifting, but they must be avoided in exercises for purposes of development. Of course there are some forms of exercise and many games which are energizing and stimulating to a high degree, in which speed and snap are desired, and in which slow movements would be out of place.

The question as to the advantage or advisability of light or heavy exercises is one that depends very much upon the individual and upon the purpose which he wishes to accomplish. Those who are not strong, certainly should not attempt heavy exercises, while those of robust build and fair condition often will get the best results from heavy exercises, or at least a little heavy exercise, even for health. As a rule, the lighter exercises may be recommended for their constitutional benefit, and for gaining strength sometimes a combination of light and heavy exercise.

For the building of actual strength, light exercises will not go very far. Extended repetition of a light movement will mean a gain in endurance but only a very slight increase in strength. For instance, a light exercise which one can do ten or twenty times with ease and comfort will take very little more strength to do it two hundred times. A man may be able to lift a ten-pound weight over his head ten times,

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but this does not mean that he can lift a hundred-pound weight once. Endurance and repetition in light exercise, therefore, do not mean much increased power. The lifting of the heavier weight in this instance will require a very powerful muscular contraction, and this can be brought about only by exercise and practice in contracting the muscles concerned against greater resistance.

The building of strength requires that one exert his strength, vigorously, though without straining. Nature, ever conforming to changed conditions, and ever ready to respond to any special demands made upon her, will meet the demand for strength by building up the muscular cells and fibers accordingly, until in time she meets the normal limit of possible development. The building of great strength, therefore, proceeds along the line of a progressive increase in resistance. One begins with exercises which require only a moderate degree of strength, or in other words, a moderate power of contraction in the muscles. As this contractile power increases with the growing size of the muscles, gradually more difficult tasks are undertaken. Light exercises, however, will carry a person just so far, and no farther. Even two or three powerful contractions of a muscle every day, against great resistance, will develop and maintain more muscular bulk and strength than the repetition of a very light movement a thousand times.

Outside of athletic requirements, or those of some heavy occupations, there is no special advantage in attaining a massive development. Health and nerve-energy are the all essential thing, and exercise is necessary up to a certain point to promote this health and develop energy. The body must be normally strong and vigorous and the circulation active, and with a moderate amount of vigorous systematic exercise each day, and as much mild constitutional exercise in the open air as one can find time for, one should keep in the best possible physical condition, granting that he does not violate other essentials of health.

FACE, EXERCISE FOR THE.—The entire face is well covered

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by a system of muscles. Every slightest movement of the face or of the skin of the face is the result of the action of one or more of these muscles, from a smile to the winking of an eye. And just as the beauty and symmetry of the body as a whole depend chiefly upon the development of the muscular system, so the development or condition of the muscles of the face has something to do with its contour and character. There is no doubt that in many cases the appearance of the face may be improved by special exercises intended to develop these muscles, filling out the physiognomy in many cases where it is drawn and apparently more or less wasted, doing away with surplus fatty tissue in some instances, but always improving the local circulation and giving firmness and character to the flesh of the face as a whole.

The distorted features of a little baby crying give one an idea of the muscular character of the little face, even though its softness in repose would seem to suggest the idea that it is composed chiefly of fat. The truth of the matter is that there is both muscle and fat in the childish face, the latter making it smooth, but the former giving it definite shape, that is, supplementing the bone structure underneath. The average baby laughs and cries whenever occasion demands, which is usually not infrequent, and so exercises these little facial muscles that they are well developed, and the face full and firm. But that the momentary wrinkles seen in crying are not permanent is seen in the smoothness of the surface.

Men and women, however, commonly neglect the muscles of their faces, for they seldom cry, and do not always laugh as much as is good for them. In many cases, therefore, these muscles partly waste away, detracting from the appearance of the face. Actresses, actors, orators and clergymen who use the facial muscles a great deal in forcible expressions of emotion, usually have uncommonly handsome faces when their health is not such as to interfere. The momentary wrinkles of the skin produced in such vigorous expressions of emotion, of simulated emotion or in special facial exercises, as in the case of the crying babe, do not remain. It is only

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the habitual expression, whether sweet, smiling, worried or ill-tempered, which becomes fixed, so that one need not hesitate to take up special exercises for the face for a few minutes each day for fear of producing lines. The improved circulation and better nourishment of all the tissues of the face will do much more to prevent wrinkles. To many faces which are commonplace character and charm may be given by filling out these muscles to their full development. People have wondered at the manner in which some famous actresses seem to retain the aspect of youth, but probably the greatest reason is the exercise of the facial muscles in intense dramatic expression, and the consequent development and well-being of the entire countenance.

Inflate the cheeks as much as possible, at the same time drawing the upper lip downward. Force the breath through the tightly closed lips.

Thrust the tongue into the cheek, forcing it outward as much as possible. Press the tongue all over cheek and pass over to other.

The only way in which one can really exercise these muscles is by "making faces," which if done vigorously will bring about the contraction and the stretching of all muscles, and bring the blood to this part of the body in large quantities. The act of yawning is an involuntary and instinctive exer-

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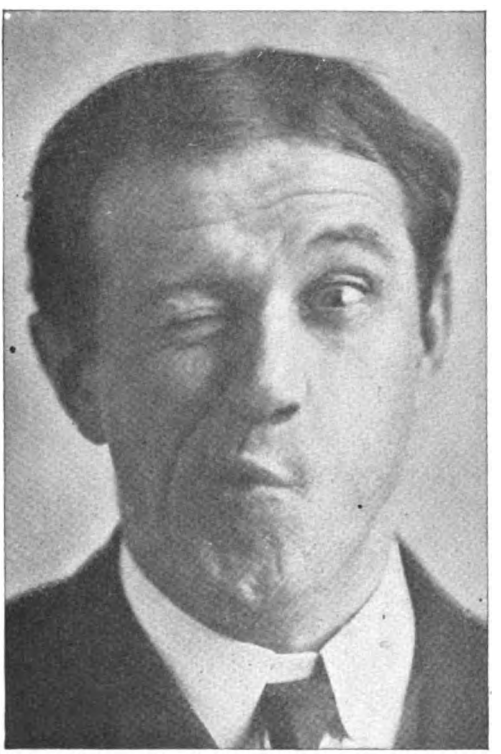
cise of this kind, just as is the stretching of the body upon awakening. In taking special exercise of this kind for beautifying the face, one should stand before a mirror, and then make it a point both to contract and to stretch every part of the face, from the forehead down to the throat. In the beginning it might be well to be moderate in the matter. One who is subject to nose-bleed, for instance, may have some little weakness of the walls of the arteries and capillaries, and might cause rupture of these in too violent effort. But after a couple of weeks the contractions and stretchings of the muscles may be made as vigorous as possible, always bringing them to the fullest and hardest stretch for a moment only, and then relaxing.



Twist the mouth over to one side, at the same time tightly closing the eye on that side. The face muscles are to be put on a "stretch" as much as possible. The cheek muscles are brought into play, and the eyelid and eyebrow exercised. Regular active exercise of the muscles will improve the contour of the face.

The following exercises are suggestive. It will be a simple matter to devise other similar exercises or variations. Shut the eyes tightly, brows contracted. Stretch eyes open wide, raising brows. Shut eyes tightly, raising brows. Squint eyes tightly, eyes open. Shut one eye tightly at a time. Depress one brow at a time, raising the other. Depress brows and try to draw scalp of top of head backward stretching forehead. Draw scalp forward raising brows. Pucker mouth and draw hard to one side, then to other. Curl up the nose, as in a sneer, trying to wrinkle it if possible.

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Pucker and pull mouth together as tightly as possible. Smile broadly and very hard, until the cheeks seem to "pull." With open mouth pull the upper lip down hard over the upper teeth and into the mouth. Pull out and down the corners of the mouth. In doing this it may help to contract the *platysma myoides,* the spreading, fan-like muscle of the front of the neck, running down to the chest (see illustration Vol. I), thus distending the throat. Yawn wide. Bite teeth together hard. Pull cheeks and ends of mouth upward. Pull lower jaw to one side, then to other, tensing muscles hard. Draw jaw inward. Thrust jaw outward. With jaw thrust forward, pull upward with lips. With mouth open, try to pull lips together. The movements of upper part of face may be combined with those of lower part, if desired, placing stress upon the entire face at once, though better concentration is secured by taking parts separately.

In connection with the above, in some cases, the exercise for strengthening the teeth given later in this work will be of great advantage, involving the muscles of the jaw. All of these exercises will help to give the face an expression of strength and character, as well as greater beauty.

As a means of helping to fill out the cheeks, when they are sunken and to make more firm or reduce those too fleshy,

A "stretching" exercise for the face. Yawn vigorously, opening the mouth completely and raising the eyebrows. Then shut mouth tightly and lower eyebrows. By this means the contracting muscles of the face are exercised, and a pull exerted on every part of the face. Flaccidity of the tissues can be avoided or to a great extent overcome through such vigorous exercises, and the circulation improved.

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the exercises described may be supplemented by filling and puffing out the cheeks with air, lips tightly closed, and also by forcing out the cheek with the tongue, rolling it around in each cheek. Any thing that will invigorate the tissues and improve the circulation will help.

If fashionable women, in search of better complexions and facial beauty, would adopt these methods of improving the face, together with such measures for the promotion of their general health as would build vitality, invigorate the general circulation and provide for better assimilation and nutrition, instead of using cosmetics and visiting "beauty parlors," which are anything but places where beauty is to be found, they could accomplish something real and permanent in adding to their attractiveness. Artificial methods, working against Nature, cannot help but harm and destroy. In some high priced beauty parlors poisonous chemicals are applied to the skin to improve the color. The malignant irritation which results does truly enough bring the blood to the skin in large quantities, to remain for a couple of hours, but the color is the unnatural red of irritation and inflammation and the effect is ruinous. In every case better color for the evening may be secured if one wishes to force herself in this way, by the alternate application of hot and cold wet cloths to the face, or rinsing alternately with hot and cold water. Not only is the color a natural and healthy one, but it is also more lasting, and especially so when it is influenced also by exercise, both of the special facial muscles and of the body generally.

GYMNASIUM WORK.—In the following pages appear several series of exercises suitable for class work. These movements are of a comprehensive character, embracing all-around movements for the general development of the entire body. They are intended to be of special value to clubs and schools where it is desired to take up physical training in classes. It is naturally understood, however, that it is not necessary to do them in class, for they will serve just as well when taken individually in one's bedroom. either morning or evening.

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GYMNASTIC DRILLS AND APPARATUS WORK.—The modern gymnasium is an institution that has come to stay, growing up out of the need for some adequate provision in our cities for that physical activity and muscular training which under more natural conditions one would engage in out of doors. There is no question of the superior value of all games and exercises in the open air, but next in value to this is a large, well lighted and thoroughly ventilated gymnasium. There has been reason for complaint in the past on the score of lack of ventilation in many places used for gymnasium purposes, but buildings for this purpose of recent construction are usually well provided with large and numerous windows. What is better still, there is a growing tendency in the direction of outdoor gymnasiums, and most of our up-to-date cities have placed various forms of gymnastic apparatus in their public parks and play-grounds for the benefit of the children. When there are enough of these to accommodate adults as well as children, in addition to numerous open fields for other games, we will see a great difference in the general health and vigor of the great masses of the people.

It is true that gymnastic apparatus is not essential for purposes of exercise or the development of strength, as the reader has noted in his perusal of other portions of this chapter, but it is also true that the use of apparatus often helps to add interest to one's endeavors in the way of training. Many forms of apparatus have a distinct fascination, and especially so because they tend to develop a high degree of grace and muscular control, as well as mere strength. In many forms of this apparatus work, and these the most valuable, the resistance is afforded by the weight of the body itself, and the result is a development which is absolutely normal and perfectly in proportion to the build and weight of the individual.

A very popular form of apparatus for the home is the elastic wall exerciser, the elastic quality of the rubber strands or spiral springs of which give the necessary resistance. The equivalent of this is supplied in most gymnasiums by a so-

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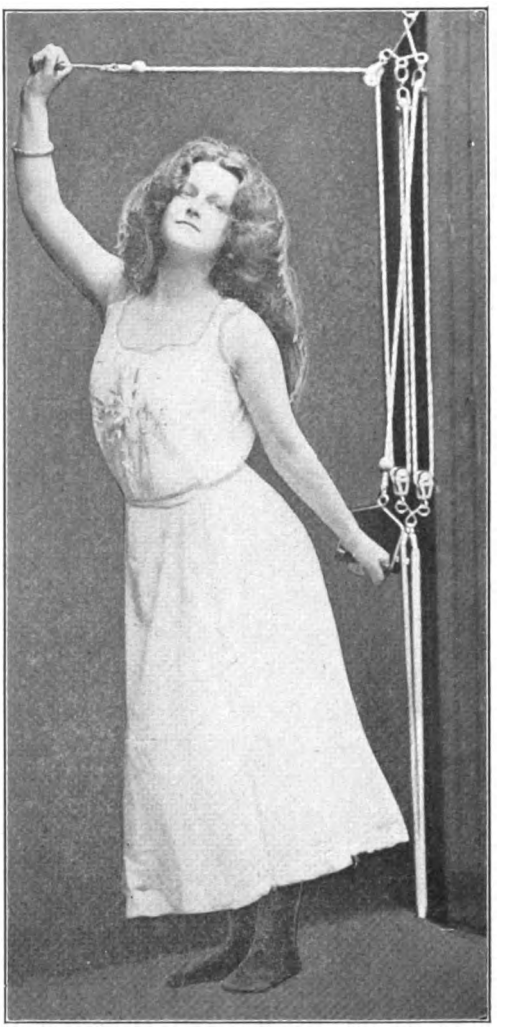
called "chest-weight" exerciser, in which small weights, adjusted on a pulley system, give a similar resistance. These are not used in class work and are not suitable for developing the entire body, being especially adapted to the use of the muscles of the chest, arms and shoulders. By referring to the *Class Drills* given in this chapter, one will find certain movements used in connection with dumb-bells and in calisthenic work which may be adapted for use with a wall exerciser. Indeed, any movement which may be performed in such a way as to operate against the resistance of the exerciser may be taken with advantage by using such a device. Naturally, all ordinary movements for arms and chest are taken with back to the exerciser, and those for the shoulders facing it.



A good type of elastic wall exerciser, suitable for home or bedroom use. The elastic is in the heavy strands at the bottom, and the pulley system shown makes the resistance more uniform than in the case of a single elastic cord, in which the resistance increases with the length of stretch. (American

The punching bag is also a common and popular form of apparatus, usually found in the well-equipped gymnasium, but also suitable for installation somewhere in one's own home. It is noisy and of a nature to cause more or less vibration, so that it is usually better to have it placed out of doors in the back

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yard, if convenient, or in a shed or barn loft, rather than in the living rooms of the house. It is frequently placed in basements, but the latter are not always well enough ventilated for purposes of healthful exercise.

One may in time become very skilled and clever in bag punching, giving very pretty exhibitions, but for purposes of exercise I would say that the simple movements are just as good as any, probably better, because they permit one to strike the bag with full strength. The repetition of light taps in many forms of fancy bag punching soon becomes mechanical and does not require enough energy to give really good exercise. Better to hit it hard on alternate rebounds.

There are some rather elaborate and expensive machines supplied in many large gymnasiums, which have very little value. There are wrist bending machines, for instance, which will not accomplish a fraction as much for strengthening the wrists as some forms of apparatus work in which the weight of the body is supported by the hands. Of all forms of apparatus, the vaulting horse, the parallel bars, the rings and the horizontal bar are the most valuable and the most commonly used, and I am offering some illustrated exercises upon these forms of apparatus, suitable for class work if desired.

For class drills upon the apparatus, it is usual to divide up a large class into "squads" of six or eight, appointing as leader the one most proficient and skillful. These different squads are assigned to the different forms of apparatus in the gymnasium, one squad taking the horse, the next the parallels, another the horizontal bar, and so on, exchanging and taking turns on each as they finish, so that all pupils will have used the same apparatus when they are through. It should be said that where there are calisthenic or other class drills on the floor, these are taken up first, with the entire assembly, followed by the division into squads and the apparatus work.

Each squad forms in line, the leader first executing an exercise on the apparatus, not only indicating what the exercise is to be, but also showing how to do it. Then the first in

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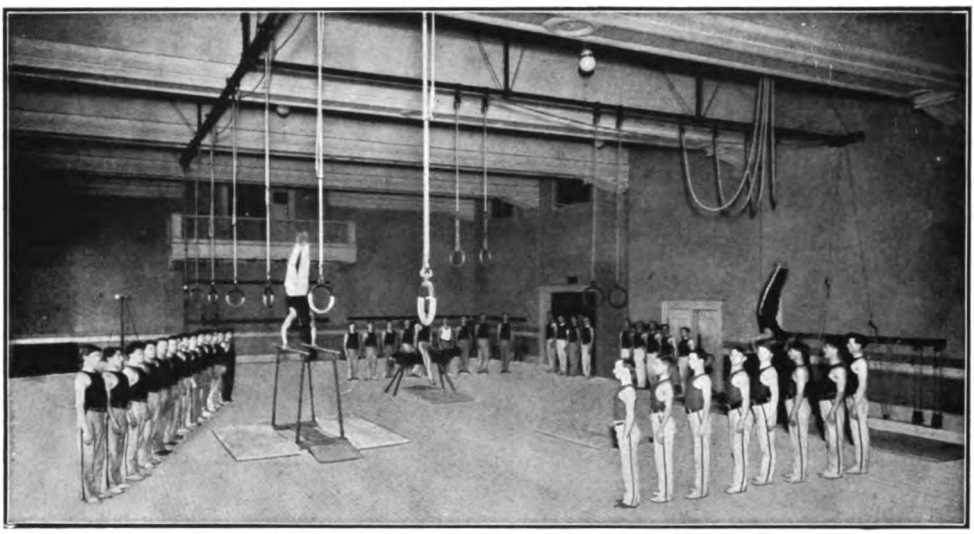

Men's classes at work in a gymnasium.

line steps forward, goes through the exercise, and takes his place at the back of the line while the second in line takes his turn. After the entire squad has performed this particular movement, the leader executes another, followed in turn by each member of the squad. The simplest and easiest movements are naturally taken first. After the squad is through with the horse, it takes up the parallel bars, some other squad then using the horse, and shifting all around.

These forms of apparatus are of splendid value in developing the arms, chest, shoulders and the muscles of the sides—in short, the entire upper body. They will soon show a conspicuous development of the *latissimus dorsi,* giving that breadth under the arms, and width of shoulders and chest which we associate with virility and robust manhood.

Tumbling is another form of exercise which may be practiced upon the well-padded mats of the gymnasium, and it should be said that it is one of the most delightful and fascinating of exercises. It is not to be expected that the average gymnastic pupil will ever reach the extremes of startling acrobatic tumbling witnessed in the circus, nor is it desirable to

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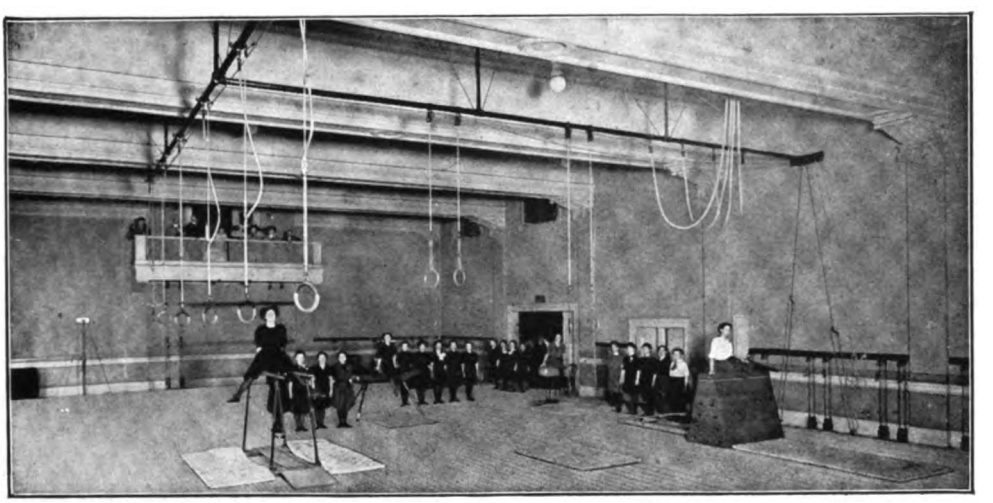
accept the dangers of such feats. But there is a variety of simple tumbling movements which are attended with no risks to life or limb, but which will probably yield just about as much pleasure as the difficult, fancy feats, besides being of a nature to promote the best bodily development. It is this version of tumbling which is taken up in the exercises which follow, and which can be highly recommended for the average pupil in all gymnasiums.

Let me suggest, also, the practice of tumbling out of doors when convenient opportunity permits. A smooth lawn, especially when soft with a thick growth of short grass, is always inviting to any one who has grown fond of tumbling, and the turf is even more satisfactory than the best gymnasium mat, if one wishes to tumble or roll.



Class of young women receiving instructions in gymnastic exercises.

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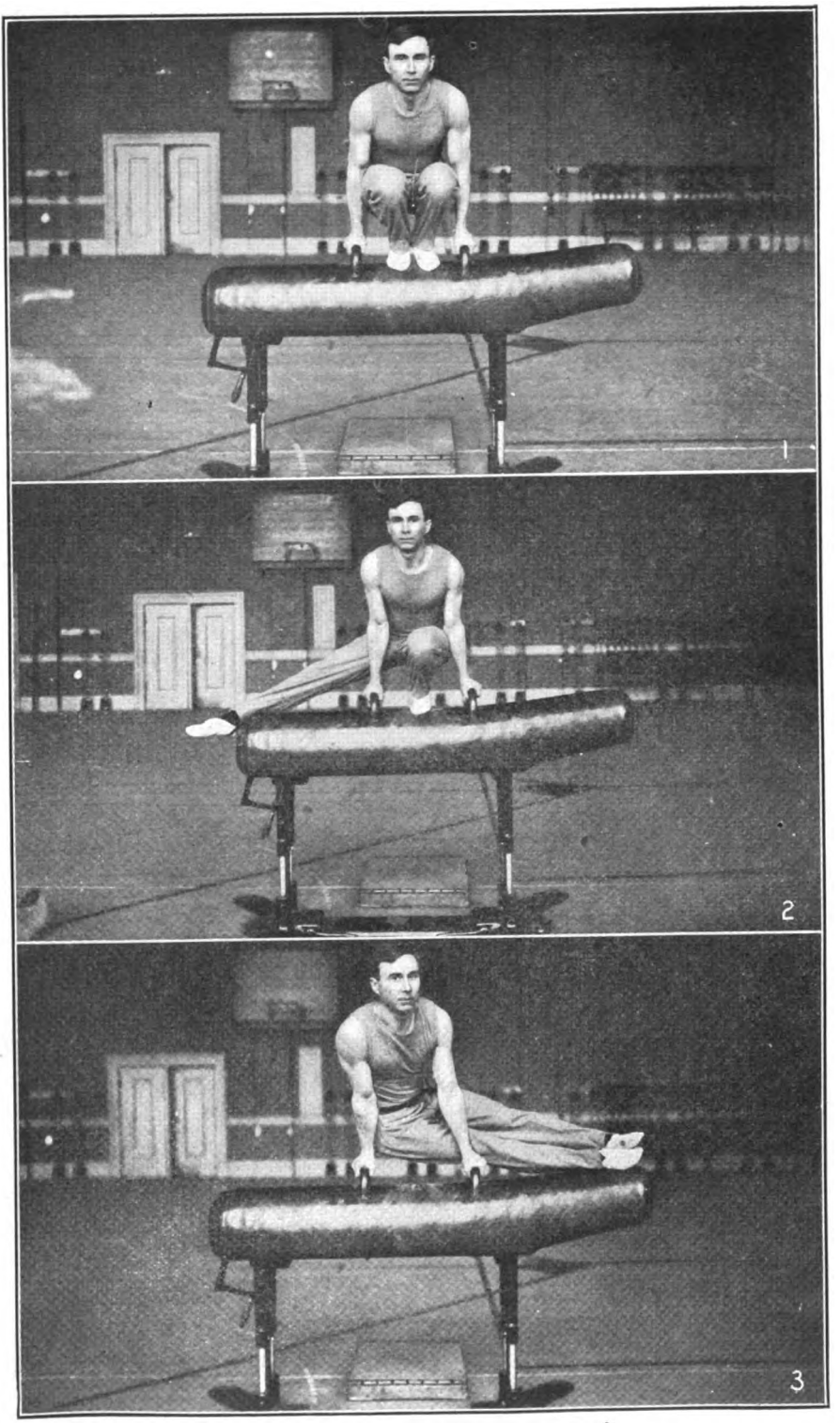

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EXERCISES ON HORSE.

No. 1. Squat Vault, forward or backward. First facing horse, take hold with the hands as shown, and vault over by doubling the knees high and jumping through between the hands. Backward the same way. While learning to do this, and until the pupil is absolutely certain of executing the movement without a hitch, the instructor should stand on the side which pupil is approaching, ready to catch him in case of a fall. In the beginning, if the pupil is awkward, there is always the possibility of not getting the knees and feet high enough, and to trip would sometimes mean pitching forward head foremost. Often it is well to have two in readiness to help in such an emergency.

No. 2. Wolf Vault, left or right. This is a variation of the preceding movement, one leg over the center, and the other winging over the end of the horse. In this illustration it is the right leg, in which case, the right hand should momentarily let go of the handle at the instant of going over, quickly resuming the hold after the leg has passed over. The same should be executed with the left leg.

No. 3. Rear Vault, left or right. This is the simple, regular vaulting movement, which may also be executed over a horizontal bar when not above the level of the head, or over the ordinary fence in a cross country jaunt. Both legs are carried over one end together, with knees straight, the hand on that side letting go just when the body reaches the point shown in the illustration. Same over the other end.

These simple vaults should be much practiced until thoroughly mastered, after which one will feel more at home on the horse and ready for more difficult movements.

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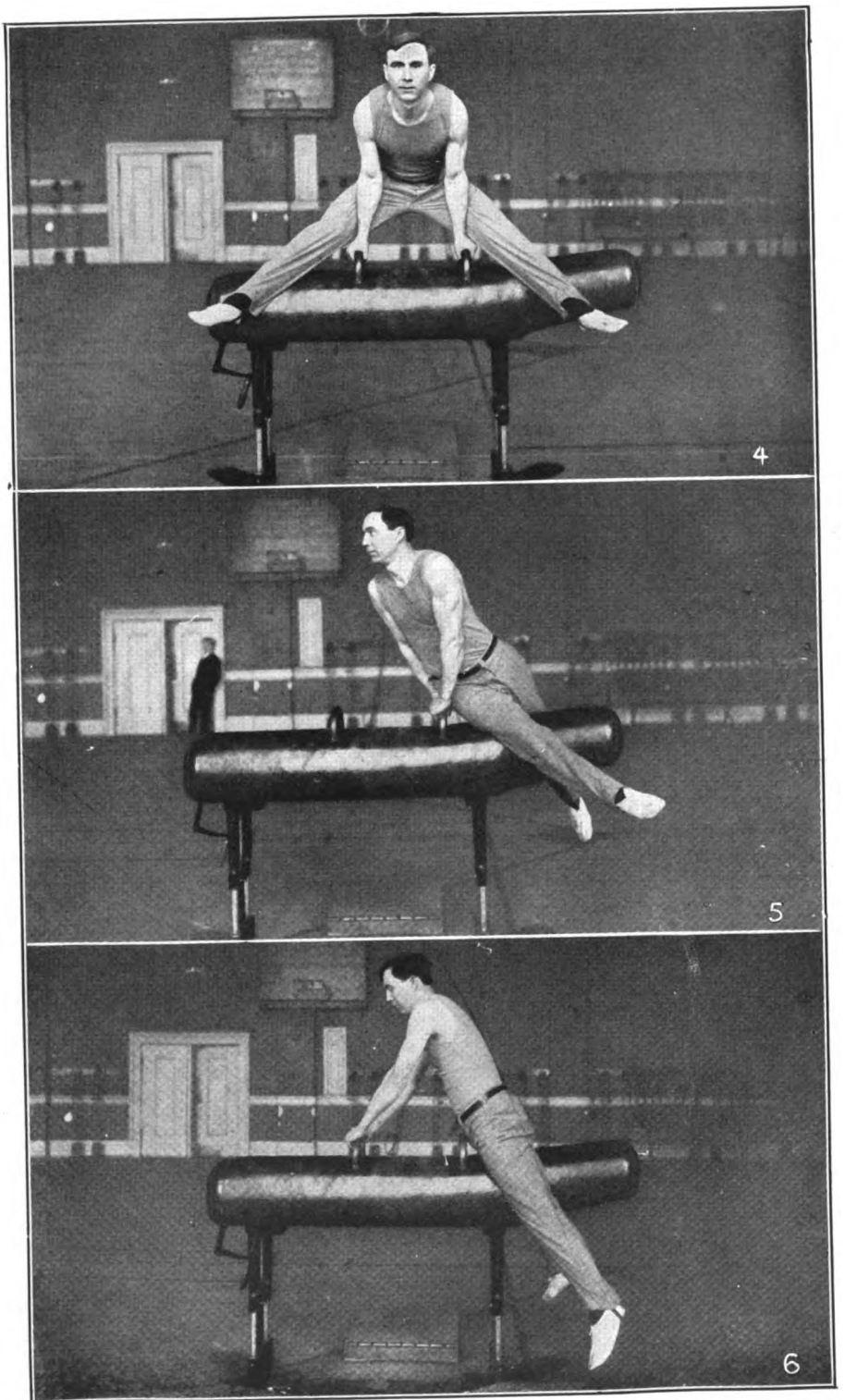

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EXERCISES ON HORSE—*Continued.*

No. 4. Straddle Vault, forward and backward. This should not be attempted until the preceding vaults can be executed deftly and easily, after which one will probably have no difficulty with this one. The legs are spread wide apart, one going over each end in the manner shown. Just as the feet clear the horse the hands should let go, the pupil alighting neatly upon his feet.

No. 5. Scissors, or Shears, forward and backward, left and right. First straddle the end of the horse somewhat in the manner shown in No. 6, but taking hold of the near handle with both hands. From this position lean weight forward on the hands, raise the legs quickly and cross them to the "Scissors" position shown in this illustration. First cross right leg under, as in this photograph, then return to original position, then cross left leg under. After becoming more expert you may be able to change from one side to Scissors on the other without stopping at first straddle position. Next straddle the same end with back to the center or saddle, hands on the handle behind you and execute the same movements.

No. 6. This illustrates a general position from which a great variety of exercises upon the horse may be started, sometimes with the hands on near handle, as in No. 5, sometimes with one hand on near and the other on far handle.

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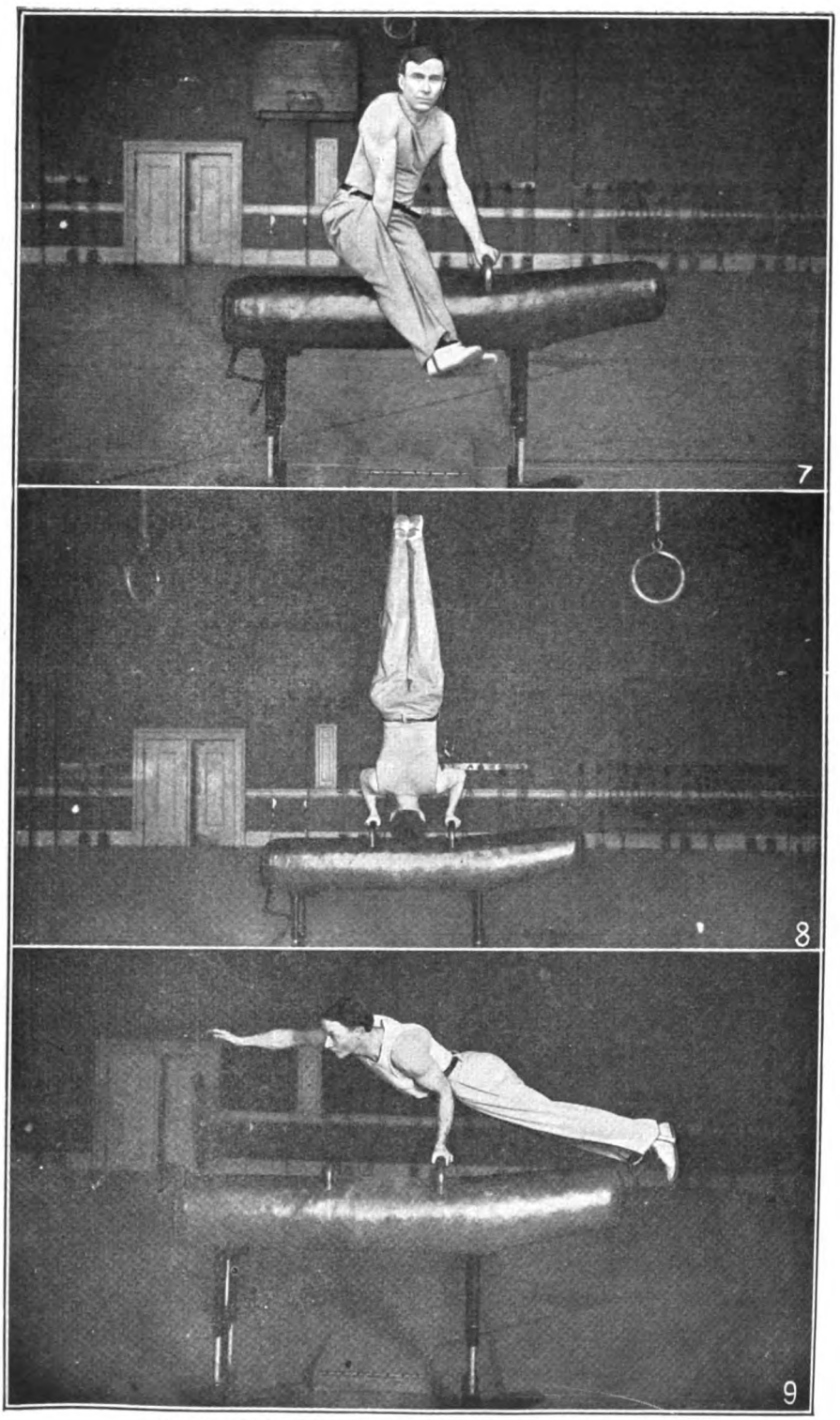

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Exercises on Horse—*Continued.*

No. 7. Stride with right arm in front. This movement may be executed starting with vault from the floor, or from the general position shown in No. 6, but with one hand on each handle. In the latter case, raise the legs and bring them together, knees straight, swing them around to the right and up over the further or right end of the horse. Just as this is done the right hand must momentarily let go its hold, the legs separated so that the right hand may resume its hold passing between them, and the movement continued around to the point shown in the illustration. It is essential to keep the weight well poised upon the arms, for one cannot slump through movements upon the horse; from this position swing back to starting point. This should be done first from the floor with a vault, for this is the easier.

No. 8. Head Stand on Horse. This is a position which should be reached slowly and deliberately, placing head on horse between the hands, first with body well bent and legs hanging down. Then slowly the back and legs should be raised until finally a full head stand is accomplished. The instructor and one other should guard against falling. The finish of the exercise should be a head spring over to the other side, a very safe and easy thing to do, but with instructor's hand on back at first.

No. 9. Elbow Lever. The elbow is well braced under the left hip and the other arm outstretched for balance. Commence with elbow lever on both hands, then gradually shift weight of body over to one side until balanced. Should be executed on each hand by turns.

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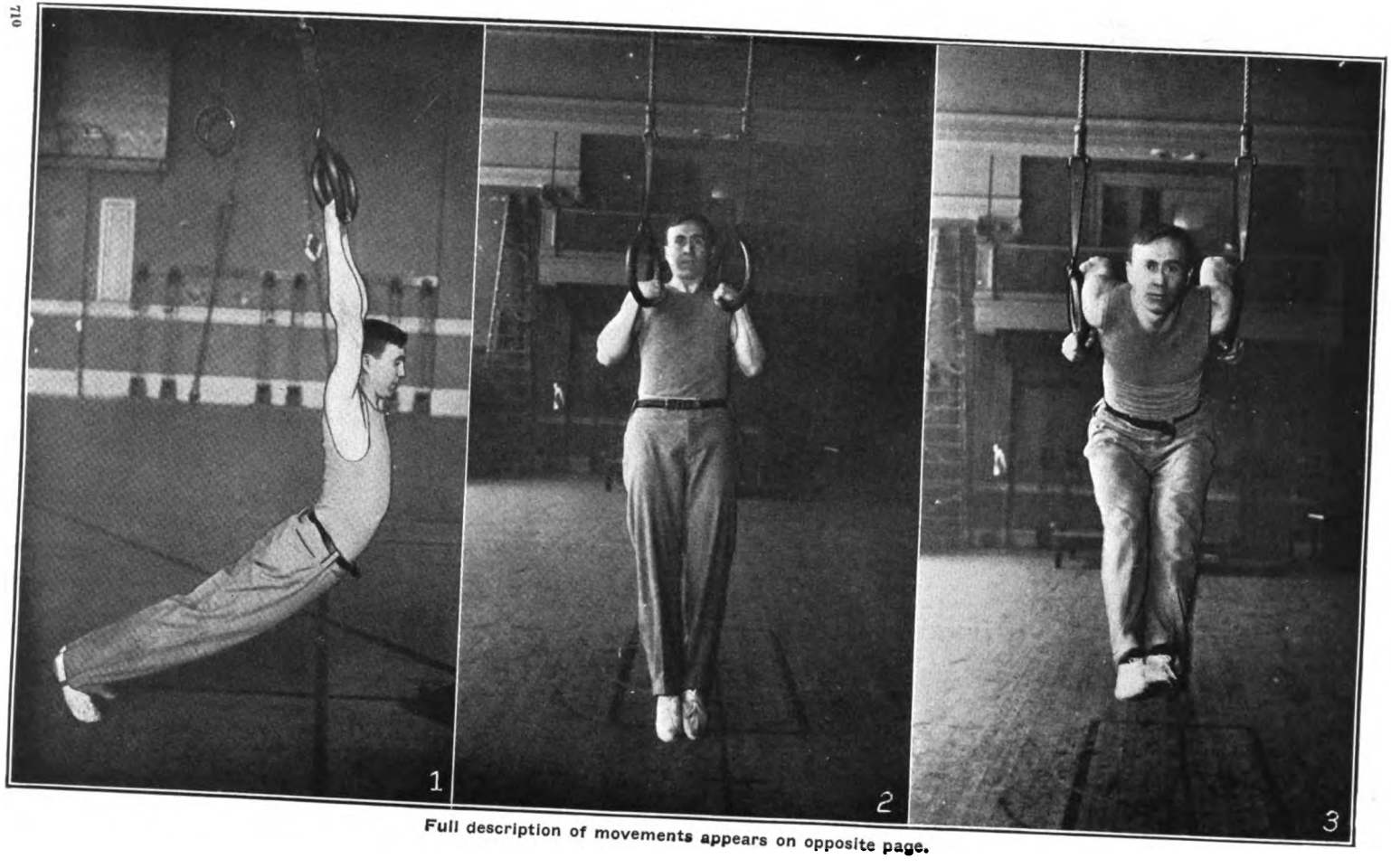

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EXERCISES ON RINGS.

No. 1. Fall out, forward, backward and sideward, describing a circular motion of the trunk of the body, but keeping feet in the same spot as nearly as possible, all while hanging from the rings. The movement is like the swing around of a slack rope, in which the center of the body describes the largest arc, and the feet represent one end of the slack swinging rope. The body should face the same direction throughout. A splendid exercise for the sides and torso generally, and very good for stretching all parts.

No. 2. Pull Up, from hand hang to bent arm hang, an ideal exercise for the biceps, though also affecting latissimus dorsi and other muscles of shoulders and chest.

(*a*) From this position, illustrated, extend the left arm to the side horizontally, holding the right flexed, and then, returning to this position, extend the right arm similarly. In this exercise the greater part of the weight of the body is supported by the flexed arm.

(*b*) Press Up, first with left arm, by raising elbow until directly above the hand, and then with right arm. Press up until arms are straight and at the sides.

No. 3. Press Up, from pull up position shown in No. 2, with both hands simultaneously, to position illustrated. Press up to straight arm.

(*a*) Flexing thighs and legs, roll forward, that is to say, raise hips and back until overhead, and rolling forward, allow feet and legs to descend in front, the body having described a circle, rolling over. Then, raising legs above the head and continuing backward, roll backward again to the same position. This is an execellent exercise for the shoulders.

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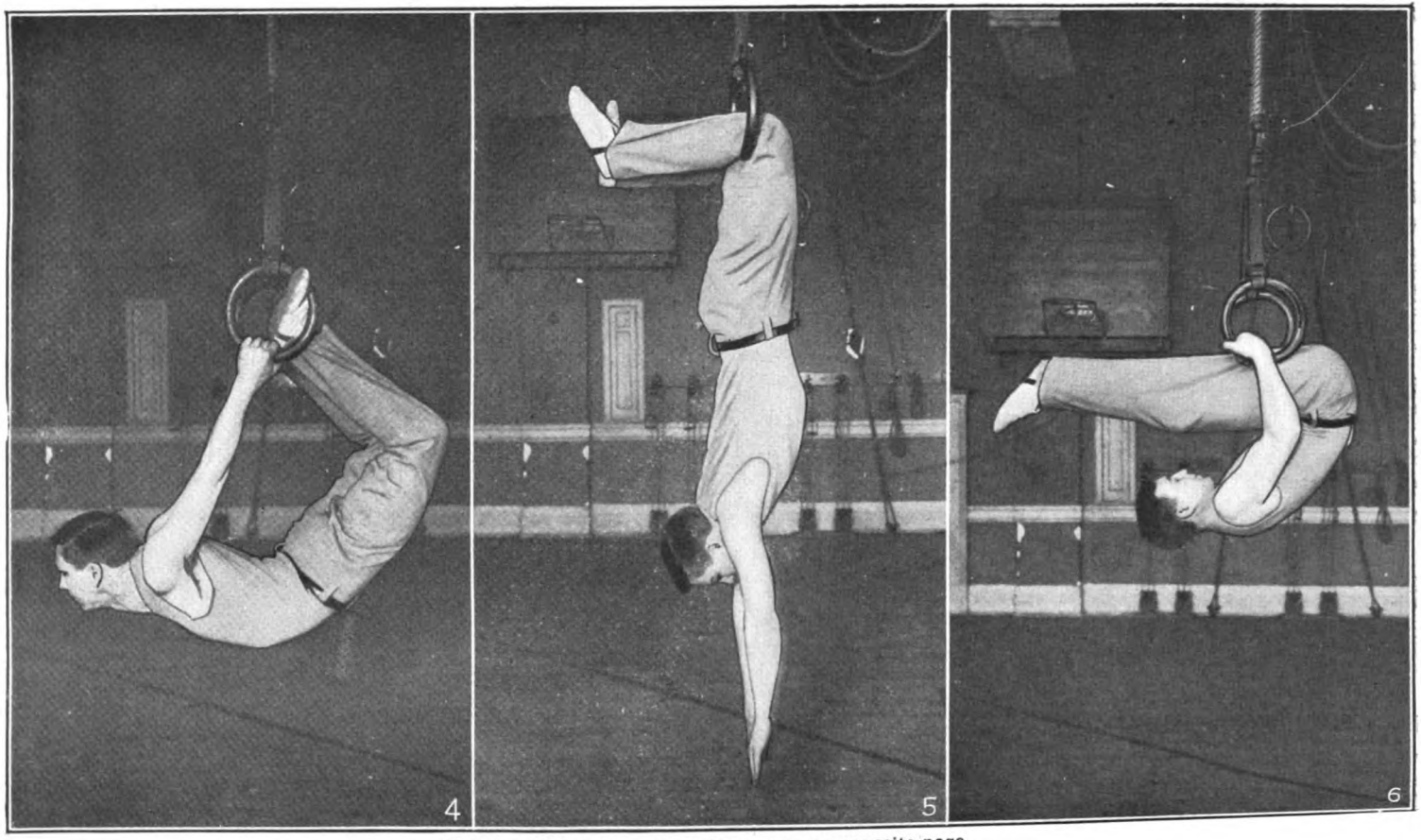

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Exercises on Rings—*Continued.*

No. 4. Bird's Nest, either with or without swing. This position is reached from hand hang by first raising feet forward to rings, hooking in rings as shown, then pushing hips forward between the arms until the arch of the back and entire body illustrated is accomplished.

(*a*) If executed with swing, dismount from position illustrated at front end of swing.

No. 5. Knee Hang, with or without swing. This is one of the simplest and easiest of all positions on the rings, but the beginner should be sure that his legs are well flexed at the knees.

(*a*) From position illustrated to a riding seat, or in other words, raise head and arms forward and up, taking hold of ropes above rings, and pulling upward rise to a sitting position with legs through the rings. Now, throwing the arms through and in front of ropes, grasp rings, roll forward and dismount.

No. 6. (*a*) Position for Kip or Up Start on Rings. This is similar in principle and execution to the kip on parallel bars and on the horizontal bars. From the position illustrated, the legs should be forcibly extended, that is to say, kicked upward and out in an oblique direction, while the hips are held to the same position, and the upper body swung up as the legs descend.

(*b*) Backward. A backward dislocate is executed by kicking obliquely backward and upward, and extending the arms to side horizontal.

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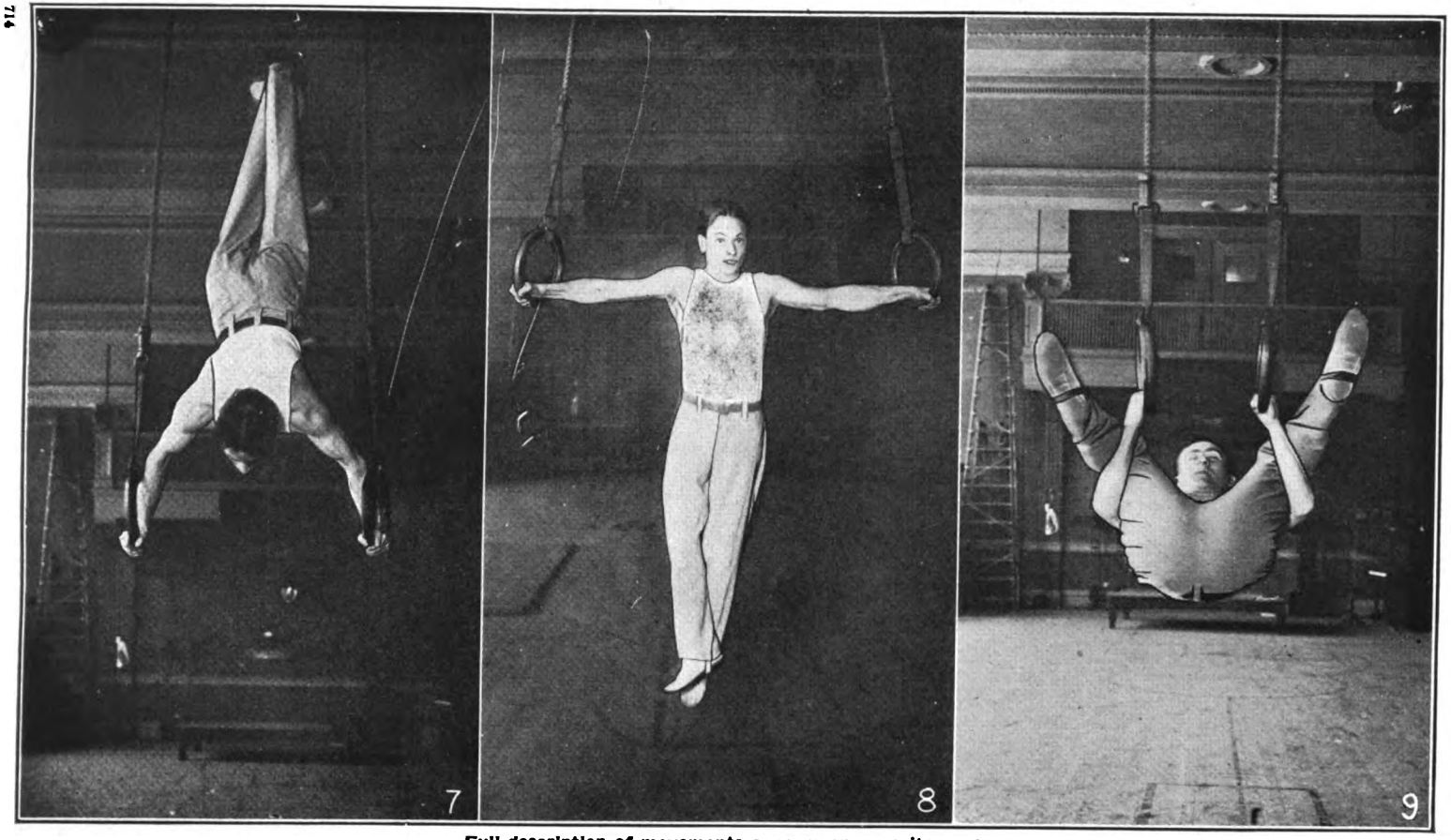

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EXERCISES ON RINGS—*Continued.*

No. 7. Handstand between Rings. The commencement of movement leading to this position is shown in No. 3, from which point the hips and back are first raised, then the legs and the arms straightened. It should be noted that some little assistance in steadying oneself may be secured by pressing the outsides of the forearms against the upper circle of the rings.

One will require considerable practice upon the rings before he will attain the proficiency necessary for this feat, though anyone who can do a handstand on the floor or parallel bars will very quickly acquire it on the rings. This illustration shows what may be accomplished by faithful application to gymnastics.

No. 8. Position known as the Crucifix or Human Cross. The best method of approaching or attempting it is first to press up to cross hand position, arms at sides, and then gradually to allow the arms to move outward from the sides, lowering the body until reaching the position illustrated, with arms outstretched on a level with shoulders. This requires a powerful development of those muscles of the sides, back and chest which depress the arm. Only the exceptional gymnast can accomplish it. It offers a good goal for the aspiring and ambitious youth to work for.

No. 9. Position for Forward Cut-off either single, double or straddle. The cut-off requires that the legs be first raised and swung back of the rings. A single right cut-off in the position illustrated would mean letting go of the right ring so that the right leg may pass through the opening thus made, the right hand again catching the ring instantly following the downward swing of the leg. This photograph shows pupil about to execute forward straddle cut-off (with both legs simultaneously), catching both rings again quickly before the body has had time to fall. Inward cut-offs made with legs swung up outside. Backward cut-offs are also made, outward and inward.

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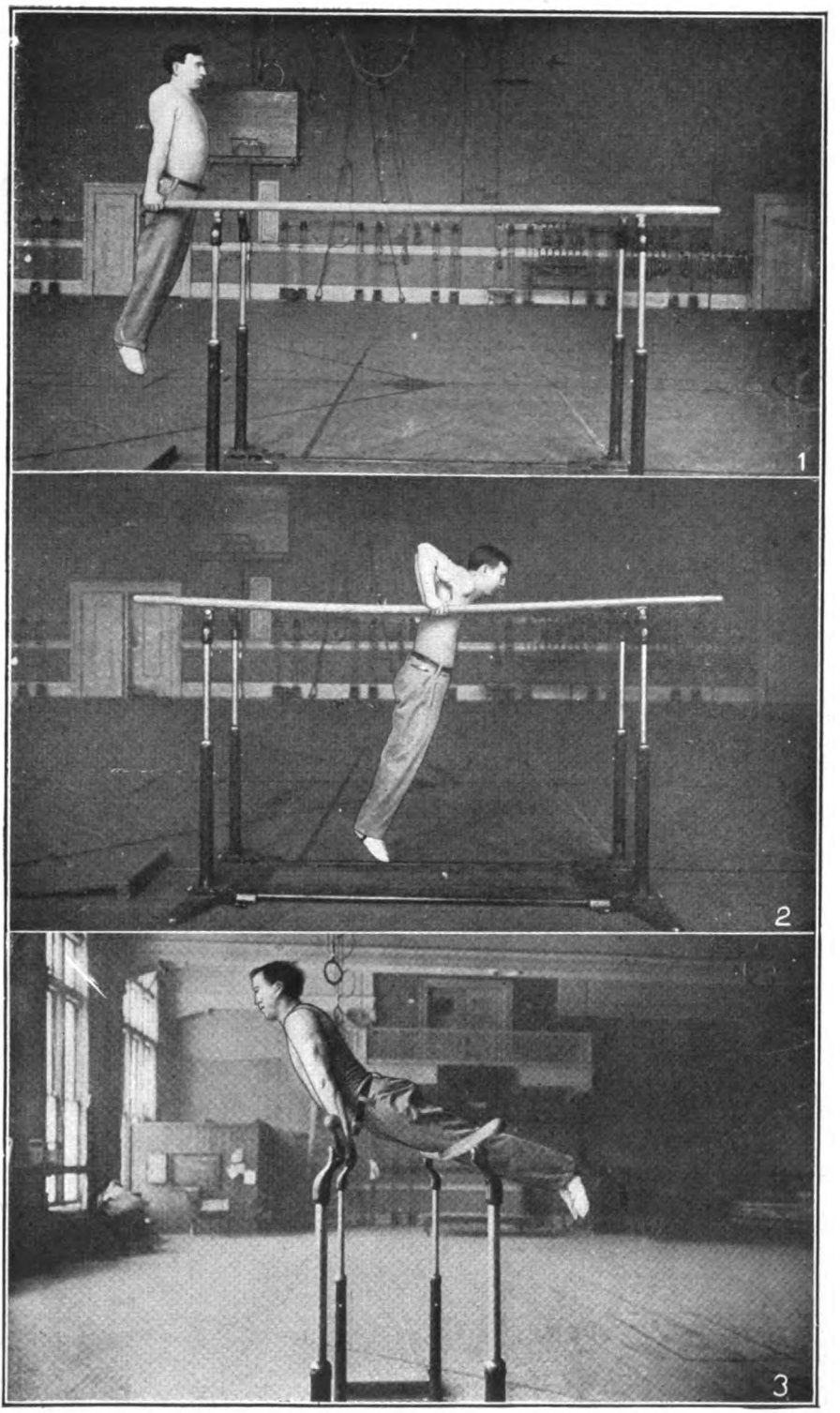

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PARALLEL BARS.

No. 1. Front Arms Rest, a general first position, from which most moves are executed. It is usually reached by approaching from the end, taking hold of the ends of the bars and reaching position with a little jump. From this position one can move over the bars by walking on the hands, alternate steps with each, or by little hops, jumping with both hands together.

No 2. Bent Arm Hang. Walk from rear end to far end in this position. Also execute the following swing, starting from position in No. 1. First swing legs up forward, straddle both bars close to hands, bring hands forward to bars and then, bending elbows dip shoulders down almost to level of bars; release legs and swing down and forward and upward, straightening arms and raising up as legs come up between the bars for another straddle. Repeat until reaching far end of bars, and then reverse the movement, swinging backward but always dipping the arms and then straightening at the end of swing. A vigorous exercise is provided by simply lowering the body from straight arms rest to this position of bent arm hang, then pushing up again, developing the triceps and muscles of the sides, under arms, especially latissimus dorsi.

No. 3. Front Leaning Rest, hands on one bar, legs across other. A general position from which a number of movements may be started.

(*a*) Leg circles may be executed from this position. Bring right leg with a sweep over the bar, down between the parallels and up over the same bar to the left of the left leg, passing under same and back to position. Same with left leg.

(*b*) Vault from bars may be executed by throwing weight forward on hands and swinging both legs together to one side and over both bars. Squat, Stretch or Straddle and other movements may be executed from this position.

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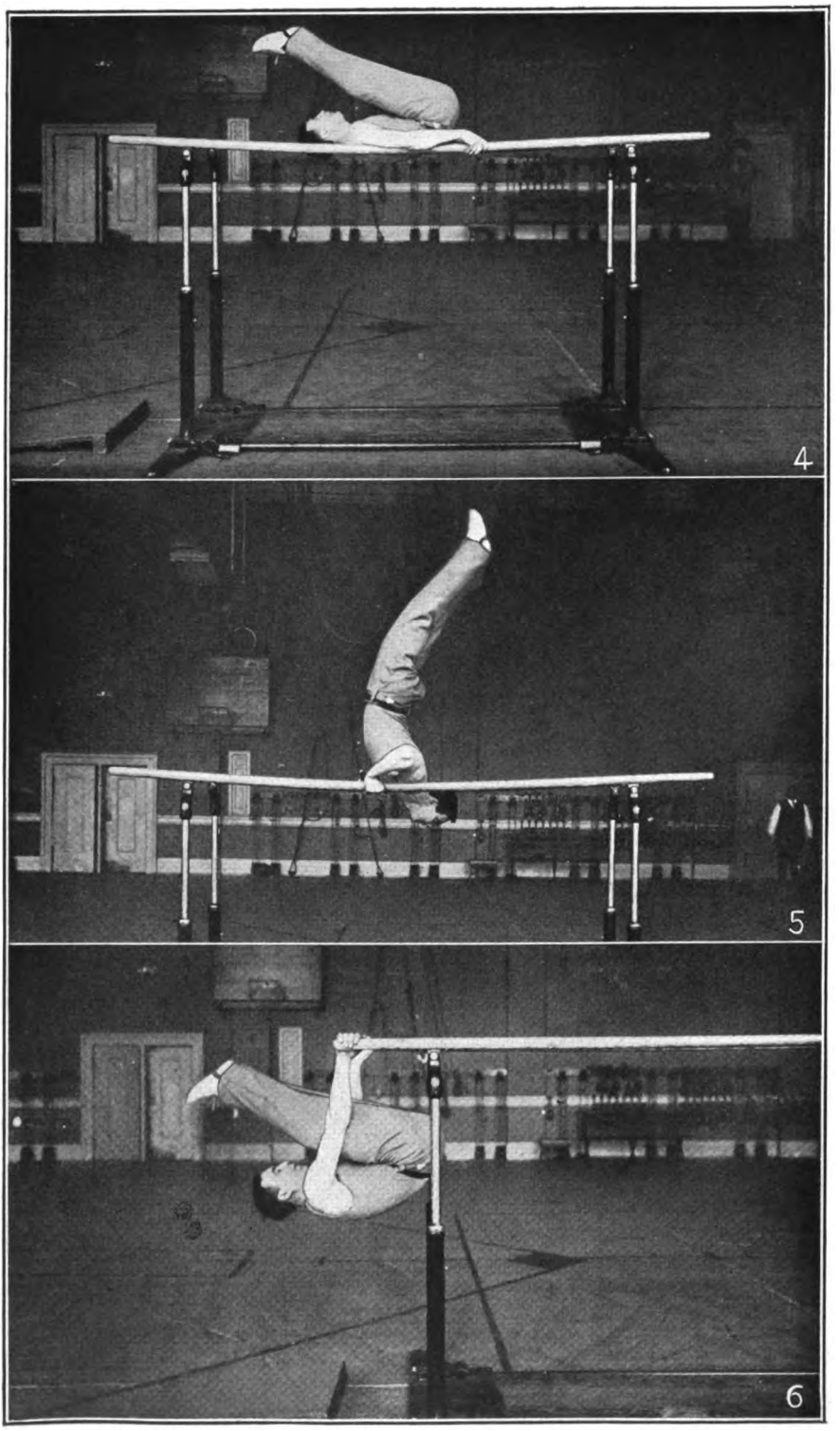

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PARALLEL BARS—*Continued.*

No. 4. Still Kip. This position, ready for still kip, may be reached by standing between bars, arms outstretched forward, and grasping bars with elbows over them, then swinging up to position shown in illustration, hips just above level of bars and legs flexed up and back against body. From this position swing legs obliquely upward and forward, and with arms stiff, swing to upright position with body. The body must rise with the momentum just as the legs descend, and unless this is accomplished at the right moment it cannot be done. This position, in readiness for still kip, may also be reached from the backward shoulder roll, described in connection with next illustration.

No. 5. Shoulder Stand, from which several movements may be executed.

(*a*) Forward or Backward Shoulder Roll. A roll on the shoulders may be easily executed if one makes it a special point to see that his upper arms, from shoulders to elbows, are extended horizontally to the sides, and remain so during the roll. In rolling backward the hands will change position, taking a new hold on the bar, and the body passing through a position similar to that shown in No. 4, ready for still kip. In rolling forward the hands will retain their position and body will come to position of arm hang, shown in No. 2.

(*b*) Position for pushing up to Hand Stand.

No. 6. Drop Kip Between Bars. This is a much more difficult kip than that shown in No. 4, but the principle is the same, and after mastering the other it will not take long to get this. Hanging in the position shown, vigorously swing legs obliquely forward and upward, bring the hips up to the position of the hands, and as the legs descend keep the hips in this position with arms rigid, swing upper body up to vertical position.

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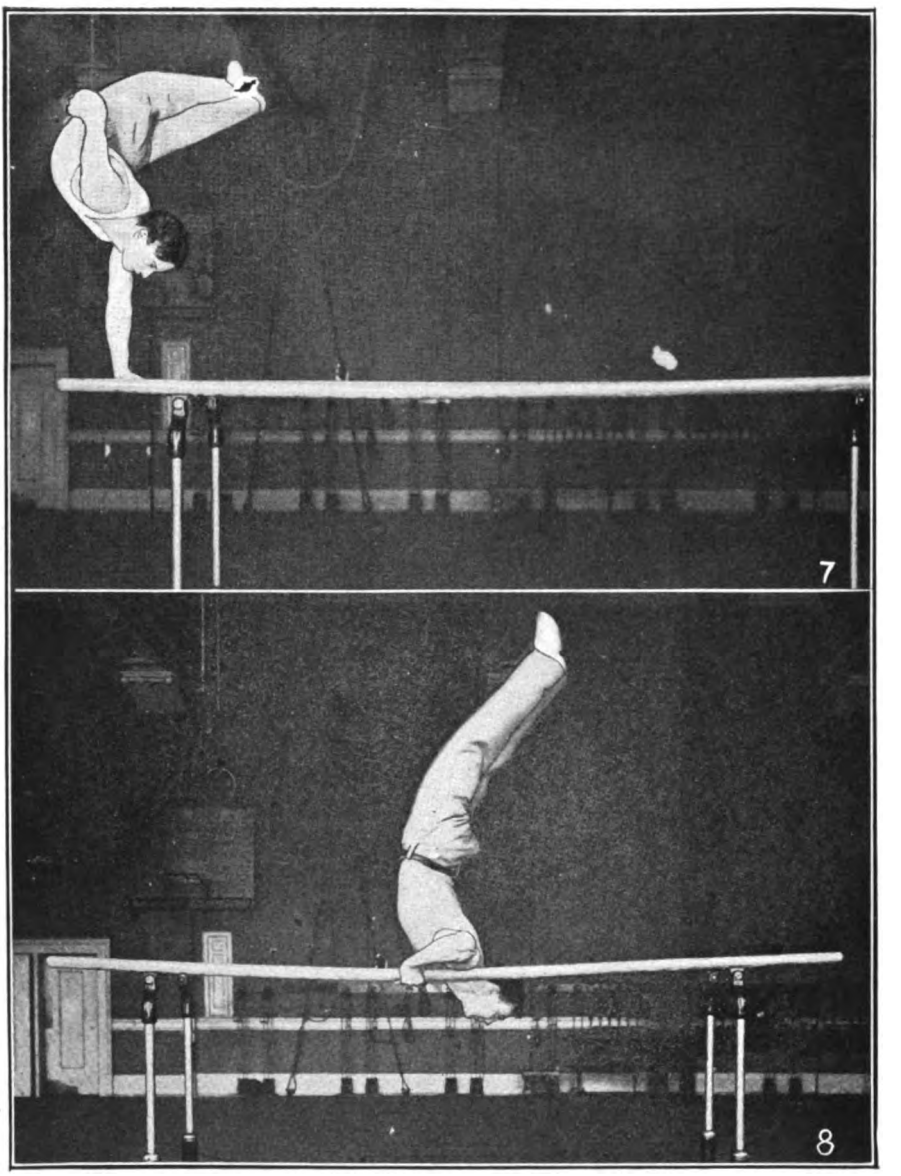

PARALLEL BARS—*Continued.*

No. 7. Execution of a One Hand Stand. This is performed at one end so that if balance is lost a drop to the floor is easy, either to the side or forward. It is reached from a Two Hand Stand, slowly shifting the weight to one side until balanced on that hand. This illustration is introduced not as a suggestion for beginners, but to show the possibilities of Parallel Bar Work.

No. 8. Drop to Side from Shoulder Stand, a picturesque method of leaving the bars. Slowly shifting weight to right shoulder, push up and over with left arm until the body swings outward, pivoting on the right shoulder and landing upon the feet. Same to the left side.

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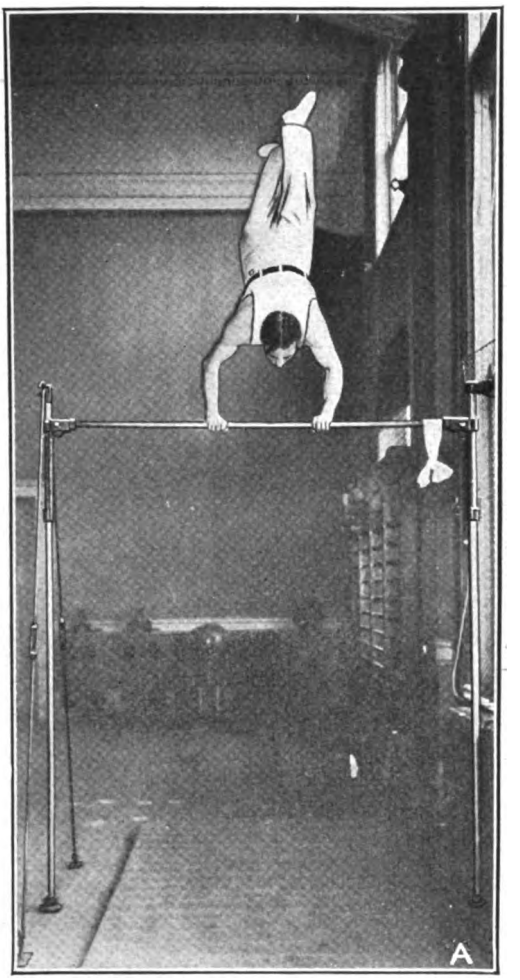

HORIZONTAL BAR.

PHOTO A. Hand Stand on Bar. This is very difficult because of the fine balancing sense required. One who is not adept at hand stands on the floor can scarcely hope to attain it. This is the position from which to start the "Giant" Swing or Circle, swinging backward, and all the way round, again and again, hanging only by the hands and touching no other part of the body to the bar at any time.

This feat and others illustrated on the pages following may at first seem difficult or impossible, but they are illustrated to show what one may work up to by faithful application, and what he may look forward to. It needs hardly be said that nearly all of the apparatus work suggested here applies to the needs of women as well as to men. Women are strong and robust, or the contrary, according to their efforts and habits.

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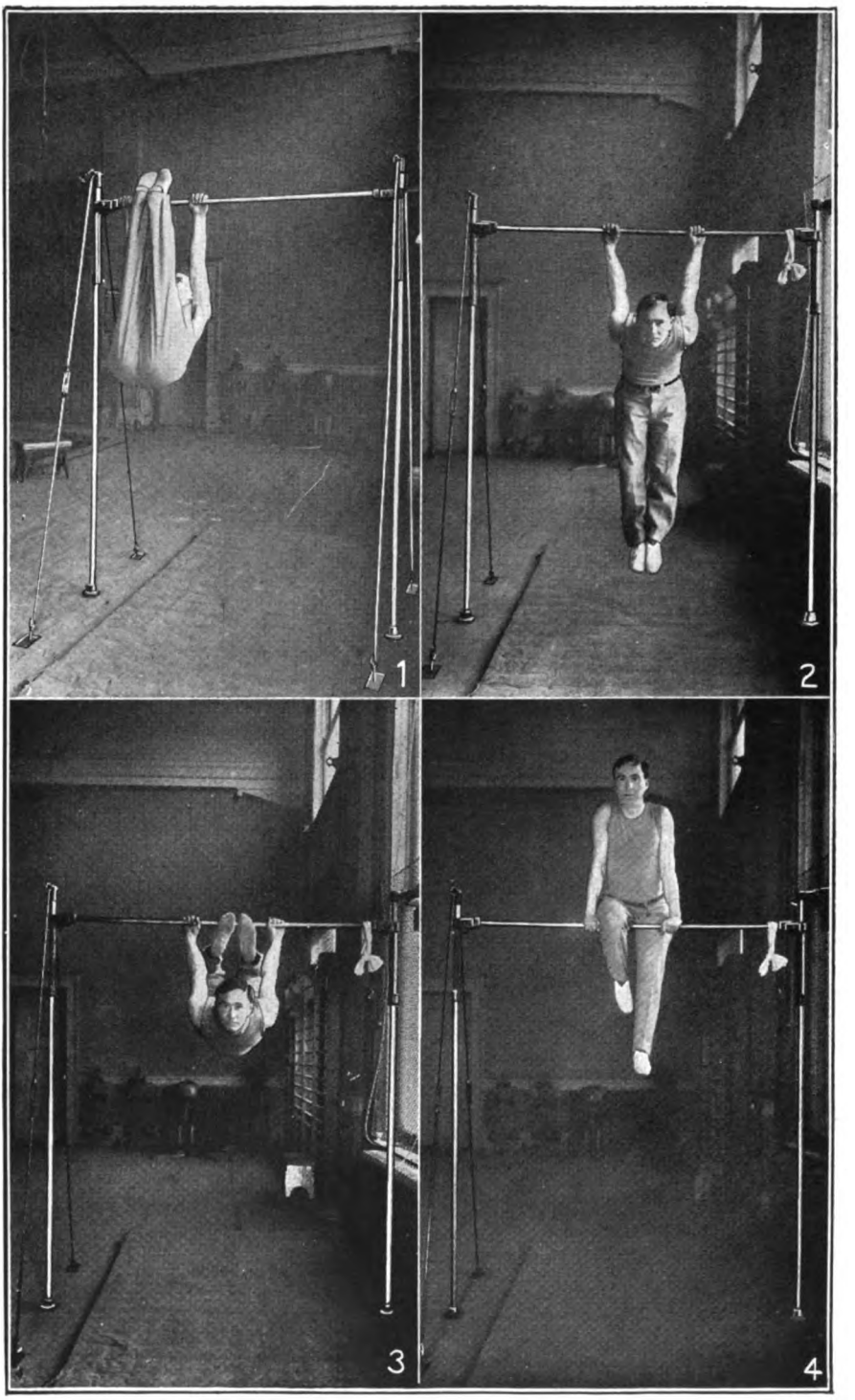

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HORIZONTAL BAR.

No. 1. (*a*) Front Hang from which the kip swing can be executed. Flex the arms, bring feet to the bar and kick obliquely upward and forward, arching the back on the rear swing.

(*b*) Forward Draw. By drawing the legs over the bar and upward to front rest position, the head swinging up as the legs swing down.

(*c*) A Spur Kip can be executed from this position by flexing the thighs and extending them forcibly and pulling down on the arms.

(*d*) From Front Rest on bar drop back to position illustrated, arching the back, and dismount—known as short under swing.

(*e*) Front Hang, with head down, by extending legs upward in front of the bar, head down. This is simply the front rest position inverted.

(*f*) Back Hang, head down, is just the reverse or opposite of front hang, head down. Pass feet between arms and back of bar, pushing up until body is straight. Knee hang is reached from this position.

No. 2. (*a*) Back Hang. Legs and thighs flexed, pass legs back between arms and lower to position illustrated.

(*b*) From *a*, grasp either hand and dropping hold by the other turn either left or right to the hand hang, and repeat to the opposite side.

No. 3. Bird's Nest. From position in No. 1, hook toes against bar, pass knees and hips forward between arms, arching back, to position illustrated.

No. 4. Knee Mount. Place one knee over, swing down with other leg, and body swings up on bar, with either left or right leg, on the outside or inside of either hand.

(*a*) From this position swing forward in a circle, round and round as many times as desired and

(*b*) Backward in a circle, in a similar manner

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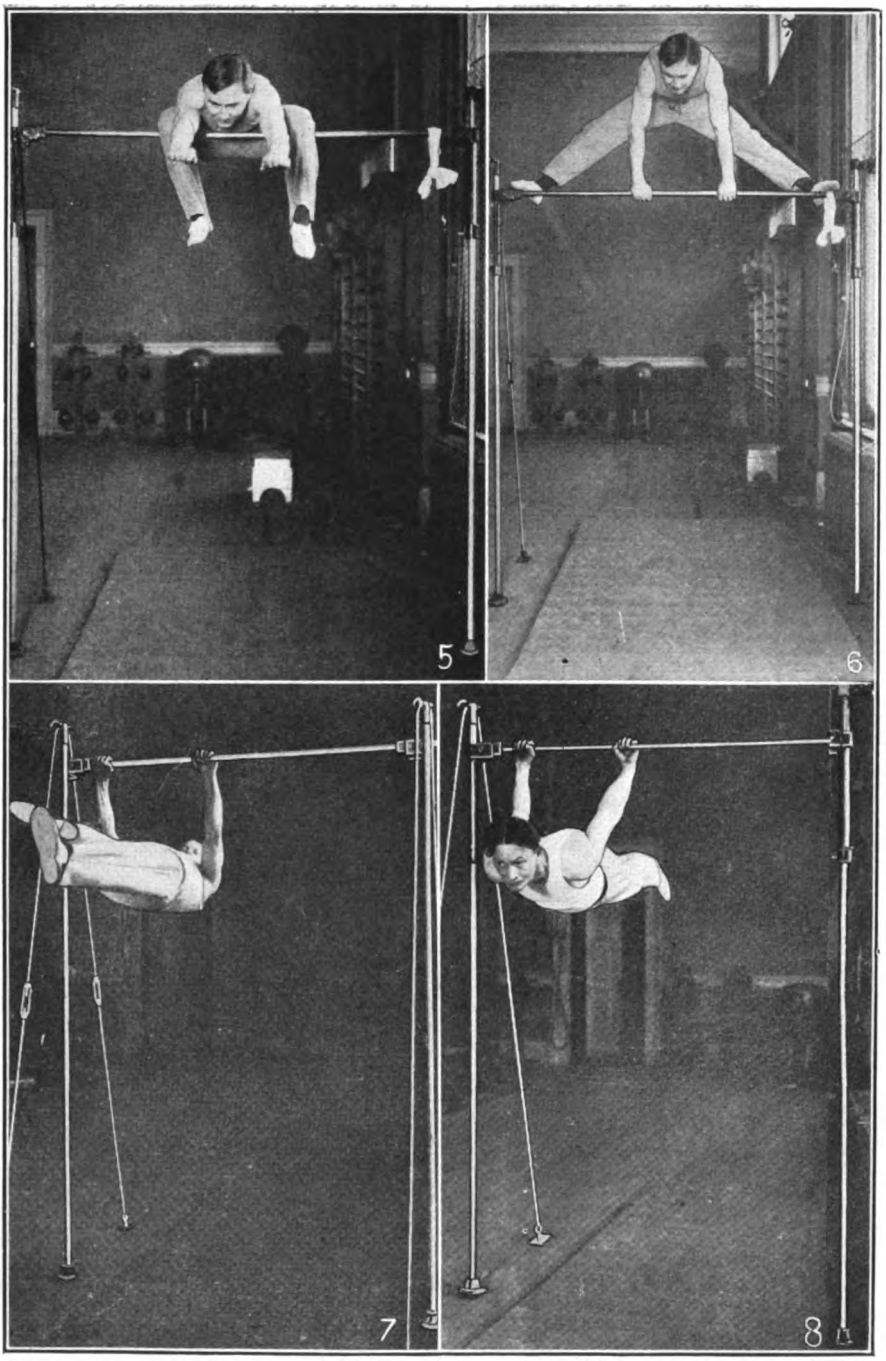

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HORIZONTAL BAR—*Continued.*

No. 5. Beginning at hook circle or swing from both knees. First sitting erect with both legs across bar, let legs slide back until hooked on bar at knees, thrusting arms far forward until ready, then swing. A striking and interesting dismount is accomplished, when sitting on the bar, by dropping backward, hooking and swinging by the knees until the body has swung around to the limit of its momentum and is facing the floor; at that moment disengaging the legs and dropping neatly upon the feet on the floor.

No. 6. Position of hand and foot, circle backward. It is understood that gymnasium shoes of sufficient flexibility of sole are worn for this purpose, so that the feet may maintain their position without slipping. In this, as in all the other swings, it is necessary to give an extra little pull at just the right time when going upward from each swing, in order to get all the way up and over the point of equilibrium. Toe and heel circles are executed from substantially the same position, the heel circles backward and hooking the heel, the toe circles forward and hooking the toes.

No. 7. Front Lever, a gymnastic feat requiring great strength of muscles of back, sides and chest. From position of front hang, with head down (see description of "*e*" in No. 1), and with body straight and rigid, gradually lower feet until body assumes the horizontal position illustrated, then stopping and holding this position for a few moments.

No. 8. Back Lever, another exercise requiring great muscular vigor, and especially of the chest muscles. It is just the reverse of the Front Lever. From back hang, head down (see "*f*," No. 1), lower body, rigid and straight to horizontal and hold for a few moments.

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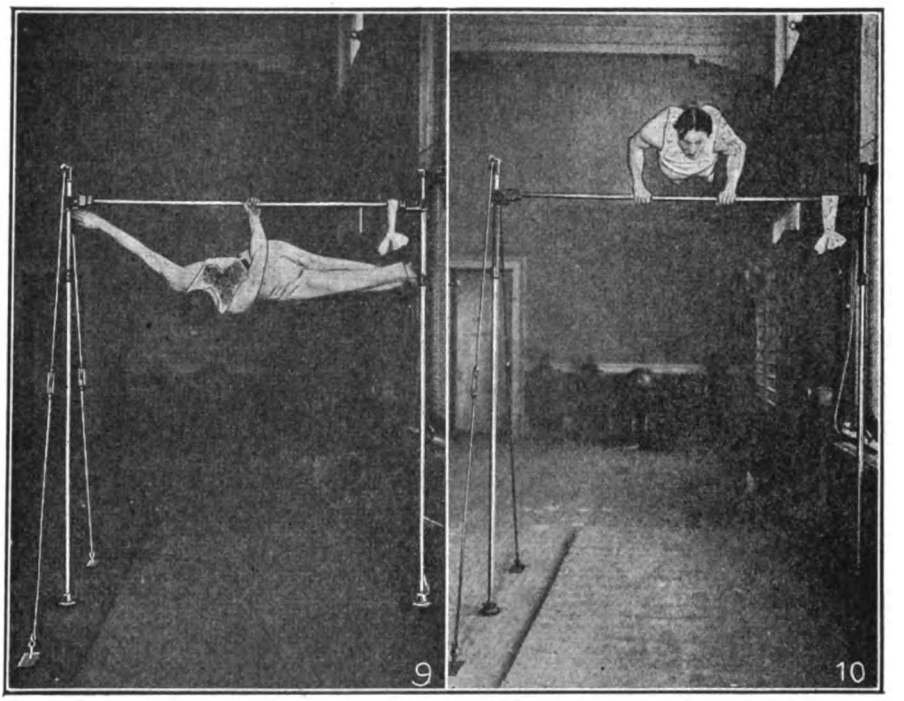

HORIZONTAL BAR—*Continued.*

No. 9. Side Lever. This logically follows the front and back levers, and is really a variation of the back lever. Being done with one arm, it is naturally much more difficult. The back lever must first be executed, after which pupil lets go with one hand and maintains the horizontal position while hanging only with the other arm. In doing this, the active arm should be held as tightly to the side as possible and the other side of the body turned upward as much as possible. This should be practiced alternately with each arm.

No. 10. Elbow Lever. The elbow lever differs from front, back and side levers in that the body is supported above the bar instead of being suspended underneath it, though the horizontal position is the essential requirement. Position is arrived at from the front rest, bringing head forward and raising body until it is horizontally balanced on a level with the elbows. This is very easy, with palms down and elbows braced under the hips at each side, but when executed properly with elbows free of the sides, it is an exercise to test one's strength.

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TUMBLING.

As stated on a foregoing page, tumbling affords a most enjoyable means of attaining a symmetrical and strong, supple body. While some of the more complicated and intricate phases of tumbling are only mastered as the result of years of painstaking effort, there are many simple movements which can be learned by any man or woman who has the energy and persistence essential to gain the skill involved in their execution.

Among the most simple and better known of tumbling movements are the hand-spring and the somersault. Almost any active young man or woman can learn to perform the hand-spring in a comparatively short time. Neither will the backward somersault be found such an extremely difficult movement as it seems at first trial. The forward somersault is often thought more difficult to learn and to execute than the backward, but it is simple enough when once you have learned it. It should best be practiced over water or a heavy cushion. Do not attempt it without a little run for momentum, in the beginning. Starting with this little run, of five or six steps, jump from both feet at the same time and execute the somersault by quickly doubling up and then straightening out again. To do this with certainty you should practice the same quick catching hold of the legs just below the knees as in the backward somersault, catching hold for an instant only, then letting go and straightening out again. This is all there is to the forward somersault, though be sure to get a good jump up into the air. It may seem curious that the same method of doubling up and catching hold of the lower legs should work in both the forward and backward somersaults, but in the former there is only the forward impetus, while in the latter this doubling up follows the first backward impetus.

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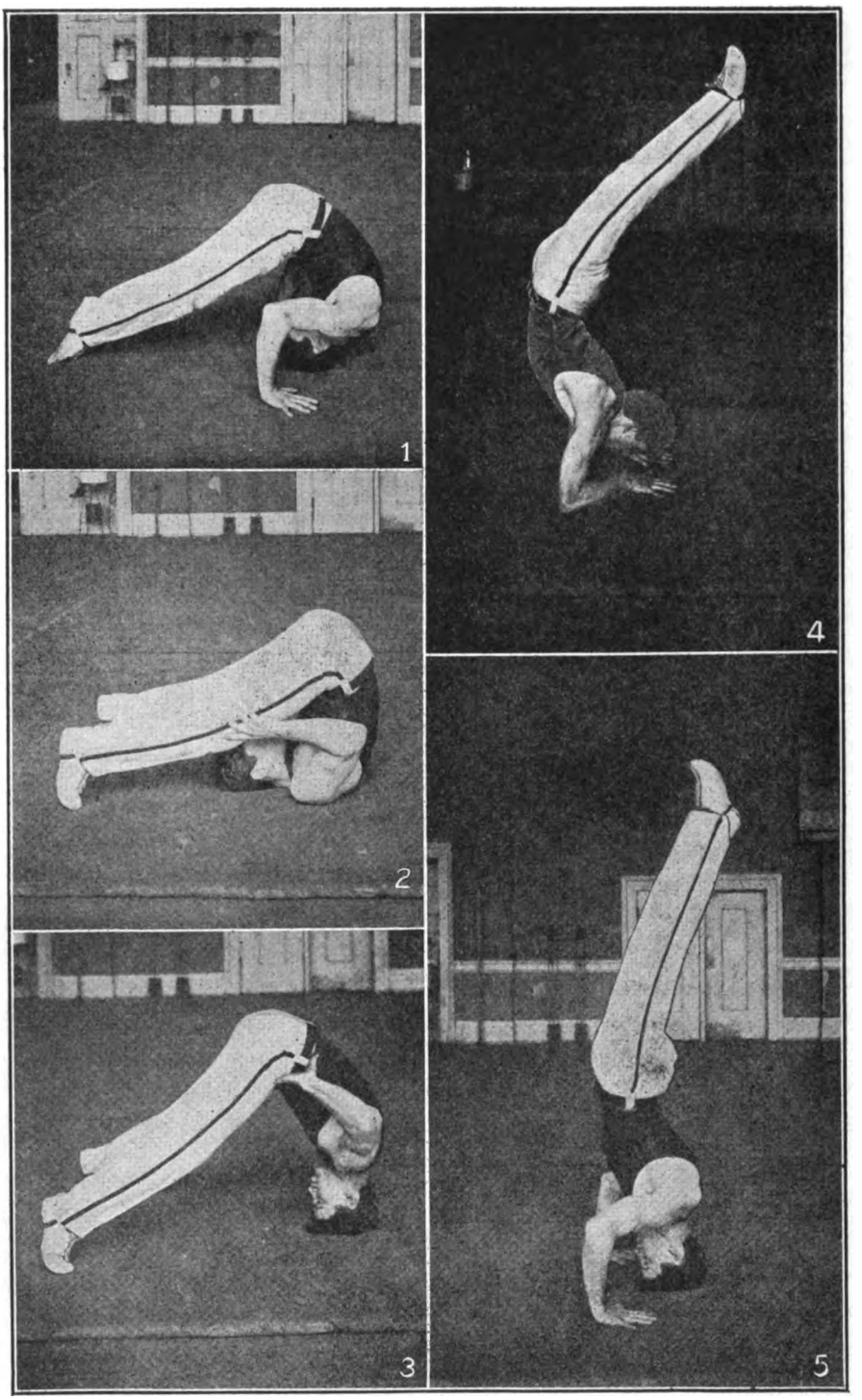

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TUMBLING—*Continued.*

No. 1. (*a*) Forward Draw; head and hands on mat; legs and feet extended; draw body forward.

(*b*) Forward Roll. Similar to *a*, except that the legs and thighs are flexed in rolling forward, so that after rolling over the back one is able to stand up on his feet.

(*c*) Backward Roll. Similar to *b*, except that it is the reverse. As the body rolls back on the neck and head the hands should again be placed on the floor to assist.

(*d*) A Dive for height and distance, can be taken from either a stand or a run. The above rolls should be mastered thoroughly before attempting this. The hands should reach the floor first, breaking the force of the descent, with the head doubled under well so that the body will land on the back of the neck and shoulders, with extended legs parallel with floor, and rolling as in *b*.

No. 2. Neck Snap, without assistance of hands. Hands are placed against knees to help give a smart, quick snap. With legs in this position they are quickly thrown back, the feet then doubled under the hips to get them well under, and the upper body hitched upward with the impetus so that it is balanced on the feet. If this is difficult, place hands as in No. 1, pushing off smartly with the hands when making the snap, which makes it easy.

No. 3. Head Snap, with or without assistance of hands. Photograph shows it without hands, but it should be mastered with hands first, held in position shown in No. 1 and No. 5. From position in No. 3, push off with the legs and throw them over smartly as in the neck snap, coming up on your feet. A quick, vigorous arching of the back is necessary in all of these snaps, or springs, which makes the exercise valuable.

No. 4. Forearm Stand, a good exercise in preparation for the difficulties of hand stands, and one which helps greatly in developing the sense of balance in the inverted position. Can be used in combination with the head and hand stand, following, placing head on the floor and raising elbows.

No. 5. Hand and Head Stand. Another good balancing exercise, but also a particularly good position from which to do the head snap. This will require a quick and energetic arching of the back, at the same time pushing up smartly with the hands.

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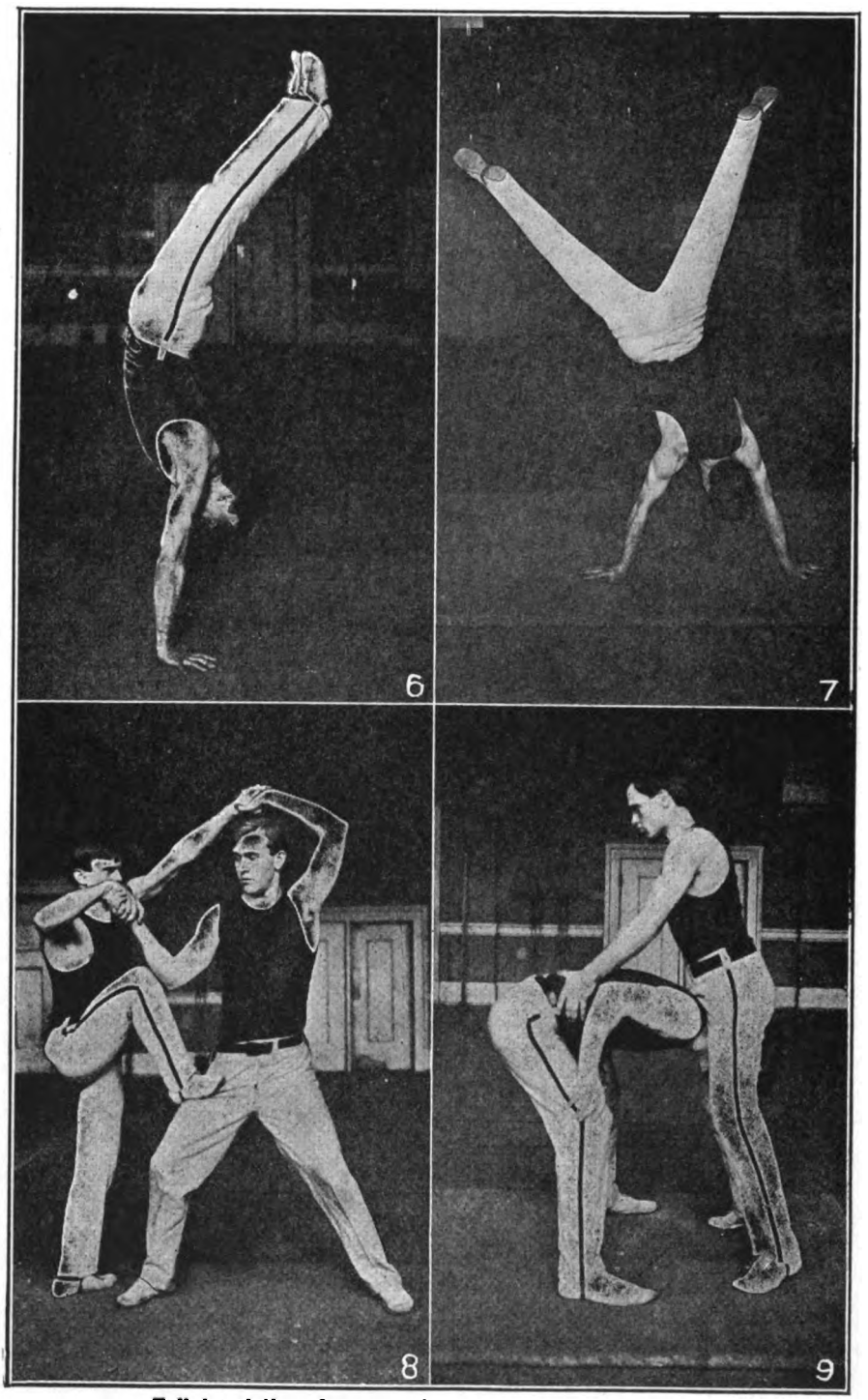

Full description of movements appears on opposite page.

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TUMBLING—*Continued.*

No. 6. (*a*) Hand Stand on Floor. The best way to learn the sense of balance in this is to do it a couple of feet from a wall, so that if feet tip over too far you may correct the position readily. Hands and wrists are important in this. Walking on hands should be practiced.

(*b*) Hand-Spring. (Not illustrated.) Attempts to learn the hand-spring should first be made over some heavy padding or cushion. It should be learned early because it embodies so perfectly the principle of the flip or snap of the body in all snaps and flips. A slight run may be used at first, but not depended upon. After reaching the hand stand position in No. 6, the legs should be kicked over smartly and the back arched, following which instantaneously the upper body should be vigorously flexed forward, bringing about the upright position. This quick bending of the upper body at the right time is indispensable. The momentum of a run may carry one over on his back but cannot raise him up on his feet. This requires the "flip." It may help to bend the arms at elbows very slightly, pushing off with the arm when the "spring" is made, but this is not essential. When mastered, one can do a hand-spring just as well on one hand, with arm rigid. This should be mastered before attempting somersaults.

No. 7. Cart Wheel, a comparatively simple and easy exercise, but one with which the pupil should nevertheless take the greatest of pains to do correctly. Usually it is slighted and slurred over because it is easy. It should be learned turning to both right and left. It is a sideways movement, bending down to the right side, placing right hand on floor, following with left hand and the lifting of the feet, the left leg swinging over first and then followed by the right. After learning to do a single cart wheel well, practice on a series.

No. 8. Two High Mount, mounting on shoulders of under man. The latter has legs well apart and braced. With right hand in other's right, left in left, upper man steps with right foot upon other's right thigh, then steps over on left shoulder with left foot, right foot on right shoulder, and balance. To stand erect, under man may put his now loosened hands back of calves of upper man for support and balance. From this position, with hands in hands as in mounting, a forward hand-spring may be executed.

No. 9. Hand-spring forward with the assistance of thrower. Upper man, astride back of neck of under man, places hands on latter's hips, or a bit above hips. When ready, under man lifts up, giving the other momentum as he turns hand-spring off the former's hips.

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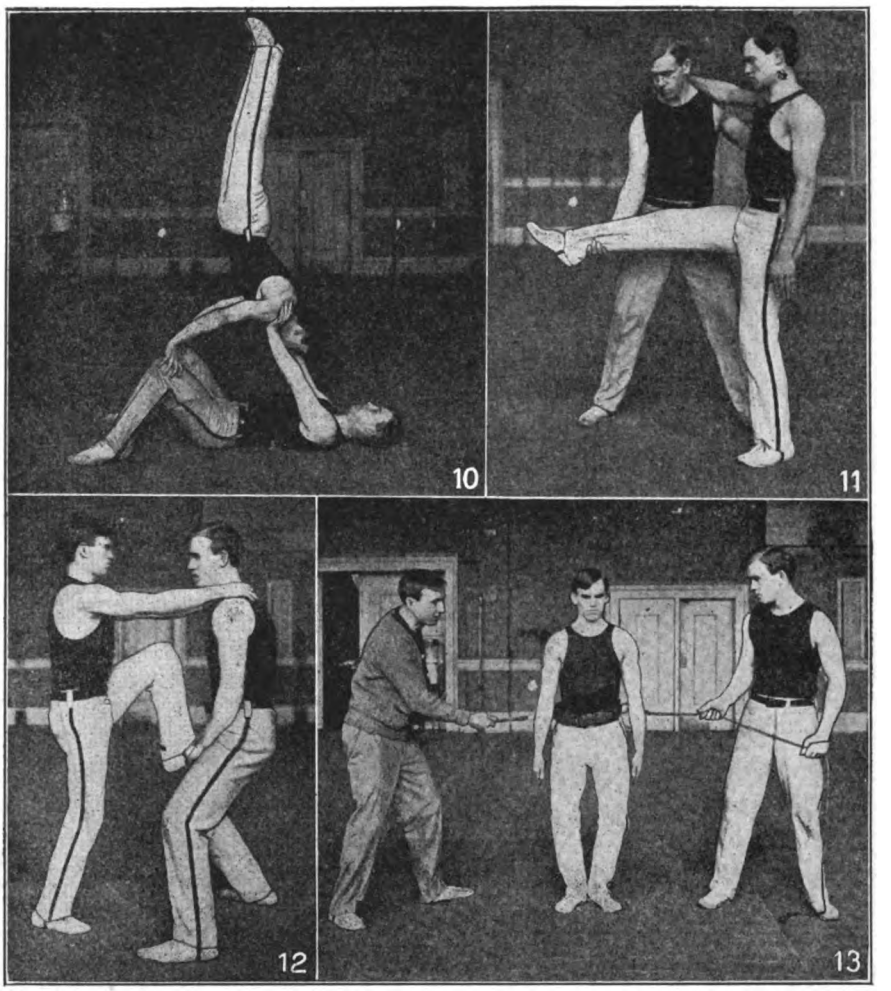

TUMBLING—*Continued.*

No. 10. Head and Shoulder Balance. As will be seen, this requires two persons, and while comparatively easy, yet produces a pretty effect. The under man lies on his back with legs flexed at right angles at the knees, feet on the floor and as wide apart as the width of the shoulders. The upper man, approaching him from the foot, places his hands on the other's knees, leaning forward until his shoulders may rest against or upon the other's hands. Then raising his feet from the floor he comes up to a shoulder stand.

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TUMBLING—*Continued.*

No. 11. Somersault backward, with assistance. With right leg extended horizontally in front, right arm is placed over and back of assistant's arm, so that there may be no interference. Assistant places right hand under heel or calf of the other's right leg, left hand upon his back. At the count of three, the somersault is executed, the assistant lifting hard on the right leg and helping to throw the other around to his feet, the latter jumping well up in the air with the other leg.

No. 12. Another form of backward somersault with assistance, this being probably more effective and satisfactory than that shown in No. 11. The assistant, with legs well apart and braced, knees somewhat bent in readiness for a lift, clasps fingers together tightly making a step upon which the other places one foot, in the manner shown in illustration. The latter also places hands upon assistant's shoulders, to press down and thus help in the lift. At the count of three the assistant lifts up powerfully and the somersault is executed.

No. 13. Somersaults backward and forward executed with the aid of the lunge strap and assistants. This is the most satisfactory way of learning a backward somersault, and should be practiced before attempting those shown in No. 11 and No. 12. A belt is worn with stout straps or ropes attached to each side and held by assistants, thus making a dangerous fall impossible. Secure and confident, therefore, the pupil is ready to master the details of the somersault. In the first place he should get a good lift, or jump upward, swinging the head and arms vigorously far backward. Instantly following this impetus he must energetically flex the body at the hips and stomach, drawing his thighs up and doubling up his knees, this serving to bring his feet up and over, and, this being accomplished, he must straighten out again so as to alight properly upon his feet. There is just one little rule to follow that will simplify the somersault and make it comparatively easy, and that is, after the first backward impetus, to grab hold of the lower legs, just below the knees, with the hands for an instant, and then to let go and straighten out. This grabbing hold just below the knees will make sure that you accomplish the necessary doubling up to get the feet up and over, and so long as you do this you can scarcely expect to have any trouble. But remember to let go again instantly. When you have good form, and can turn somersaults with your eyes shut, this snatching hold of the knees may not be necessary, but the beginner should not attempt to learn without it. If one is a good swimmer, he will do well to practice his back somersaults into the water, from a beam or other support scarcely above the level of the water.

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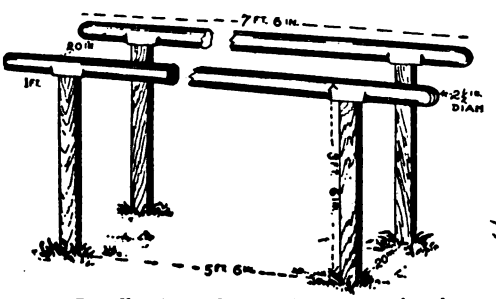
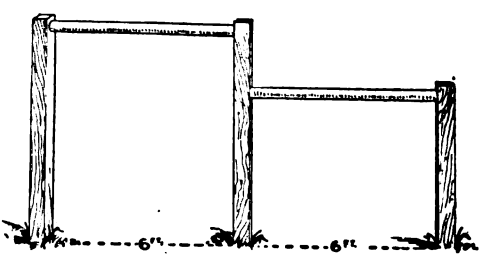
APPARATUS AT HOME.—There are hundreds of thousands of young men who live in the country or in small towns who are interested in gymnastic exercises and apparatus work, but who naturally have no gymnasium within their reach. The purchase of apparatus for the home is a very expensive proposition for the private individual, indeed, so much so that it is practically an impossibility in the majority of cases. However, it is a simple matter to construct some home-made apparatus which will answer the purpose equally well, and at little expense. Furthermore, if there is a convenient space in the yard or orchard, it is ever so much better to have this apparatus outdoors, and in this way enjoy an advantage which is impossible for one who attends a gymnasium in the city. I am offering a few simple suggestions along this line.



Parallel bars for outdoor use, showing dimensions.



Outdoor horizontal bars.

Parallel bars can be made in the following manner: If you intend to use them in the open air, four posts should be fixed in the ground perpendicularly, on the inside 18 or 20 inches apart at the ends, and about 5 feet 6 inches apart lengthwise. The posts should be about 3 feet 6 inches above the ground and made preferably of fir poles. Be careful to select bars that are free from knots. The bars should extend about a foot beyond the posts at each end, and you should therefore cut the two bars 7 feet 6 inches long. They should not be perfectly round but slightly flattened on both sides and about 2½ inches at their smallest diameter. There should be a shoulder on those parts of the bars which rest on the posts to give additional strength to the bars. The ends should be slight-

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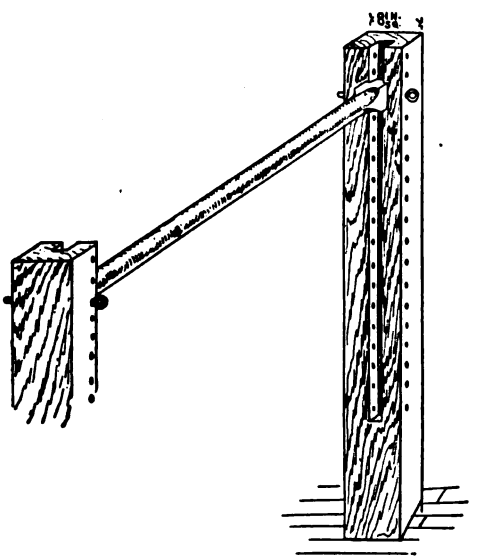
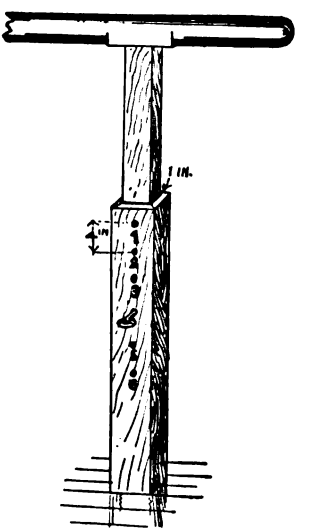
ly rounded to fit the hollows of the hand. If the parallels are to be erected in a building, the posts can be made in a manner to allow the bars to be lifted higher, if required, according to the height that may be desired by the performer. If you wish to increase the height in this manner, a case should be made for each post to allow a two-inch square pillar to slide up and down therein. The case could be made of wood about an inch in thickness, according to the strength of the wood used. Holes must be bored through both pillar and post, into which an iron pin is placed to keep the bar at the required height.

To make a horizontal bar for outdoor use, you should secure three posts which can be fixed in the ground, one lower than the other two. The posts should be about six feet apart, the bar to be fixed to each as shown in the illustration. The bar, if made of wood, should be about one-fourth of an inch more in diameter than the parallel bars. If iron bars be used, of course, they can be much smaller though a wooden bar is best. In making horizontal bars for indoor use, two posts about 8 inches square can be fixed tight in the floor. A groove about 6 feet long should be cut through each post to about 18 or 20



Indoor horizontal bar, showing how it should be made to be adjustable in height.



Showing one of the supports of indoor parallel bars, indicating how they can be made adjustable.

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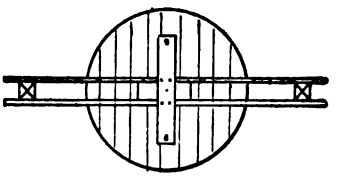
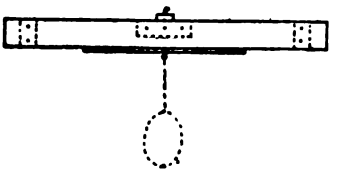


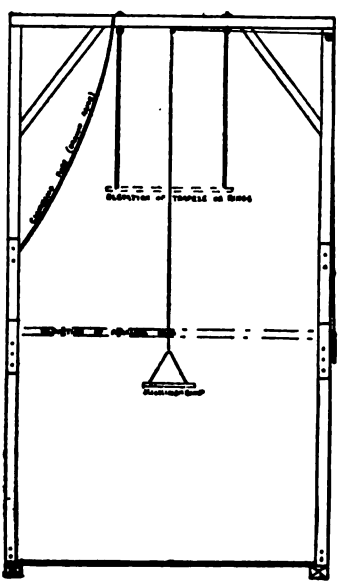
Top and front view of punching bag platform.



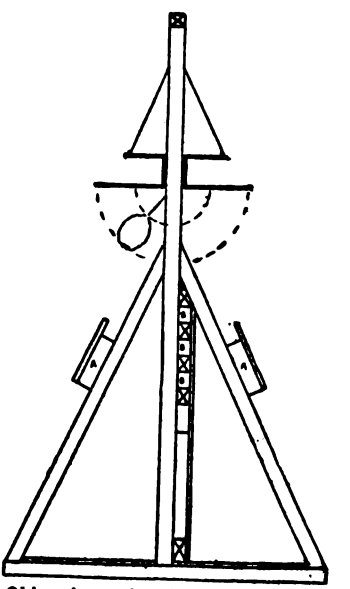
Side view of punching bag platform.

inches from the floor. About 14 or 16 holes should be bored through the posts within the length of the groove for an iron pin to pass through. The object of this iron pin is to place the bar at a proper height. A glance at the illustration will give one a much clearer idea than can be secured from my description. The bar can be the same size as required for outdoor use, but should have a small shoulder at each end to rest firmly against each post. As will be noted, the bar can then be lifted to any height required.

Following is an ingenious plan for what may be termed a "Combination Gymnasium," suited to one having limited space at his disposal, and including several forms of apparatus in the one structure. The suggestion and plans were given me by



Front view.



Side view, showing bag platform in position. A, cleats for parallel bars. B, holes for horizontal bar.

A complete and inexpensive open-air "gym."

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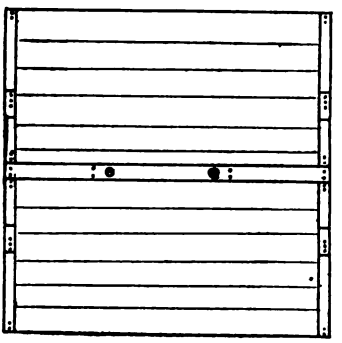

Showing floor plan, view from above.

Mr. J. W. Seaver, and I am giving his description of it in his own words:

"There being no gymnasium within reach, I resolved to build something to meet my needs, which resulted in what I now call 'my complete open-air gym.' The material used was about 100 feet of 2x3 scantling and 60 feet of common one-inch thick boards, which cost very little. I erected what resembles a frame commonly used for swings in our public parks; except that under one brace, which is rather higher than common, is arranged space for a horizontal bar, adjustable to three heights; and on the outside of braces are cleats in which my parallel bars rest. Thus in one piece of apparatus costing a trifle of money I have trapeze, swinging rings, horizontal bar, parallel bars, kicking ring (adjustable), climbing rope, and the children have a swing.

"As an afterthought, I made a platform for a punching bag, which can be removed when not in use. All this apparatus is adjustable to any height, except the parallel bars; in fact, is used daily by my wife as well as myself. A glance at the drawings shown in the article will enable anyone to construct a similar piece of apparatus. The frame is put together with log screws, the ropes for trapeze have loops spliced in lower end to fit over trapeze or rings, holding same securely. The high kick is arranged with weight and a scale is marked on outside of upright. For bars I used 2x3 oak planed down, except at ends, to fit hands. The circle for bag was made of three-quarter-inch smooth boards firmly nailed to two one-inch boards six inches wide which fitted the uprights and is raised or lowered by cord used for high kick. This platform complete weighs about forty pounds and can easily be removed when not in use.

"After several months' constant use the apparatus gives as perfect satisfaction as the first day on which it was erected."

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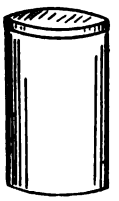
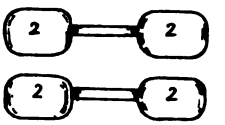


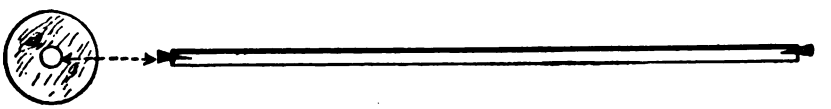
Procure two large tin cans

To make dumb-bells, procure two large tin cans, and cut out bottom. Next make four circular pieces of wood large enough to be placed firmly in the can at either end. Into the center of each of these cut a hole as shown in illustration. Procure also a hardwood bar the length of the ordinary dumb-bell.

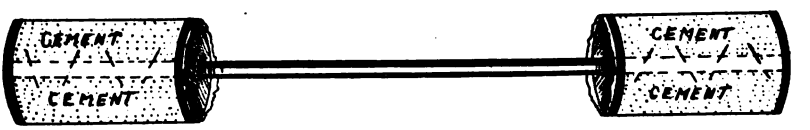


Finished dumb-bells after cans have been removed and edges rounded by file.

Now procure some cement. Mix one part cement with two parts of sand. Add water until soft, but retaining a degree of firmness. Fill cans with this cement, covering top and bottom with the circle pieces of wood. Insert wooden rod. Run in wedge at the ends of cans to keep piece of wood in place. Before rod is placed in cans it would be well to run several nails into it. This will make it hold firmer in the cement, and it will not be apt to slide out after the cement is dry. The second dumb-

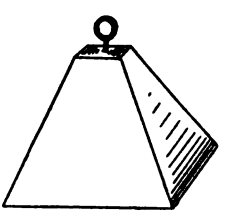


Make four circular pieces of wood. Cut hole in center of each. Procure hard wood bar the length of the ordinary dumb-bell.



Cans filled with cement and with bar attached.

bell is made in the same fashion. Let entire apparatus stand for about four or five days, or until cement is perfectly dry. Then pieces of wood and tin can be removed leaving you the dumb-bells made of cement. They can be smoothed off with a file and made to appear as shown in illustration. A coat of good paint would also help to improve the appearance of the dumb-bells.



A lifting weight made in the same manner as dumb-bells.

A lifting weight can be made in the same manner. The directions are so simple that the illustration showing one made of cement will give anyone a clear idea how to make it.

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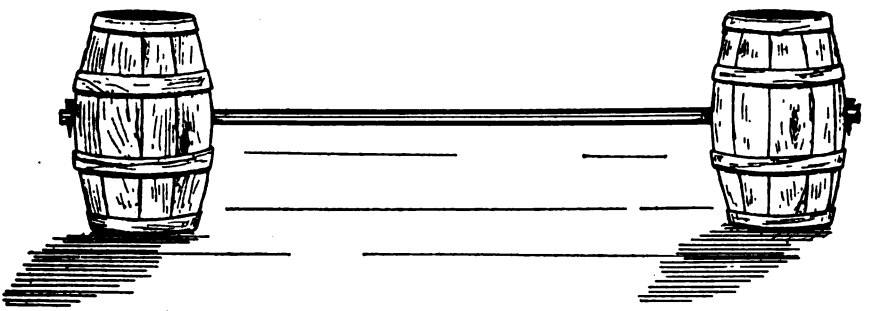
A bar-bell may be made by using larger cans or pieces of stove pipe of any length required, according to the size and weight desired. One should not attempt to use a bar-bell without a careful study of the instructions for weight-lifting given in another chapter.

Showing small bar-bell in completed form.



Showing another simple method of making a bar-bell, using a couple of very small kegs. These may be filled with sand or any other material, the weight increased or decreased as desired. Using sand bags of known weight will be convenient for this purpose.

FLATIRONS.—The old-fashioned flatiron may often be used advantageously as a form of gymnastic apparatus. The work of ironing may itself be regarded as an exercise, but it is not ideal for this purpose on account of its stiffening tendencies and lack of action. A pair of flatirons may be used in the same manner that one uses a pair of dumb-bells, however, and in many cases they will be found more effective in executing the same movements. I would especially recommend their use in this way if one is desirous of strengthening the hands, wrist, forearm and grip generally.

FLEXING EXERCISES.—See *Tensing Exercises.*

MEDICINE BALL.—The medicine ball is a large, soft ball, covered with leather and packed with any suitable padding, not unlike a substantial but perfectly round pillow, from a foot to a foot and a half in diameter, and weighing eight, ten or twelve pounds, and sometimes more. The purpose of the ball is simply to throw and to catch, there being no special organized game. The ball is heavy enough to afford splendid exercise in the mere throwing and catching, with either one

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arm or both arms, and this throwing and catching is interesting enough to make it attractive. The curious name given it is not due to any "medicine" contained in the ball or associated with it in any way, but to the fact of its early recognition as a means of promoting health and strength. In that day, the word "medicine" was associated with the idea of improving health.

By various methods of throwing, nearly all parts of the body may be exercised in the use of the medicine ball, first throwing underhand, overhand, and sideways with each separate hand, throwing by a straight pushout from chest, with both hands from between the legs, both hands from behind the head and backward, both over head and between the legs. It is altogether a very satisfying form of exercise. A bag of beans will answer just about as well for the purpose, if one does not wish to spend the money necessary for a well made medicine ball.

MENTAL REQUIREMENTS OF EXERCISE.—See *Concentration.*

MIDDLE AGE AND EXERCISE.—See *Old Age and Exercise.*

MUSCLE BINDING.—Those who are enthusiastic upon the subject of physical culture are not infrequently favored with a warning that they are likely to become "muscle-bound," this coming usually from dyspeptic-looking persons who do not know the meaning of the term. Somewhere they have heard the phrase, and guessing that it describes a condition to be disapproved of, do not hesitate to cry it aloud at every opportunity. In some cases they gather a vague idea that it means such an excess of muscle that one is unable to move the various parts of the body.

However, one need have no fear of any such difficulty if his methods of training are at all rational, and it may be said just at the outset that no mere bulk of muscle will interfere with one's most free and easy movement of every part, provided it is properly developed. It is only the improper and restricted use of the muscles, and not the amount of development, that can cause a "muscle-bound" condition. The term has reference to a shortening of the muscles which makes im-

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possible complete extension and flexing of the members concerned. This condition is the result of exercises which call for greatly restricted movements, rather than the fullest possible extensions and flexions. It does not matter how heavy or massive one's muscular development, he will not be muscle-bound if he has faithfully followed this necessity for complete movements through all of his training.

Old-fashioned weight lifters have taught us to guard against muscle-binding by their example. Their work with the weights involved great stress upon the muscles, and while they developed the necessary bulk and power, they did not move the weights any further than necessary. Their muscles were shortened accordingly, and people began to offer a supposed argument against physical culture because it made people muscle-bound. However, it was only the mistaken method, for even weight lifting may be practiced so that it will not have this result, as will be seen in another place. There is no cause for alarm on this point.

Old Age and Exercise.—There are many who fancy that while exercise is of benefit to young people, yet it is not suitable for those in advanced years. This is the greatest mistake, for it is the lack of exercise in most cases which is the cause of that physical decrepitude which is so commonly associated with age. Activity is the law of life, and this is no less true in age than in youth, though there are some modifications to be made in the manner of exercise. Just so soon as one settles down to "be old," or in other words, to stagnate, mentally or physically, just so soon do his powers atrophy and decline, and it does not matter whether the process starts in at the age of forty or eighty. The only way to retain youth up to the last is to maintain the healthful conditions and activities of youth.

We should remember that old age is a matter of physical condition rather than of years, and we often meet people who are as young at seventy or eighty years as others are at half that age.

Speaking briefly, age means a loss of elasticity, especially in the cartilages and in the walls of the blood vessels. A great

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deal is said about the hardening of the arteries, but this is a matter which may be largely controlled by the diet, the exercise and other matters affecting the health and nutrition of the body. Since we know that circulation depends upon this elasticity of the blood vessels, next to the essential pumping of the heart, the importance of keeping the arteries in good condition, and for the sake of this, the general health, will be obvious.

Nearly all ordinary exercises suitable for all-around development can be practiced with benefit by those who are passing through their advanced years, except that in some cases they would better be performed more slowly. Owing to the gradual loss of elasticity in the arteries, it is not wise for those who are very old to attempt violent or very rapid exercises. As a rule, those which call for less speed or activity but more endurance are well suited. The requirements of children are just the opposite, for they can profit by lively games with only moderate demands upon their endurance. There are many cases in which old men have shown themselves capable of better endurance records in old age than in youth, outside of the more strenuous pastimes. Walking is an ideal exercise for the old.

As for those in middle age, little needs to be said except that they should really be included in the classification of young people. In a healthy condition, the man or woman of middle age should really look forward to one or two score years of youthful activity and strength before entering upon any decline in vigor or health, and even then should endeavor so far as possible to continue with the conditions and activities of youth. If unaccustomed to physical exercise, the man of middle age will find himself rather awkward and stiff, but if he will take up faithful and persistent physical training he will find that all of this will disappear in a few months and he will again enjoy the activity and strength of his early maturity. He may take the regular exercises suitable for young people, with any variations that may be necessary for his individual peculiarities.

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RELAXING EXERCISES.—In previous chapters I have referred to the necessity for complete relaxation as a means of securing perfect sleep. The possibility and the practice of relaxation outside of sleep, however, are elements of health-building which should be emphasized. There are thousands of people who go about in their waking hours in a state of nervous tension and who even sleep with their hands tightly gripping the bed clothes as though something desperate would happen if they let go of themselves. This condition of tenseness involves a terrible waste of energy, and in some cases, if not overcome, is alone sufficient to prevent any material gain in strength and vitality.

Standing without tenseness, raise one arm at a time to the level of the head, and after a moment relax the muscles, letting it drop loose and limp to the side, where it should swing once or twice if it is properly relaxed.

The power to relax will give one greater efficiency and power in any endeavor or occupation, not merely because of the saving of energy that would otherwise be wasted, but because of the better control which one may thereby enjoy both over himself and the external affairs with which he has to deal. Well-seasoned athletes know and appreciate this keenly. It is an indispensable feature of good boxing, for in a contest one cannot afford to squander his strength through unnecessary tenseness or to have his muscles so tied up in this way that he cannot act instantaneously when an opening presents

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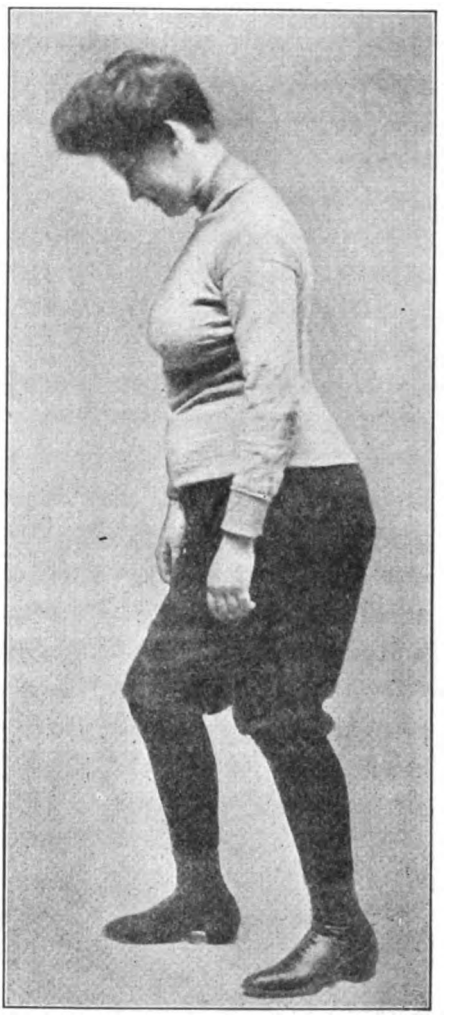
itself. If it is necessary for him to relax his stiffened and contracted muscles and then to contract them again in order to strike, he will be too late. The boxer who has not yet learned the lesson of relaxation is hopelessly handicapped.

And it is so in other matters, not merely in athletics, but in every phase of life. If you have the least tendency towards nervousness or excitability, or if you have not yet acquired the power to relax each and every part of the body absolutely at will, then you should immediately set about the study and practice of relaxation until you have secured such control over yourself. If it means nothing to you just now, there may come a time before long when it will mean everything to you. And it will help you to get control of your body from the standpoint of contracting the muscles and exerting your strength as well. Before long you will be able to relax utterly without the assistance of the special movements that I have suggested.



Walk slowly and carelessly across the floor with the entire upper body relaxed, somewhat after the manner of one relaxed through intoxication. The head should droop even more than in this illustration, or until the chin rests upon chest.

It is true that this tenseness arises primarily from a mental or nervous condition, and if one can only bring about a relaxation of the mind and nerves, the rest of the body will relax as well. However, the mind is so much accustomed to acting

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through the body that by thinking in terms of relaxed muscles, as it were, and by special movements which assist in this relaxation of the muscles, one is able to bring about the desired relaxation of the mind. It is for this purpose that I offer suggestions on relaxation elsewhere in this work.

It may help to point out that a heavily intoxicated man is a good picture of muscular relaxation, involuntary and undesirable as it may be. Some forms of partial paralysis, involving a similar relaxation of the body, present a spectacle so similar that police officers are usually coached carefully in order that they may distinguish the difference. I mention this because it will help you to relax the body if you will imitate the manner and the appearance of a drunken man, simply letting every part of the body hang limp and seemingly lifeless.

Of course, if you relax utterly you will even cease to stand, just as does the man completely drunk when he collapses on the sidewalk. It would be well to practice this frequently when you are not nervous and have no need of it, in order that you may the better be able to do it when you have real occasion. It may all seem very undignified and silly, and you may feel that you are placing yourself on a par with a circus comedian, but it will prove an effective means of getting away from your tenseness.

Bending forward, let one arm at a time hang down loosely, swinging as though absolutely lifeless. All stiffness and tenseness must be avoided. It should be perfectly limp and relaxed. Alternate with each arm.

The other suggestions for raising the arms and legs one at a time and letting drop loosely will be equally as valuable for relieving nervousness in the daytime as for wooing the absolute

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relaxation of perfect sleep. In the case of the arms you should raise one slowly to the level of the shoulders, hold it there a moment, and then "let go," permitting it to drop limply and without life. If you really do this successfully the arm will probably swing loosely back and forth two or three times, without restraint or guidance, apparently without life. It has not been deemed necessary to illustrate these relaxation movements because they can be made just as clear by this brief description. Each leg, raised nearly to the level of the hip, will show a similar tendency to swing lifelessly at the side after both the control and the contraction of the muscles have ceased. Another fairly good movement for the purpose consists in holding the hands out in front and then shaking them limply and loosely, letting them flop or fly freely up and down from the wrist.

Possibly these movements in an erect position may not be so easy or satisfactory as exercises in a reclining attitude, in which one may dispense with even the moderate muscular contraction required for standing, relaxing utterly. Lying on the back, on a bed, one leg may be raised to an angle of forty-five to sixty degrees, and then allowed to drop freely, with a sense of weariness and of relaxing the entire body simultaneously. If it is properly limp it may bounce a bit once or twice. The same may be done with both legs at a time, and with the arms. Often it is well also to raise head and shoulders two or three inches, then dropping

Bending far forward from the hips, let the arms swing loosely and the entire upper body hang limp and relaxed. After standing a few moments in this position, shake the fingers loosely and then stand erect.

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back with a sense of utter abandon. It is often a good plan, lying or sitting down, to try to imagine that your body is as light as a feather, and that you are floating in the air.

RESISTANCE EXERCISES.—In the broader sense of the term, practically all exercises are "resistance" exercises, with the possible exception of some of the very lighter forms of calisthenics. Most exercises depend for their effectiveness upon offering some form of resistance to the action of the muscles concerned, whether this resistance consist of external weights, elastic cords, wire springs, or the weight of the body itself. The greater the resistance, the greater the effort to overcome it and the greater the muscular power developed thereby.

But more specifically, the term, "resistance exercises," may be applied to a form of exercise in which the muscles of one part of the body offer resistance to those of another part. They may be recommended because of their convenience in not requiring any apparatus, and because they offer a means of developing a truly powerful degree of strength.

In a sense, the so-called *tensing exercises,* discussed and described elsewhere, are a form of resisting exercise, but the word, "tensing," is so descriptive and fits them so well that they may be best distinguished in that way. These *resisting* exercises have to do with movements, made as full and complete as possible, whereas the tensing exercises are commonly executed with little or no motion, simply producing muscular rigidity of the part of the body affected. In these resisting exercises there is less opportunity for any undesirable interference with the circulation, for the reason that the one muscle or set of muscles is usually opposed by others in a remote part of the body, rather than by other neighboring muscles which would make the entire part hard and stiff. (See *Tensing.*)

I am offering only a few suggestions in the way of resisting exercises here, as illustrating the general scheme by which the student can devise exercises that will develop every part of the body, powerfully if he chooses, but at any rate symmetrically and perfectly. Every one should have a good working knowledge of muscular anatomy, and with this knowledge he should

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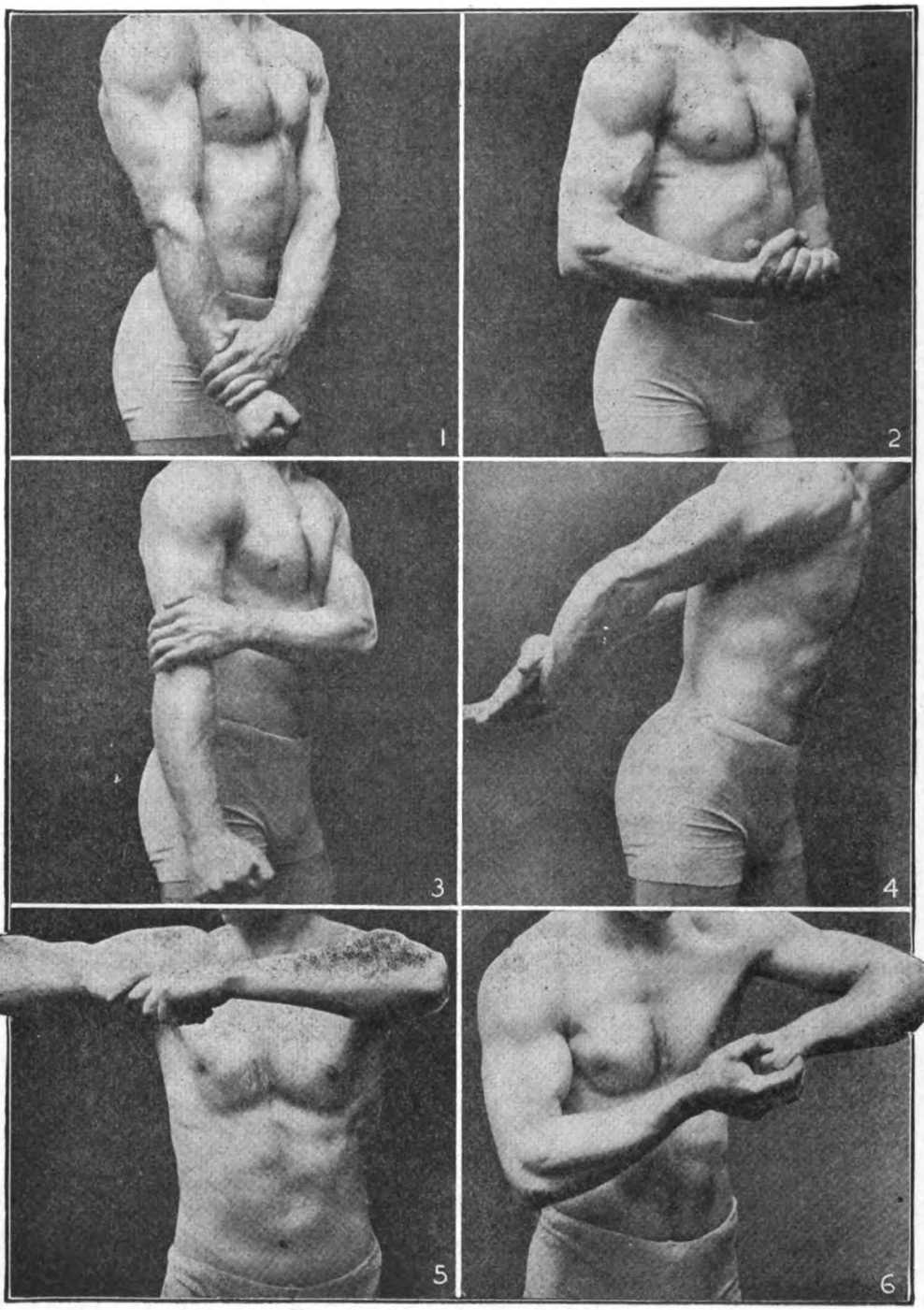

Examples of Resisting Exercises.

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EXAMPLES OF RESISTING EXERCISES.

No. 1. For biceps, flexing muscles of arm: Place left hand over right wrist in position illustrated, then, with right elbow stationary at side, flex right arm until right hand is brought up to shoulder, resisting the movement with left arm. Alternate with other arm.

No. 2. For extensor muscles of arm: With hands placed as shown, and starting first from position in front of neck or upper chest, gradually and forcibly press down with the left arm, resisting with right, until straight and down in front of body. Alternate with other arm, hands reversed. It is to be noted that there is nearly but not quite as much exercise for the resisting muscles as for those active in directing the movement.

No. 3. For lateral deltoid muscles: Placing left hand outside of right elbow, raise the right arm outward and upward to the side, resisting with the left arm. Alternate on the left side with left arm.

No. 4. Crossing hands behind the back, press backward and outward with one hand while resisting with the other. Alternate by reversing hands. For shoulder muscles and deltoids, also pectoralis.

No. 5. Clasping or hooking hands, and starting from position in front of right shoulder, pull with left arm and resist with right, pulling hands over to position in front of left shoulder. Then reverse. For shoulder muscles.

No. 6. Placing fist of one hand in palm of the other, as illustrated, and starting from position in front of left shoulder, push left hand across front of chest, resisting with right hand. Reverse the movement, alternating. For pectoralis (upper chest) muscles.

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be able to invent or arrange whole systems of exercise for all parts of the body, along the lines of any method or scheme of training suggested. The application of this principle of resistance is especially valuable in strengthening the fingers, the wrists, the neck and any parts not well provided for in the ordinary systems of all-around exercise.

It is important to remember the necessity, in all such exercises, of carrying each movement as far as possible in both directions, both in the flexion and extension of the active member. In extending the right arm, for instance, against the resistance of the left arm, the movement should begin with the right arm flexed as tightly as possible, and continued until it is extended to its limit, or absolutely straight. Naturally, the greatest power in this case will be exerted through the extensor muscles of the right arm, otherwise there would be no movement. These may be termed the *active* muscles in this instance, and the biceps of the left arm regarded as the *resisting* muscle.

As in other forms of exercise, due attention should be paid to the essentials of relaxation, the use of all parts of the body daily and other requirements. A most important factor here is the concentration of the mind, for without this the exercise would be nothing. The vigor of the exercise will naturally depend absolutely upon the degree or intensity of mental application.

SPEED.—To acquire quickness of movement requires only that one practice exercises or games calling for speed. It does not matter how much other healthful exercise one may take, it will not interfere with the development of speed provided one undergoes a little special training each day for the purpose. It has often been supposed that a heavy development of muscle means that one is slow, but this is not true. Some of the biggest and most powerful men are as quick as a cat in their movements, though it is also true that some of them are slow. It is partly a matter of special training for quickness, but probably even more a matter of build and development. The man with very heavy bones is not likely to have speed, unless he has a remarkable development. Many small men have speed

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because they are lightly built. Most large men are not sufficiently developed to possess a marked degree of speed. Perhaps I should say that it is a matter of the proportionate weight of bone and muscular energy. The man of small bones may be quick with a muscular structure apparently moderate in size, while the big man of fairly heavy bones may also have speed if he is powerful enough, from a muscular standpoint.

Continual slow and heavy work will make one slow, even though he may be strong as a Hercules. This is often true of weight lifters. But some weight lifters who persist in speed exercises and games enjoy a very fair degree of quickness with all their strength. Boxing, hand-ball, fencing, sprinting and other exercises calling for quickness of movement may be relied upon to develop speed.

Stiffness and Soreness after Exercise.—This is the result of suddenly taking a lot of exercise when one has been unaccustomed to do so, or, when accustomed to a certain amount of exercise each day, of taking an unusual lot of it all at once, or of taking exercises entirely different from those which one is used to, and thereby placing heavy demands upon muscles unused to them. The stiffness and lameness indicate that the muscle cells and fibers have not yet recuperated fully.

One who takes up systematic exercise after long inactivity may expect to experience a little trouble in this direction, but it is not serious and will pass away in two or three days, not to return except in similar circumstances. It is really better, however, to take only a little exercise at first and gradually to increase the amount so that there will be no inconvenience of this kind.

Massage is valuable as a means of relief, since it forces the venous blood out of the tissues, makes way for the fresh arterial blood, and thus powerfully accelerates the circulation locally, or wherever desired. Massage, however, is not always convenient, and the best common treatment is the application of hot water. This also will arouse a most active circulation and will accomplish wonders in overcoming both the stiffness and lameness. Hot water and rubbing combined is recommended.

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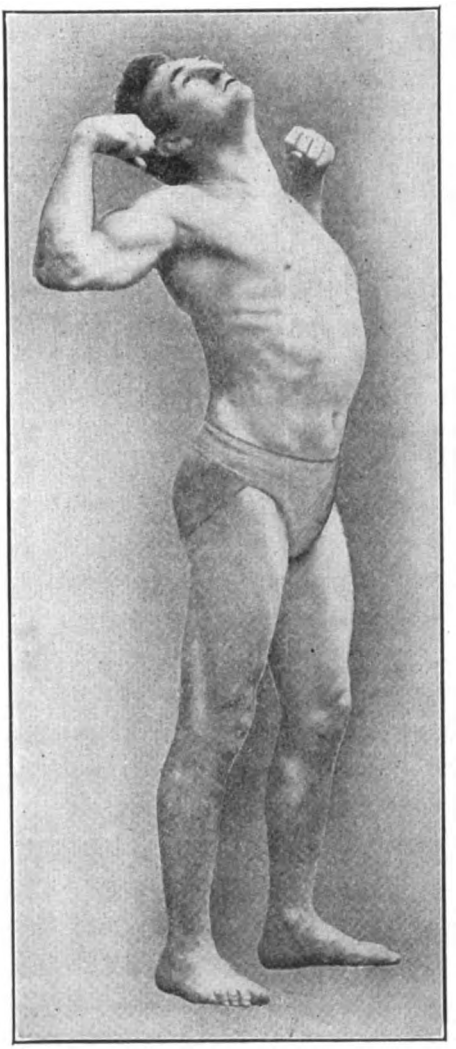
STRETCHING EXERCISES.—Stretching is a form of exercise practiced instinctively not only by mankind, but by most other animals, after a prolonged period of sleep or of inactivity. Outside of our own experience we are especially familiar with the stretching antics of cats and dogs. It seems to be Nature's impulsive way of trying to make up for too many hours of muscular idleness. But if a few moments of stretching is found to be gratifying and pleasurable, and is known to be of physiological benefit, we can accomplish much more good by extending the exercise into minutes, and consciously, thoroughly stretching every part of the body.



A natural stretching exercise, one which is often practiced instinctively and involuntarily. The stretching of some muscles involves the vigorous contraction of others, though in most stretching exercises this means the contraction of extensor muscles. In this case the stomach, chest and front neck muscles are stretched, the back muscles contracted.

The act of stretching is an involuntary and instinctive contraction of the extensor muscles of the various parts of the body, offering marked relief especially when the limbs or any parts have been flexed or cramped for some time. The very fact that the contraction is instinctive is sufficient to the constitutional value as well as the local benefit of the effort. I have just said that stretching is a contraction of the extensor muscles, but this stretching is often accompanied by a similarly instinctive contraction of many flexor muscles. For in-

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stance, after rising high on the toes, stretching with the large extensor muscles of the backs of the calves, one may stand on the heels and stretch the toes upward, flexing as far as possible. Or, after stretching the arms and finger tips out as far as possible, one may feel the impulse to clench the fists tightly and double the arms up above the shoulders, throwing the head back and pulling the elbows back as far as possible.

In every case, however, these stretching contractions are confined to either the extensor or flexor muscles at any one time, and are therefore to be distinguished from the so-called tensing or antagonistic exercises. In the tensing exercises there is not necessarily and not probably any complete extension or flexing of the part, while the extensor and flexor muscles contract at the same time, opposing each other and rendering the entire member rigid. In stretching, however, when the extensor muscles are contracted and the part extended to its possible limit, the flexor muscles are absolutely relaxed, and when the member is flexed to the utmost the extensor muscles are utterly relaxed. For this reason the use of stretching exercises can be recommended as infinitely superior to tensing methods, though the latter also are useful in some instances. In short, stretching fulfills the requirements of the ideal exercise in the way of alternating contraction and relaxation and in the completeness of the extension or flexion of the part, though lacking in the element of movement and in the use of the muscle through the full sweep of the various positions in which it acts. In straightening the arm, for instance, from a tightly flexed position, the triceps is brought into play continually from that position through all of the positions of the arm until it is fully extended. In stretching, the muscle is used vigorously only in the one position of the straightened arm.

Stretching, therefore, is not to be considered as a complete and adequate system of physical training in itself, but it is highly valuable for its physiological benefit and is to be recommended as supplementary or auxiliary to some other comprehensive method of exercise. For the most perfect condition

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and development of the muscles, there should be movement, and movement at that throughout the full scope of the action possibilities of the muscles.

The proper time for taking stretching exercises is the time when you will most enjoy them, or in other words, whenever you are led to stretch through instinctive promptings, whether this be upon awakening from sleep or at any time of the day after sitting still for too long. It is scarcely necessary to illustrate a system of stretching positions, for anyone can devise such a system at will. Simply start to stretch and then keep on, stretching in every direction and in various positions. First rising on the toes, stretch finger tips high above the head, then stretch arms out to the sides and backward, then far out in front, then downward, then bending down, and with legs apart, stretch arms backward far between the legs; stretch body and head far to each side, then far forward and far backward, flex arms at shoulders and bring head and shoulders far back; stretch the legs, one at a time, far forward, sideways and backward; flex them tightly at the knees and then the thighs vigorously against the abdomen; then, if no other variations suggest themselves, go through the entire list over again.

SWEDISH MOVEMENTS.—This is the name given to a system of passive exercises for remedial purposes which were originally devised and used in Sweden, but which now are used more or less in progressive medical circles all over the world. I have called them passive exercises for the reason that in most cases the various parts of the body are moved by an attendant or, in some instances, by a machine, instead of the movement being performed by the active effort of the individual himself. By means of these movements the circulation may be locally increased in one part of the body, or decreased, as desired, thus relieving congestion and promoting the welfare of the body generally. Combined with massage, they are very effective in many cases, though as a general thing I consider that suitable active exercises, performed by the patient himself, are more valuable. This, however, has to do with the curative aspects of exercise and will be taken up in a later volume.

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TENSING EXERCISES.—Tensing exercises consist of the voluntary contraction or "tensing" of the muscles of the body, without the use of apparatus or any form of external resistance, opposing muscles being used to counteract each other or to resist each other. They are sometimes called antagonistic exercises, and sometimes other fancy names. It is possible to execute them with a certain amount of movement, but usually they are executed without motion, and especially when equal force is exerted in the opposing muscles. In the case of the arm, for instance, the flexor muscles will be contracted in resistance to the extensor muscles, the result being a rigidity and hardening of the entire upper arm.

The principle of tensing as an exercise is employed very extensively among correspondence instructors in physical culture. It is well suited to a mail-order business of this kind because it gives the instructor an opportunity to advertise something different from ordinary gymnastics or exercises, something which is convenient, which can be made as vigorous or as mild as may suit any individual, and which permits of condensing a great deal of muscular effort into ten or fifteen minutes. Tensing exercises are used by a number of people at the present time.

Tensing has various advantages as a form of exercise, but has also certain drawbacks. The convenience of taking such exercise at any time, without removing the clothing, and even without being noticed when executing them in public, is well worth considering. At odd moments through the day, for instance when waiting for a train, while riding in a train or trolley, or even when walking along the street, one can voluntarily tense or "harden" the muscles of different parts of his body, thereby accelerating the circulation and building strength. Those who claim that they have no time for exercise may at least avail themselves of this method by putting it into practice when they are engaged in going or coming or in any occupation which does not require concentration of thought. The tensing of the muscles will require concentration.

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The possibility of making the exercise as mild or as vigorous as desired has just been alluded to, but while moderate effort in tensing may prove satisfactory to many who are not yet very strong, yet as a general thing I would recommend free movements and other forms of exercise in such cases, the tensing principle being better suited to those who already have some measure of real strength and development. There is no doubt that by the practice of tensing one can harden his body and make it very rugged and vigorous, even though it is not an ideal form of exercise for the most perfect results.

Tensing also helps to give one a certain voluntary control over his muscles, for he learns to harden or tense one part or another as his mind may direct. Athletes and theatrical strong men who do poses in public acquire great control in this direction, and find that the vigorous contraction of the muscles for the purpose of making them stand out conspicuously under the calcium light is really a strenuous exercise. The practice of such poses before a mirror, causing the muscles of first one part and then another to be outlined as sharply as possible, may be commended as a part of one's general scheme of training or development.

The first and most important thing to be kept in mind in connection with the practice of tensing is the necessity for very frequent and complete relaxation. The proper plan is alternate tension and relaxation and very short intervals. One should avoid the "tetanizing" tendencies of tensing the muscles too long at a time, for reasons given in my remarks about *Exercise and Its Essentials* in this chapter. Voluntary and complete relaxation in frequent alternation with powerful tensing will help to give that muscular control which I have just referred to.

However, the exclusive use of tensing as a means of exercise is not to be recommended. The lack of action is one objection, though this may be largely overcome by introducing motion into the exercise, or in other words, contracting one muscle or set of muscles more vigorously than the opposing

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muscle or muscles and thus allowing the former to move the affected member of the body slowly, against the less resistance of the other muscles. This is not perfect tensing, though it is better, but even then the movements are likely not to be so complete as they should be. Probably the greatest objection lies in the fact that in the very nature of the exercise the complementary muscles must necessarily oppose each other. Instead of getting control of each muscle individually, and training it to act independently, the muscles are trained to work against each other in a somewhat unnatural manner, to interfere with normal action.

The first and only purpose of muscle is motion. The ideal exercise is one which allows the muscle to fulfill this purpose without interference, moving either the body or some part of it, or some external object, and without any restriction except possibly the special resistance which it is intended to overcome in the course of the exercise. The purpose of the triceps, for instance, is not to interfere with the biceps, but merely to extend or straighten the arm. Under normal circumstances, when the triceps is called into action to extend the arm, the biceps is and should be utterly relaxed, and exercises which realize this condition are best. But after one has trained his muscles through a system of tensing only, his muscular control is likely to be so abnormal that when extending the arm his biceps also will contract, offering a large measure of resistance, and tending toward mere rigidity of the entire arm. When using certain muscles in the everyday affairs of life, he is likely to find himself hardening the complementary muscles and impeding his own actions, simply because he has so trained his muscles in his exercises. This more or less rigidity and hardness of the muscles seems to give one the sensation of strength and power, but it is somewhat misleading. If carried very far, this tensing exercise is inclined to make one slow, stiff and slightly muscle-bound.

Apart from this matter of imperfect control, there is the interference with the circulation which is involved in this

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simultaneous and rigid contraction of all of the muscles of a part. If, as in normal movement, one set of muscles is completely relaxed while the opposing muscles are employed, the circulation is unrestricted through a great part of that member or section of the body. But in tensing there is more than twice the necessity for frequent alternations of relaxation than in the ordinary effort. In some resistance exercises where muscles in remote parts of the body operate against each other, as where certain muscles of the arm resist certain muscles of the leg, or one arm works against the other, this objection does not apply. (See *Resistance Exercises.*)

The question of mental concentration in tensing exercises is such an essential feature that much is made of it by those who advocate them. But from the standpoint of the voluntary and individual control of the muscles, and also from the standpoint of strength building, the apparent mental effort is misleading. For instead of all of the power of the mind and nervous system being concentrated upon one muscle or set of muscles, as should be the case for strength-building, it is necessarily divided between the opposing muscles. Furthermore, in providing the resistance to one muscle by equally contracting another, one consumes just twice as much nerve-force as is necessary to accomplish a given result with either muscle. With those who are vital and strong, this may be no objection, but for those who have no nerve energy to waste it should be an important matter.

I have here spoken of the complementary muscles as "opposing" muscles, but this is rather an improper terminology, and one to which only the invention of tensing or antagonistic exercises has given rise. These muscles are not really *opposing* muscles, for Nature never intended them to oppose each other, or to interfere with each other. They are simply intended to move the various parts of the body in opposite directions, and should be only referred to as intended for this purpose.

The claim is sometimes made that by this method one can supply within his own body a degree of resistance equal to that experienced in the lifting of a heavy weight, but with less tax

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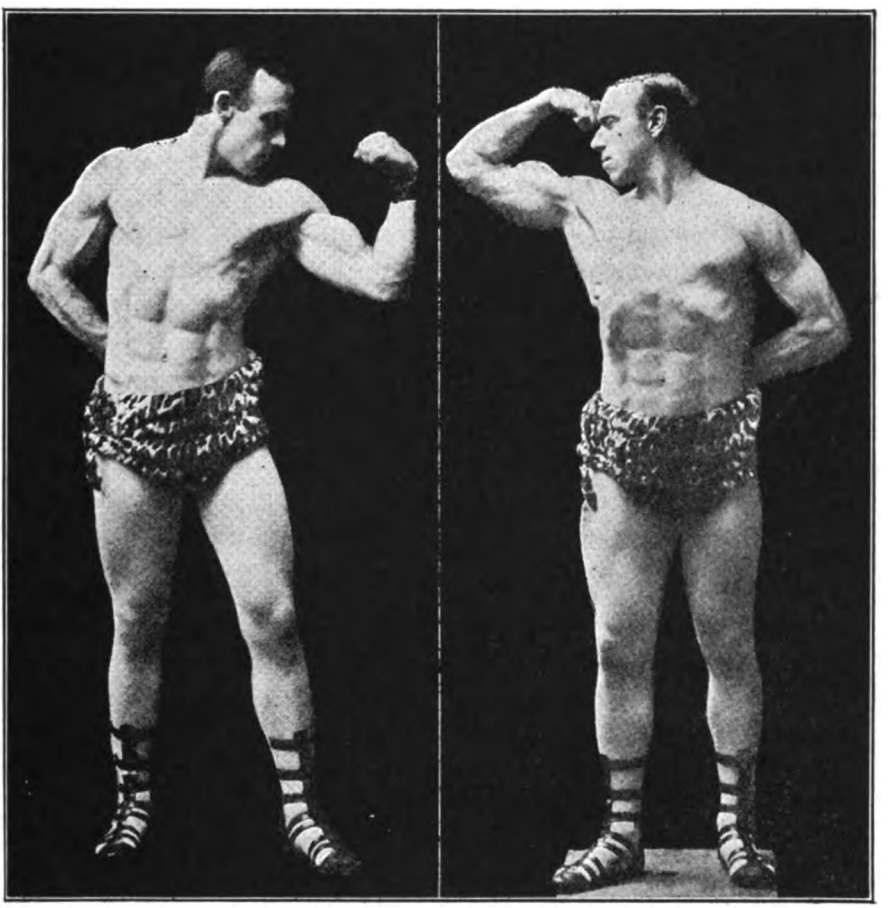
upon one's nervous energy and less strain upon the heart. This of course is not and cannot be true, for in the case of a like resistance there would be twice the tax upon the heart and nervous system in the tensing exercise. However, the less said about "strain upon the heart," the better, for it is an ambiguous phrase commonly used only for the purpose of frightening people to deter them from taking exercise, or in



Tensing poses by Albert Treloar, showing how exhibition poses may provide vigorous exercises. In these poses, not merely the arms are tensed, but the muscles of stomach and chest are sufficiently contracted to make them appear clearly outlined. In the first illustration the flexed wrist, at first turned outward, is gradually turned far inward, effectively showing a rolling movement of the biceps. In the second pose, the arm is flexed more completely, though not fully.

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the case of the "mail-order" specialist, to prevent the prospective customer from taking any other exercise than his own. As long as one remains within the limits of pleasure and a rational moderation in exercise, there is no chance of trouble from a supposedly weak heart. In the majority of cases there is no danger here even when going to extremes in exercise, but of course such extremes are not to be commended.

Finally, summing up generally the advantages and disadvantages of tensing exercises, they may be recommended to a certain extent or as a part of one's physical training. When time is limited they will answer very well, and they are very convenient for warming up quickly for a bath.

As to their practice, it is unnecessary here to give complete specifications for all parts of the body. Aside from the suggestions illustrated, the student may modify or adapt any number of other movements or positions of the body, in the free movement exercises given in this work, applying the principle of tensing to these various parts and positions of the body in such a way that the entire body is influenced. The back muscles will oppose those of the abdomen and the region of the stomach, the sides will antagonize each other, the upper chest muscles those back of the shoulders, various muscles of the neck will work against each other and the same with the arms and legs. Having first made a careful study of the anatomy of the muscular system, any student will be able to devise a complete and thorough system of tensing that will comprise every part of the body.

Though we are illustrating only two or three tensing exercises, to help make clear the method of executing them, yet I am giving a complete system for employing all parts of the body in the following series of exercises. It will be seen that in this list as much movement as possible has been combined with the principle of tensing, thereby giving them the greatest possible value in their actual practice. In other words, they may be called "Flexing and Tensing Exercises."

They are intended for individual or private practice, but are also so arranged as to be available in class work. The *gen-*

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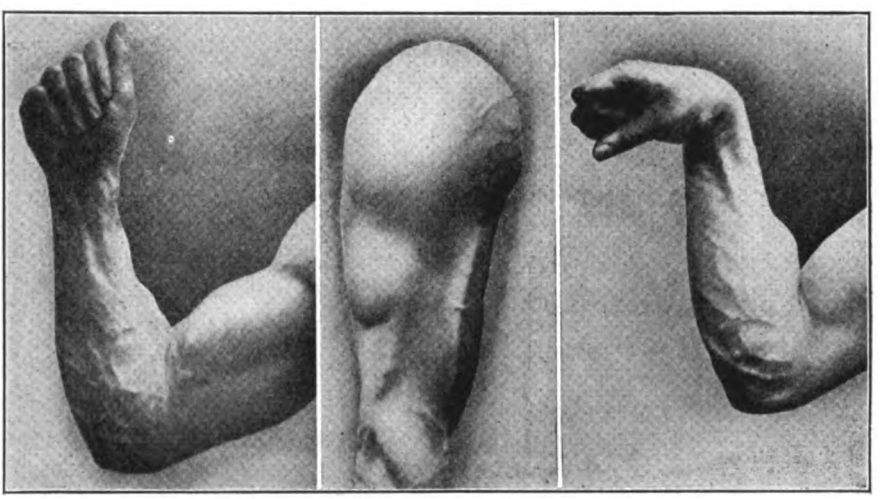
eral position for class work should be, *body erect, shoulders back, eyes straight to the front, chin in, arms hanging at sides.*

Exercise No. 1.—With elbows pressed hard against the sides of the body, slowly flex the arms, tensing the muscles of the upper arm vigorously, and tightly clenching the hands, thus compelling one set of muscle to resist the movement of another set. Count, 1-2-3-4.

Exercise No. 2.—Hold arms stretched out to the sides, repeat exercise of flexing arms as described above. Count, 1-2-3-4.

Exercise No. 3.—Clench hands tightly, with arms flexed, hands as near to shoulders as possible; then make several attempts to bring the hands still nearer to the shoulders without bending wrists. Count, 1-2.

Exercise No. 4.—With arms stretched down at sides, hands clenched, make several attempts to bring arms still farther down. Count, 1-2.



Three Examples of Tensing Exercises. In the first illustration arm is flexed at right angles, the entire arm tensed and hardened, and the flexor and extensor muscles contracted with equal vigor. While tensed in this way some movement may be introduced, flexing or extending the arm fully. Second illustration shows arm vigorously tensed but extended, the extensor muscles contracted with greater vigor. Third illustration shows a variation of the first, affecting muscles which turn the forearm. With wrist flexed inward, and all muscles tensed vigorously, turn hand outward to position illustrated.

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Exercise No. 5.—Turn the head slowly from far to the right to far to the left, flexing all the muscles of the neck, and making one muscle resist the action of the other. Count, 1-2-3-4.

Exercise No. 6.—Bring the head far forward and then far backward, tensing all the muscles, and making one muscle resist the action of the other. Count, 1-2-3-4.

Exercise No. 7.—Bring the head over to the right, until it very nearly touches the right shoulder, then slowly bring the head over to the left shoulder, resisting the movement with all the muscles. Count, 1-2-3-4.

Exercise No. 8.—With the head as far back as possible make several attempts to bring it still farther back. Count, 1-2.

Exercise No. 9.—With the head as far forward as possible make several attempts to bring it still farther forward. Count, 1-2.

Exercise No. 10.—With the head turned as far to the right as possible make several attempts to bring it still farther to the right. Same exercise to the left. Count, 1-2.

Exercise No. 11.—With the shoulders held downward and backward, tense the arms vigorously, and then bring them slowly forward nearly on a level with the shoulders, then backward as far as possible. Count, 1-2-3-4.

Exercise No. 12.—With shoulders held immovable backward and downward, bring arms outward to the side as high as you can. Count, 1-2-3-4.

Exercise No. 13.—With shoulders held downward and backward, bring arms on level with shoulders, then make several attempts to bring them still higher. The arms can be brought but little higher than the shoulders, if the shoulders are held immovable, downward and backward. Count, 1-2.

Exercise No. 14.—With the shoulders held downward and backward, bring arms forward as high as you can, and then make several attempts to bring them still higher. The same exercise with the arms held as far backward and upward as possible. Count, 1-2.

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Exercise No. 15.—With muscles of back and chest tightly tensed, slowly bring the shoulders far forward, then far backward. Count, 1-2-3-4.

Exercise No. 16.—Allow the shoulders to fall as far downward as possible, muscles tightly tensed; slowly bring the shoulders as high as you can. Count, 1-2-3-4.

Exercise No. 17.—Bring shoulders as far backward as you can, and then make several attempts to bring them still farther back. Same exercise with shoulders far forward. Count, 1-2.

Exercise No. 18.—Bring shoulders as far upward as you can, then make several attempts to bring them still farther up. Count, 1-2.

Exercise No. 19.—With shoulders hanging as far downward as possible, make several attempts to bring them still farther downward. Count, 1-2.

Exercise No. 20.—With the arms held far forward, elbows rigid, slowly bring arms across the body in front, right arm under the left arm. Same exercise with the left arm under the right arm. Alternate position of right and left arms. Count, 1-2-3-4.

Exercise No. 21.—Cross the arms as far as you can in front of body, elbows rigid, then try to force them still farther across. Same exercise with position reversed. Count, 1-2.

Exercise No. 22.—With arms held far out at sides on level with shoulders, elbows rigid, bring arms far backward, then far forward, touching the palms together. Count, 1-2-3-4.

Exercise No. 23.—With arms stretched far outward as in previous exercise, from far backward, try to bring arms still farther backward. Count, 1-2.

Exercise No. 24.—Cross arms directly in front of body on level with shoulders, right arm over the left; try to bring arms still farther over. Same exercise with position of arms reversed. Count, 1-2.

Exercise No. 25.—Slowly bend from far to the right to far to the left, tensing strongly the muscles of the waist and the back. Count, 1-2-3-4-5-6.

Exercise No. 26.—Slowly bend from far forward to far

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backward, keeping the muscles of the waist line strongly tensed. Count, 1-2-3-4.

Exercise No. 27.—Bring body far over to the right, then try to bring body still farther over. Same exercise to the left. Count, 1-2.

Exercise No. 28.—Bring body far forward, and then try to bring it still farther forward. Same exercise with body backward. Count, 1-2.

Exercise No. 29.—Slowly twist body from far to the right with hips immovable to far to the left. Same exercise with left side. Count, 1-2-3-4-5-6.

Exercise No. 30.—Twist body far to the right, and make several attempts to twist it still further. Same exercise to the left. Count, 1-2.

THEORY OF EXERCISE.—See *Exercise and Its Essentials.*

TIME FOR EXERCISE.—The time of day selected for one's exercise is a matter that should be determined according to the hour at which one seems to secure the greatest pleasure and benefit from it, though in many cases one must also be governed by the matter of convenience and the demands of his daily occupation. It may be stated in a general way that the time of day at which one will derive the greatest benefit from his exercises is the time at which he most enjoys them. If the necessities of his work conflict with his desire to take his exercises at a certain preferable hour, then he should modify his plans accordingly.

There are those who enjoy their exercises most in the evening, and who also find that they can execute them better, with less of stiffness, than in the morning. In such a case, I would recommend that the exercises be taken at that time. Perhaps the very best time of day in nearly all cases is the afternoon, but the usual working hours of all those employed in business or industrial circles makes this impossible. In the case of certain lines of business in which office hours are short, it frequently happens that it is possible to get one's daily exercise in the late afternoon, which I would especially commend, as a means of relieving the mental fatigue of the day's work,

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getting rid of the cobwebs in the mind, figuratively speaking, but literally getting rid of the fatigue-poisons in the brain and body.

But though many choose the evening, when they cannot devote a part of the afternoon to their exercises, yet probably a greater number will find greater satisfaction in taking their exercises the first hour of the morning, after arising, and one should really be capable of better results at this time because the energy of the body stored up during sleep has not yet been depleted by the day's work. The exercises taken at this time energize one, arouse every organ, tissue and cell in his body to vigorous life and activity, and prepare him to attack the labors of the day with exceptional vigor. At least, this should be the result in the average case, as well as with those who are unusually strong and vital. There are some cases of limited strength and reduced vitality where this plan would not work out so well. One who is not strong, but who is under the necessity of accomplishing a definite and extensive amount of work each day, must conserve his energy in a reasonable way. If he takes as much exercise as his powers will permit without harm, he may find that he has consumed so much of his energy that he will not be able to do justice to his work; he may find himself fatigued long before the day is over, and the ultimate result will be a decline instead of a gain in strength. In a case of limited strength it is often better to choose the evening for one's exercise, taking just enough in the morning to wake the vital and functional system and arouse an active, vigorous circulation.

Briefly, then, I would recommend the morning for one's exercise in most cases, or in other words, the average case, though this is not to be considered as a strict rule and no one should hesitate to select some other time of the day if there seems any reason for doing so.

There is one special and rather important suggestion which I wish to make in this connection, however, and which has to do with the daily long walk in the open air which I would advise in practically all cases. In my discussion of walking

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and also of constitutional exercise the reader will see the necessity of spending a certain part of each day in the open air and preferably devoting much or all of this time to walking. The regular muscular exercises for purposes of development and strength building are important enough in themselves, but one will secure infinitely better results in the building of vitality and constitutional vigor if he also takes this walk in the open air, or perhaps goes skating or golf playing, or indulges in some other open-air pastime which will accomplish substantially the same results as the walk. The present suggestion is that the special exercises and the walk should be taken at opposite ends of the day, so far as is convenient or possible. In short, if one goes through his systematic exercises in the morning, then he will best take his long walk in the afternoon or evening, whereas if he follows the practice of taking his special exercise in the afternoon or evening, then he should arrange to take his walk in the morning, preferably the first thing.

Naturally, what may suit one best may not best satisfy another. Each one should make a special and careful study of his own case, and may thereby settle for himself the question of the most satisfactory time of day, with the help of the suggestions which I am offering here.

WALKING.—From the standpoint of health-building, walking is unquestionably the one exercise which we could least of all afford to dispense with. ' No matter what one's occupation, and no matter what other exercises he may indulge in for the purpose of special development, he should always devote a certain part of each day to healthful outdoor walks. It is true that there are many other splendid health-giving activities, but the importance and value of walking in this connection are so great that I have sometimes said that no human being could be in the most perfect physical condition unless he or she did at least two hours of walking in every twenty-four, this, naturally, in addition to other exercises either of a special or recreative nature.

As a rule, if one walks a great deal, a proper position of

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the body will naturally be maintained, though it must be admitted that the average man is not enough of a pedestrian to make a correct method of walking a habit. There is a right way to walk just as there is a right way to do anything. Yet no matter how you walk, a certain amount of vigor will be secured from the exercise. But if you move in a slip-shod manner, if your movements are not harmonious, you will tire quickly, and will fail to secure the benefits that are easily within your reach by acquiring a proper gait and position of body. Even those who possess more than the average strength will become exhausted after walking a few miles, if they do not understand the secret of the proper method. In fact, an improper manner of walking will exhaust rather than increase the fund of vitality owned by the body.

It is only within the last decade that I have really learned how to walk. In order to do so one must acquire an easy gait, every movement must be rhythmic, and the position of the body must be such that you go forward with strides that are made almost without effort.

At one time I made a practice of taking walks of from fifteen to twenty miles in the morning before going to business, and the more I experimented, the more I became convinced that the exercise is one of an especially valuable nature. I have never been in more

Correct attitude while walking, showing forward incline of the body that should be assumed. The head in this illustration has been held a little too high.

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perfect physical condition than when taking such daily long tramps.

Even under the most disadvantageous circumstances, a short brisk walk is always beneficial; but a long walk that will take from three to five hours of steady rhythmic movements, considered as a means of rousing the functional system to increased activity, can hardly be improved upon. The vital organs—stomach, heart and lungs are all beneficially affected. All the depurating organs of the body are prompted to healthful action. The blood is cleansed of impurities, the eyes become clearer, the complexion is improved, the flesh firmer, and all parts of the body are augmented in strength and general hardiness.

Cases have often been reported where consumption and other serious maladies have been cured by walking. For those who are striving for health, for those in the grasp of a grave chronic disease, no exercise is quite so valuable as walking combined with deep breathing. It is more especially valuable for cases of this kind named because the exercise is difficult to overdo. If you will simply stop when you are tired, nothing but benefit can be derived from it. I do not mean by this that you should cease at the very first moment that you feel a slight twinge of fatigue, but you can continue with benefit until you feel that you can enjoy a rest with a feeling of pleasurable relief. Naturally, any exercise continued to exhaustion cannot be called beneficial, but it requires a vast deal of will power to continue walking to such an extreme. It is chiefly because of the walking involved that golf, hunting and many other outdoor activities are so effective in building health and nervous vigor.

When assuming the proper attitude the pedestrian inclines his body well forward. For walking should be a continual fall forward just as in running. Each step should save you from a fall, and the body should be always inclined far enough forward to insure a continuance of the movement. The entire form should always be erect, shoulders back, chest prominent, head back and eyes looking straight to the front, unless it is

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necessary to look to the ground in order to select your path. Many are of the opinion that because an erect attitude is advised in walking, it is necessary to swing the body far backward. This is a serious mistake. There should never be any strain or stiffness in one's attitude. Position of shoulders and chest should not be forced too much. Body should be erect in a natural way. Do not raise the shoulders high. They should be *back, but down.*

Edward Payson Weston, who at seventy-two broke all his life-long walking records from the Atlantic to the Pacific Ocean, walking this distance in less than three months, from Los Angeles to New York City.

Every step must furnish a progressive propelling power, and if the body is not leaning forward this is impossible. If you will be sure all during your walk that the body is held in this fashion, remembering to make every step appear as though it would save you from falling on your face, then you can rest assured that your gait will be commended by the professional pedestrian. And above all your positon should be comfortable.

Of course, it is not easy to break old habits, and it will require close attention for a time in order to assume the attitude I have indicated; but careful attention will make a radical change in a very short time and after a

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while it will become natural for you to assume a correct gait. The benefits of walking are immensely increased if one will form the habit of drawing deep inhalations of pure air, thus filling the lungs to their greatest possible capacity. In another place I have given illustrated breathing exercises. As a means of increasing one's endurance and the general pleasure of a walk, and assisting in the building of greater vital power, the value of such exercises cannot be overestimated.

Though walking even on brick sidewalks is beneficial, it is far better to do so on the grass or ground if possible. Especially will a walk of considerable distance seem far more difficult on hard pavements of any kind. The proper place to walk is in the country, away from the foul air and the dirt, dust and smoke incidental to urban life. If you live in the city your walk can be made far more pleasurable and beneficial if you will ride out into the country before beginning it. If you are compelled to go to your business at a certain time each day, walk to it instead of riding. A walk of three to six miles in the city though not so pleasurable nor so beneficial as it would be if taken in the country, is still a hundred times preferable to riding. If you live in the country you are fortunate, for you can walk almost any distance you choose before arriving at your place of business, providing, of course, that you do not begin work at a very early hour. If you commence your daily duties at eight or nine o'clock it will not be found difficult to arise at four or five o'clock, and in the interval you can take a long and pleasurable promenade.

It has often been my habit when my duties have permitted to rise between four and six o'clock. Though walking at any time is pleasurable, I must say that in the early morning hours there is a peculiar, almost intoxicating element in the air which greatly adds to its pleasure. The air seems far more exhilarating at this time of the day. Another special advantage of the early hour is that any unusual costume is likely to excite the curiosity of the ordinary late riser. Those who leave their beds at four or five A. M. are, as a rule, too busy to be curious. So I often start out dressed only for comfort, walking bare-

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foot, with hat in one hand and coat and shoes in the other. Thus equipped, when I arrive at some point where I again wish to enter the realms of so-called civilization, by stopping at a convenient brook by the road it is an easy matter to remove the dust of travel and assume the articles of clothing that quality one to become one of the conventional human sheep.

Though my favorite method is to walk barefooted, I have usually used sandals. Foot-wear of this character, however, can hardly be recommended for wear on a dusty road or one on which there is much gravel or stones just as going barefoot is not comfortable or advisable under some circumstances. In using sandals on such roads small particles get into the toes of the sandals and are a considerable annoyance. For ordinary road walking the sandals should have the entire front part of the foot covered.

A method in long distance walking that can undoubtedly be recommended for the reason that it makes it more easy for one to assume the forward incline, the importance of which I have so strongly emphasized, is the long stride in walking.

High speed should be avoided. Three and a half miles an hour is as fast as one should walk to secure the greatest possible degree of benefit and pleasure. If you walk faster you are bound to tire quicker, and there is not nearly so much benefit secured from the exercise. A long, easy stride is advised, making every step a little in excess of that which it is your custom to use in ordinary walking.

It is undoubtedly true that the majority of people walk with nervous tension so that the steps they take are jerky and impulsive, and are devoid of rhythm. The same steps, if taken at greater length, will make it possible for the walker to cover more ground with greater ease and less expenditure of nervous energy and will result in a more natural tired feeling than that that follows the short step action.

It might be well to mention to those who wish to follow my example in walking without shoes, that it will be found difficult to do so until the soles of the feet are hardened. The first few attempts must be confined to a very short walk, but

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before long a callous surface will form on the bottom of the feet and you will then be able to walk almost any distance barefooted. I must say that I favor walking without shoes where the roads are at all smooth. I seem to move with less effort, and do not tire nearly so quickly as when wearing shoes. Of course, if sandals are worn that do not confine the feet, there is not a great deal of difference between them and the bare foot, but no matter how nicely a shoe may fit, it always interferes to a certain extent with the free circulation of the blood and hence its power for evil.

It will probably be sufficient at the outset to walk four or five miles. Try first of all to acquire a proper position before you attempt to cover much distance. In fact, it would be well to avoid trying to see how far you can walk. It is not really distance, but *increased vital power* that you are endeavoring to acquire. This is the only result that is of any special importance.

If one is inclined to be too fleshy or "soft," long walks will naturally reduce the weight. If you are too thin they will increase your appetite, and in time increase your weight, though during the first week or two, if they are regularly taken, your avoirdupois may be reduced slightly, yet very quickly thereafter a decided gain may be looked for.

It is proof of the great value of walking that athletes everywhere, no matter for what event they may be preparing, always make it a part of their training. They do this because it builds vital power. Such added vitality enables them to increase the vigor of the muscles that they expect to use most in their contests.

Then, too, it is well to note that walking keeps one young. It delays senility. It drives out old age cells, and makes every part of you throb with life and health and strength. One of the youngest old men that I ever saw in my life was a professional walker who claimed that he made a habit of walking from fifteen to twenty miles a day, and although a man of nearly sixty years he had the complexion of a sixteen-year-old girl, and did not look more than thirty-five.

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It is always an advantage to have some destination in view. When you start out, select some place that you would like to reach. Wandering aimlessly here and there is never of so much benefit as an exercise, though undoubtedly it is pleasurable. If you are walking in the country, select a town a few miles away and although there may be nothing of interest there that you desire to see, yet you will have the satisfaction of knowing that you have a definite destination.

Above all things, one should remember that regularity of breathing is of special importance. If you are unable to regulate your breathing satisfactorily you might adopt the plan of inhaling during a certain number of steps, say six or eight, and then exhaling while you count a similar number.

As for competitive speed walking it is perhaps just as well, that we do not take up this particular feature of athletics, for nearly all other sports are more interesting and much better exercise. There is no doubt that heel-and-toe walking affords vigorous exercise for special muscles, but it is somewhat awkward and a rather unnatural method of locomotion. It is infinitely harder than running, even though one does not move so fast. In the beginning, it seems to involve so much of a strain upon certain muscles unaccustomed to it that it is very uncomfortable. Ordinary walking is the ideal exercise for constitutional benefit, but when one wishes to increase his speed above a certain moderate pace, the natural and instinctive action is that of running. Running just a little faster than a brisk walk is so easy that one in fair condition can keep it up for many miles. Natural activities are always the best, and our sports should follow natural lines, for pleasure and for benefit.

The natural walk is the ideal long distance proposition, and competitive walking, if any, should consist of long distance jaunts at a normal pace, rather than doing a mile or a half-mile by the somewhat awkward method of the so-called heel-and-toe. For functional vigor, for nervous energy, for mental activity and the general harmony of body which go with these, there is nothing like long walks through the country.

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CHAPTER III.

BUILDING A POWERFUL PHYSIQUE.

BEFORE putting into practice the measures necessary for developing a powerful physique, the student should be familiar with the structure of the muscular system and its requirements. He should, therefore, make a study of muscular anatomy as given in Chapter IV of Volume I, and should also familiarize himself with the contents of Chapter XVIII of Vol. I, as well as with Chapters I and II of this volume dealing with various phases of the subject of exercise.

He will see from all this that a powerful physique is to be desired not merely for the sake of external muscular strength, but for the sake of health, vitality and resisting power. Even though he does not truly require muscular strength in his daily occupation, yet it means the possession of great energy which can be turned in any direction. It means a reserve of power which will be invaluable in time of emergency. Great physical strength means internal as well as external energy; it is invariably associated with splendid digestive and assimilative vigor, general functional strength and a robust condition of all internal organs, for reasons which have been given in the other chapters above named.

There are those who so misconceive the meaning of health that they declare themselves to be in good health if only they are not bedridden with disease or some form of chronic invalidism. In their stagnant, phlegmatic existence, they do not understand what it is to be more than half-alive, which really means to be half-dead. They think and they say that they are in good health if only they are able to be out of bed, able to walk around a bit, to dress themselves, and to sit up at the table for three gorging meals each day. But surely, this is not health.

There are degrees of health, varying from that condition of which it may be said that one is not longer in positive ill-

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health up to that which represents the very maximum of physical energy, beyond which it is impossible to cultivate one's powers. The true physical culturist should be satisfied with nothing less than this, but it is a condition which is impossible except with the possession of a robust physical development, the most perfect degree of vigorous animal life. One must be strong, feel strong, with the sense of strength and undiminished energy in every part of the body, and this is impossible to the undeveloped man or woman. The man who realizes that he is in need of nervous strength should know that any material degree of nervous energy is impossible if he is muscularly inactive and atrophied, if he is one of the "bone-yard" type, or if he is handicapped with a heavy burden of surplus, unhealthy fat. The admiration which women have ever felt and expressed for manly strength, and the like admiration of men for well-built, shapely women, indicating robust, vigorous womanhood, is only an expression of the instinctive recognition of the biological value of strength. It is a recognition of its survival value in the struggle for existence, not merely because of the muscular power itself, but because of the vital qualities which go with it, the vital qualities of which it is the manifestation.

It is true that the essential energy or central power of the body is of a nervous character, and that this is the power back of muscular manifestation, the motive force which moves them. But it is chiefly through the instrumentality of the muscles that this vital or nerve-energy is generated, developed and stored up in the body. Without a vigorous and normal muscular system, one is greatly limited in the acquisition and enjoyment of this vital power.

The old-fashioned notion that great muscular strength was incompatible with health was so absurd that it could only have had its origin in the prejudices of those who knew nothing whatever about the subject, however they may have been informed on other matters. For a time it seemed to be a favorite diversion among those who were lacking in physical development and vigor, and who were satisfied to remain so, to de-

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clare that the man who developed his muscles only did so at the expense of his vital organs, when they did not vary the criticism by saying that he did so at the expense of his brain. But from the standpoint of physiology, nothing could be more irrational than to assume that muscular strength means weak lungs and deranged functional organs. The use of the muscles involves the use of the lungs and the greater activity of all vital and functional organs, tending to strengthen and develop these. Far from the inactive man having any advantage in these respects, he could not hope to maintain even a moderately efficient condition of these vital organs. One whose internal vital organs were in poor condition could not possibly accomplish very much in the way of muscular exertion, for the muscles serve only as an instrument or engine for the expression of the power that is within. But at the same time it is through their use that one is able to develop this internal strength. On the average, the internal organs of those who are muscularly strong are infinitely more vital, robust and efficient than those of physically indolent college professors, bookkeepers and others who may be in the class of "weaklings."

One need not fear in this respect. It is true that I advise against the utmost extremes of physical development, but this is because, like excess in anything, they are unnecessary rather than because they are injurious. It is true that there have been some cases in which apparently excessive development has been followed by disease, but it is necessary to understand these cases before passing judgment or rushing into print. It may be said briefly that in the occasional instance where the phenomenal athlete or "strong-man" has come to grief, physically speaking, it has been because of over-work, his using up his vitality faster than he could build it, as in any other form of over-work, and not because of any supposed antagonism between muscular strength and health. And in the majority of cases, if the truth were known, these athletes and strong-man prodigies have undermined their constitutions through dissipation. In the past very few of them have ever paid the slightest heed to the laws of

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health or the requirements of hygiene, as do many athletes of the present day.

To build a perfect and powerful physique, symmetrical and of uniform strength in all its parts, it is essential to correct any defects or special weaknesses which may be present in any individual parts of the body. The vigorous exercises for various parts of the body suggested in this chapter are intended to accomplish such corrections, wherever necessary, but since the exercises which will overcome special defects are identical with many of those for developing a high degree of strength in the same part of the body, the corrective exercises, as such, have not been separated from the group of general exercises for development applying in each case to a specific part of the body. (See *Corrective Exercise.*)

The *value of wrestling* as a means of developing a powerful physique should be emphasized, taken either by itself or as supplementary to other exercises for the purpose. Of all sports and games, wrestling is by far the best to develop a high degree of strength in all parts of the body, except perhaps the legs, and it has the advantage of combining strength with endurance and a certain amount of quickness. It may be commended for developing a robust state of heart and lungs as well as for perfecting the external body. Good wrestlers always have strong backs and necks, since success in the game depends so much upon these parts. For this reason also, wrestling is especially useful as a supplement to the special exercises for the back and neck presented in the following Charts enclosed in the volume.

The *Special Charts, Supplementary to this Volume,* are to be given special attention because of their fundamental importance in the building of a powerful physique. In this connection the student is referred to those parts of Volume I in which the central features of Physcultopathy are discussed, and particularly to Chapter V of Volume I, in which special attention is given to the relation of health and strength to the energy of the spine and nervous system. The student should make a careful study of the aforesaid chapter because

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everything else hinges to a certain extent upon the matters therein referred to. It is needless to repeat here what has been said about the office of the spinal cord as the great storehouse and center of energy, or to reaffirm that the spine and entire nervous system may be energized by special measures and exercises for strengthening the back, and accelerating the circulation throughout the entire region of the spine. The practical application of some forms of treatment for this purpose will be taken up in the sections of this work dealing with curative matters (see Mechanical Physcultopathy Vol. III), but some valuable exercises for energizing the spinal cord are presented in the Supplementary Charts just mentioned.

These charts contain a number of general exercises for the arms and the development of other parts of the body, but the important movements are for the neck and back, since they apply directly to this subject. Remember that these exercises are fundamental, not merely for the sake of strengthening the muscles of the back and neck, which they will accomplish vigorously, but because the increase of vital or nerve-power which they will bring about will mean increased energy for every other part of the body as well. They will enable one to get quicker and far greater results by the special exercises for each part given in this chapter. Taken altogether, and practiced faithfully, one could not avoid a remarkable change both in his physique and working energy.

Perhaps I should add a word of caution to those who are not yet very strong. Some of the exercises for the neck, in these Charts, may take on the appearance of rather advanced exercises for those who are just beginning the practice of physical culture. In such a case they would better be left alone, for nothing is to be gained by straining any part. It would be better to continue with light exercises until strong enough to take all of these movements without discomfort or over-exertion. Most of them, however, could be executed in a modified form, without placing too great stress upon the muscles, right from the start. Description of each exercise illustrated is also given in the Supplement.

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CORRECTIVE EXERCISE.—Corrective exercise may be distinguished from remedial exercise, in that the latter has to do specially with the influence of certain exercises or forms of exercise in overcoming disease, whereas the former is concerned with movements that tend to correct special weakness, defective development of parts of the body or various deformities. The subject of remedial exercise, therefore, is left for consideration in the later parts of this work having to do with curative physical culture. We should not lose sight of the fact, however, that all appropriate exercise for one who is in ill-health takes on a remedial aspect, inasmuch as it is largely through such exercise that he gains strength and acquires that improvement in his circulation and functional tone which is bound to bring about a condition of normal, vigorous health.

Similarly, almost all general exercise has more or less of a corrective aspect. Let one set about building up a vigorous and perfect physique by all-around exercise, aiming at a symmetrical and uniform development of the whole, and any special defect in his development or any minor deformity will tend to disappear just as certainly as he gradually accomplishes the condition of symmetry at which he is aiming. All ordinary exercises tend to restore a normal state of the body in case there is anything out of gear. And yet by special attention to any peculiar defects or weaknesses, one can correct the difficulty much more quickly and definitely by special exercises directly intended for the purpose.

Suppose for instance, that through negligence and faulty carriage, or possibly through one-sided manual labor, one has developed a slight *curvature of the spine* and carries one *shoulder lower than the other.* In such a case vigorous all-around exercise would go far to remedy the trouble, but special exercises for building up the depressed side, and particularly for strengthening the muscles of the back and straightening the spine will accomplish the desired improvement more effectively and in much less time. While speaking of spinal curvature and disparity of the shoulders, I would say that the exercises for

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ILLUSTRATION OF PROPER CARRIAGE OF BODY.

Proper carriage of the body for avoiding and correcting round shoulders. The importance of assuming a proper position at all times, whether sitting or standing, should be thoroughly understood. The position here shown is one that can be especially recommended. The shoulders should be back, the abdomen should not be drawn in as is commonly recommended. It should be relaxed and perfectly free to move outward and inward as the breath is inhaled and exhaled. There should be no strain in any part. Correct position in both sitting and standing is not only necessary to avoid round shoulders, but for the best general health. Study the position here shown and try to acquire a proper position at all times. Also read the discussion of poise and good carriage in the chapter on Physical Training for Women.

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the back and shoulders given in the Supplemental Charts are ideal and invaluable for this particular purpose.

"Round-shoulders," so-called, are exceedingly common and also quite easy to correct, providing one is persistent in the exercises necessary. Here, again, all ordinary exercises for the back and shoulders tend to improve the condition, but special exercises for bringing the shoulders far back at the same time that the muscles are powerfully strengthened will establish them in their proper position much more quickly. This drooping tendency of the shoulders arises first from weakness of the muscles back of them, though to a certain extent it is due to the weakness of the entire back which leads one to assume a slouchy, careless attitude instead of an erect and vital carriage of the body. In many cases it is a matter of constitutional debility. Certainly the man who is blessed with physical power and vitality plus carries himself erect; he does not droop or sag at the shoulders. It will be apparent, therefore, how exercises for the back and shoulders will correct this difficulty, especially when they are designed to pull the latter back and up into normal position.

It is natural that a *flat* or *sunken condition of the chest* should go with round-shoulders, as expressing the same lack of vital energy. Even when the chest is originally of good shape, it cannot avoid being compressed and narrowed in the round-shouldered attitude, thus cramping the heart and lungs, and giving occasion for still greater debility. And not only this, but as the chest is contracted in this manner, the entire front of the body is depressed, causing a crowding of the digestive and other functional organs and a greater or less prolapsus of the same. To fill out and build up the chest properly it is absolutely necessary to overcome any tendency toward round-shoulders, to assume a proper and erect carriage of the upper body, both in standing and sitting, and also to adopt such special exercises as will raise the chest, expand it and strengthen its muscles.

It should be noted that in the influence of corrective exercise we are not limited to the mere possibilities of enlarging the

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muscles and thus improving the outlines, but the bones themselves yield to a marked degree in the course of time. With all their strength and stability, the bones are yet susceptible to any continued influence, not only in the direction of gradual deformity, but also in the correction of such deformities. With the formation of new cells they will slowly modify their shape if sufficient stress is brought to bear upon them. This is naturally most true in childhood, when the bones are more cartilaginous, and as one leaves his youth behind him, with the increase of mineral matter in the bones, the possibility of their modification in this way becomes ever less and less. Some time after maturity, therefore, one reaches a limit beyond which he cannot expect to materially alter his bone framework, but just when he reaches this point would be difficult to say, since it varies in different individuals and depends partly upon the circulation and health. It is to be expected, however, that the matter of overcoming deformities will usually be taken up in childhood or youth, so that in nearly all cases we can depend upon any necessary moderate modifications of the bones. Such defects as round-shoulders, slight spinal curvature and others in which there is no real bone deformity, may be corrected at any time of life, even after the bones have become brittle.

The earlier in life that any deformity is taken up for correction, therefore, the better. In the beginning the bones are little more than cartilage, but they continue to retain enough of gelatine throughout childhood to make them elastic and pliable to a certain degree. We have often seen the legs of a child badly bowed at one year of age, the lower legs bent shockingly, and then we have seen the little limbs straighten out perfectly by themselves in a year or two, with the growth of the youngster. So does Nature tend to correct herself. But in most cases *bow-legs* and *knock-knees* can be overcome in childhood by a little care to exercise and influence them properly. Rubbing each day with only moderate pressure in the one right direction, will have its effect upon the changing, growing cells of the live little bones. In bow-legs, they should be rubbed on the outside with gentle inward pressure, and with knock

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knees, the reverse should be the case. The wearing of braces for the purpose is sometimes effective, but the remedy is an unsatisfactory one in many cases because it is weakening, and for that reason often defeats its own purpose. Usually it is better to cultivate strength of the legs by exercises which have the corrective tendency. With the exercises the circulation in the limbs will be full and vigorous, which in itself is an important factor. After maturity not a great deal can be done radically to alter a bowed or knock-kneed condition of the legs, but in every case they should be muscularly well developed so that by this greater symmetry their appearance will be so much improved that the defect will be less noticeable.

In the so-called "chicken-breast" or "pigeon-breast" the difficulty lies entirely in the malformation of the bones, though chicken-breastedness is doubtless caused or aggravated in some cases by the cramping of the chest which tends to force the bones into this position. At all events, such a defect is an easy one to correct in most cases, owing to the unusually elastic quality of the ribs. Even the sternum, with all its marked strength, has a peculiarly plastic quality. When I say, "easy to correct," I do not mean that results can be accomplished in a week or a month, but that the improvement can be made with certainty and satisfaction if one is persistent in his efforts. It is necessary to strive for a normal and vigorous condition of the chest, the same as when building up a flat chest. With the shoulders back in their proper place, the chest should be raised and expanded, and the muscles of the chest should be vigorously used and strengthened. The result will be to pull and force the ribs into a normal position, and the changes in the symmetry and structure of the chest accomplished in some cases of this kind are almost startling.

Many common defects and special weaknesses are merely the manifestation of muscular deficiencies, and in all such cases they may be corrected speedily by concentrating upon exercises for those parts. The exercises in this chapter are designed both for corrective purposes and for the thorough development of each part of the body.

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In the following pages are presented special exercises for the various parts of the body, designed for the individual development of each part, and for the correction of special defects or weaknesses which may be found therein.

ABDOMINAL MUSCLES.—See *Stomach.*

ARMS.—It would seem quite apparent that not a great deal need be said about the importance and method of developing the arms, inasmuch as every novice in physical training, even every school boy, gives his first attention to the development of these members. However, strength and symmetry of these parts is necessary not only for the sake of their ordinary uses, but as a means of accomplishing the best results for other parts. Weak and undeveloped arms as a rule indicate a similar condition of the chest, and a large majority of the exercises and activities in which the arms are employed also call for the use of muscles of the chest, sides, shoulders and back. This will be made more clear by reference to the comments in regard to the muscles of the arm given in Chapter IV of Volume I. For instance, the chest muscles are used along with the extensor muscles of the arm in striking a blow. The muscles under the arm are employed in "chinning" while shoulder muscles are used to help in raising the arm above the head.

Developing the Upper Arms. In addition to the movements illustrated, note the arm exercises given in the Supplementary Charts accompanying this volume. For a vigorous exercise for the biceps there is nothing much better than "chinning" or pulling up to a bar with the arms. Every school boy knows this exercise, which may be made doubly effective for the very advanced gymnast by doing it with one hand. If this is too difficult one may pull up with both hands, then, hanging on with only one, lower the body very slowly. For the triceps the reverse of this movement may be found in a movement to be performed upon the parallel bars, or upon the parallel backs of two chairs, or the edges of two tables two feet apart. In the latter cases the knees must be doubled. First rest the body on the hands, arms straight at

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the sides. Then bend the elbows and lower the body until the shoulders nearly reach the hands, at which point push up and straighten the arms again. This exercise, like chinning, employs the *latissimus dorsi* and other muscles of the torso under and around the armpits, but is nevertheless splendid for the triceps.

Strengthening the Forearms, Wrists, Hands and Fingers. In a great many cases the general development or lack of development of the body is very largely covered by clothing, so that even one who is miserably lacking in his physical proportions may often hold up his head as though he really has cause for the fullest self-respect. The conventions of clothing, however, do not insist upon the hiding of the forearms and these parts often come conspicuously into view. The rest of the body may be permanently protected from the eyes of others, but the forearm and the neck will give one away. The well-set-up, vigorous man or woman has a full, well rounded neck and a shapely, well-modeled forearm. It is a peculiar fact that one can not only judge of the strength and vital energy of an individual by his "grip," which of course is the expression of strength in the muscles of the forearm, but also, through them, of the vitality and nervous vigor behind. It indicates mental as well as physical vigor, for all observant persons will notice that strong and successful men and women, those of exceptional energy and of strong personality, invariably have a powerful grip. The weakling or the nonentity, lacking in personality, magnetism or distinct vital qualities of any kind, is found to have little or no "grip," does not take hold of things as if he meant it, and really has no capacity so to take hold. In many cases strength of character depends very largely upon the condition and strength of the body. By building normal physical vigor, in many cases the weakling can do much to acquire magnetism, personality and character, to the extent that his hereditary endowment has made these qualities possible.

It is said that it is largely through the use of the hands, the organs of manipulation, that the human race learned to

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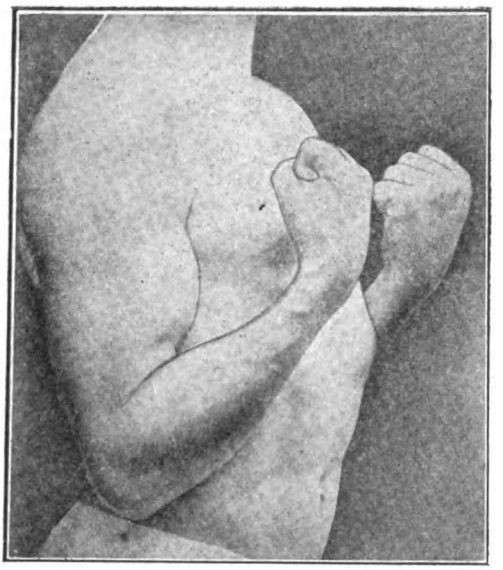
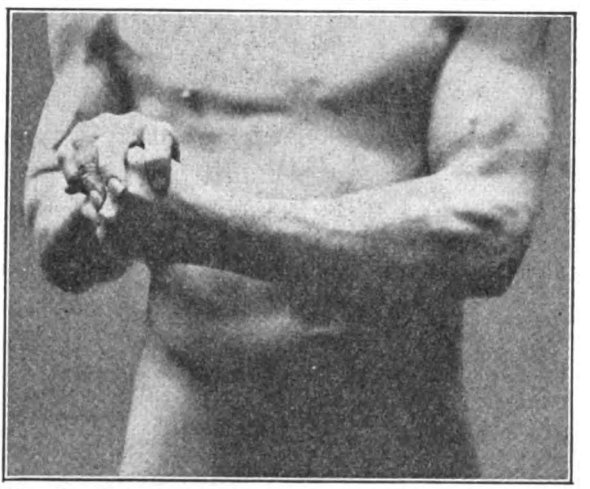
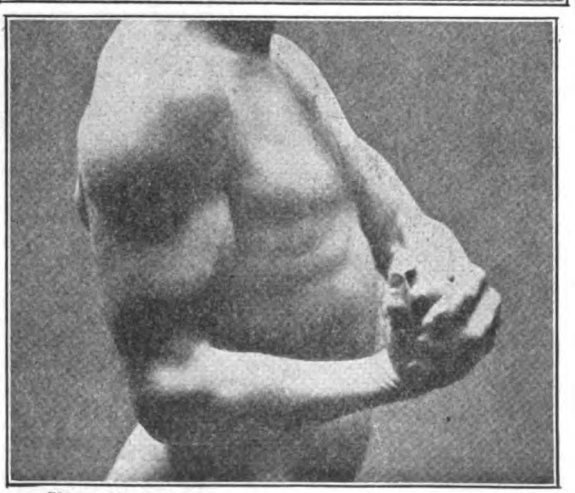


EXERCISES FOR STRENGTHENING THE ARMS.

No. 1. A vigorous tensing exercise for the arms. With arms first down at the sides, and fists tightly clenched, vigorously tense and harden all of the muscles of the arms and slowly flex them at the elbows, until the fists are up in front of shoulders. The wrists should also be flexed as shown in the photo. Slowly extend the arms, relax, and repeat.



No. 2. A resisting exercise for the muscles of the forearm. Placing the fist of the left hand under the palm of the right hand, flexed upward, and resisting with the left hand, flex the right hand downward at the wrist as far as possible. Repeat until tired, then reverse the position for the left arm.



No. 3. With the right palm upward, fist doubled up, and hand flexed upward at the wrist, place the palm of the left hand against the back of the right, as shown. Then, resisting with the left hand, extend the right and flex downward as far as possible. Repeat until tired and then reverse the exercise for the other arm.

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think and developed the intelligence which later manifested itself in speech. And in the case of the infant, in whom is epitomized the experiences of the race, it is through the use of the muscles and especially of the hands that the little mind at first develops. There seems to be a peculiar relation between the grip and the mind or nerve force, for while this same relation exists between the nervous system and all other muscles, yet it appears to be particularly intimate in the case of the hands.

As will be obvious to the student of anatomy, strength of the grip and of the wrist really means strength of the forearm. It is in the forearm that the governing muscles are located. They not only determine the clutch and the extension of the fingers, but also the flexing of the hand at the wrist, in all directions. When we develop power in these muscles which bend the hand at the wrist independent of finger action, we increase the apparent strength of the wrist. I am illustrating here some resisting exercises for this purpose, though the student will note that he can extend the list to include similar movements against resistance in every direction in which the hand may be moved. The wrist itself, as was seen in the study of anatomy, is not a muscular structure, but at the same time its firmness and strength, that is to say, the toughness of the tendons by which the forearm muscles have their *insertions* in the hand, and the resisting power of the many bones of the wrist, depend upon the muscles named and the resistance which they have to overcome. Subjected to much stress and activity, all of these tissues will be strong, firm and vigorous. If neglected and unused, they will become tender and weak, incapable of much resistance. All tissues, including cartilage and bone, depend for their condition to a great extent upon muscular action and the more perfect circulation and nutrition which accompany such muscular action.

This is true of the fingers as of the wrists. Strength of the fingers involves the condition of the little bones and the strength of the little joints as well as the mere contracting power of the muscles which operate them, but this strength

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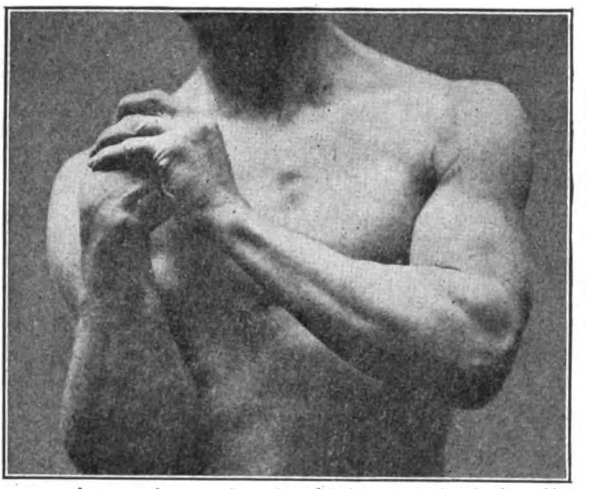
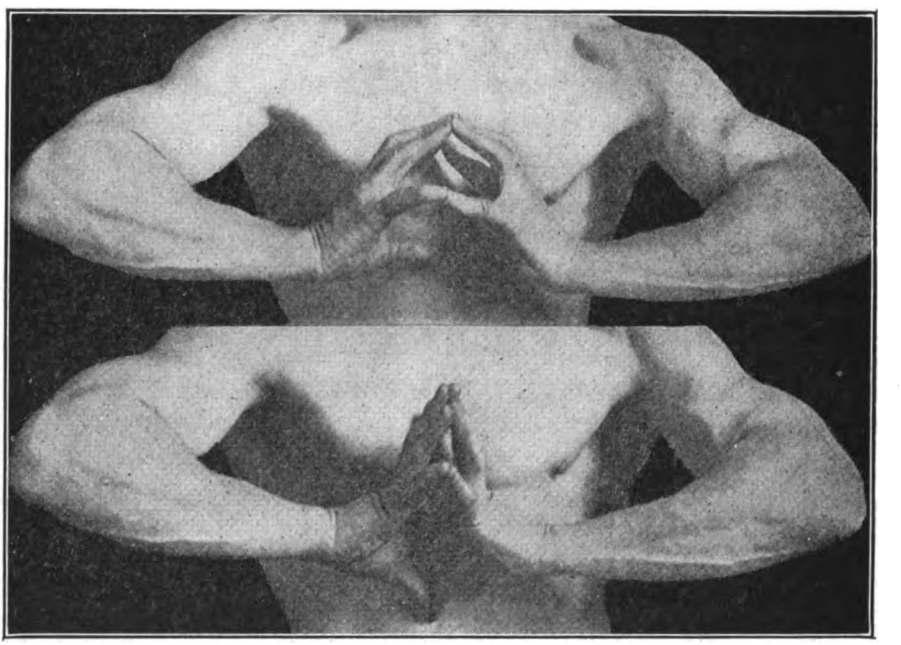
EXERCISES FOR THE WRISTS AND FINGERS.



No. 4. First flex the right fist sideways, as far as possible (to the side of the little finger, but neither forward nor backward), placing or hooking the left hand over the thumb side of the fist. Then, resisting with the left, bend the right fist over to the other, or thumb side. Repeat and reverse as in the preceding exercises. Other variations of the same form of exercise should be practiced, bending each wrist in every possible direction against the resistance of the other hand.



No. 5. *For strengthening the fingers.* First place the finger tips together in the manner shown in the upper photograph. Then, pressing vigorously together, let them slowly spread out to the position shown in the lower picture, resisting each other moderately and not enough to place too much strain upon the joints. The practice of this exercise, gradually increasing its vigor will greatly strengthen not only the muscles concerned, but the joints and ligaments of the fingers, as well.

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of joints, bones and tendons is developed by resistance and the use of the muscles.

Those who suffer from weak wrists and hands, therefore, should systematically practice the exercises given here, together with other exercises which offer a progressive resistance, the amount of resistance being increased gradually as the parts grow stronger. Such manual labor as bricklaying, for instance, is guaranteed to strengthen the wrists, though one who had very weak wrists could do only a little of it in the beginning. It is important not to strain the wrists or the fingers too much at any time. Handling all kinds of objects with the hands, as for instance, heavy furniture, would be effective, but perhaps one of the best forms of exercise for the wrists is exercise on apparatus in which the weight of the body is placed on the hands, for instance, the parallel bars, vaulting horse, flying rings or horizontal bars.

Such exercises will be of great value in developing the grip as well. In a general way, it is unnecessary to give any special attention to the grip if one uses apparatus, since practically all exercises will require the more or less vigorous use of these muscles. I am presenting an exercise for the fingers which will be suggestive of other similar movements for strengthening them, though these will not be necessary except where one particularly wishes to strengthen the fingers. The pianist may have occasion to practice special exercises for the fingers, stretching them apart and in other ways adapting them to the requirements of his piano technique, but there is naturally a limit to the strenuous exercise for the fingers which he should take, lest he sacrifice flexibility and speed for rigid strength. Strength he must have for effective rendering of good music, but all-around bodily vigor will suffice for this. and his exercises on the piano will probably offer the best finger gymnastics for his purposes.

The ordinary man or woman who wishes to strengthen the grip can do nothing better than practice taking hold of things with all possible vigor, as in shaking hands. Shake hands as if you meant it, and more too. Shake hands with yourself,

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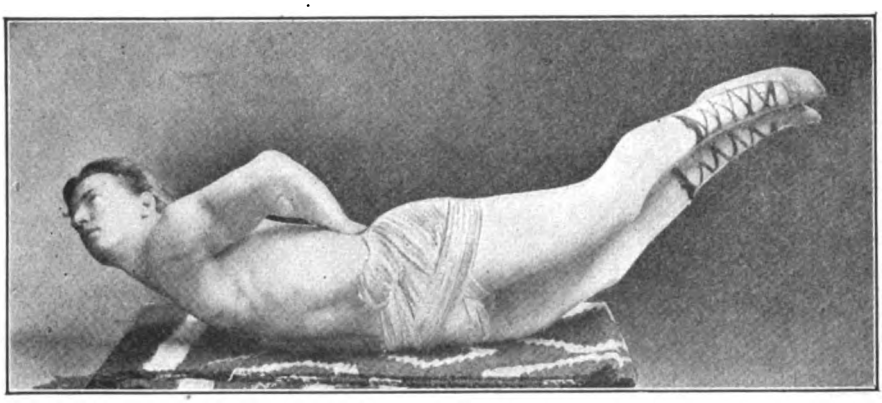
EXERCISES FOR STRENGTHENING THE BACK.

No. 1. Lying face downward, and placing the hands together on the small of the back, raise legs, head and chest simultaneously, and just as high as possible. Upon reaching the position illustrated, make another attempt to raise extremities still a little higher. Lower feet and head, rest a moment and repeat, continuing until tired.



No. 2. Lying first face downward, shift weight slightly to one side, lifting the legs and head as high as possible, and the shoulder of the opposite side. Relax and repeat, then taking the same exercise shifting slightly to the other side.

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tightly gripping and squeezing one hand with the other. A splendid means of strengthening the hands is by tearing up old magazines before throwing them away, tearing old paper bound novels, packs of cards, or newspapers folded up a number of times to a thickness that will offer stubborn resistance. Do this every day, and you cannot avoid developing a powerful grip and a pair of forearms of which you may be proud.

THE BACK.—*How to Strengthen It.*—There are many reasons why strength of the muscles of the back is of the utmost importance. Foremost among these are those which I have discussed in connection with methods of invigorating the spine and nervous system through exercises for the back, but aside from the influence of such exercises upon the nerves and the building of increased vital power, a vigorous condition of the muscles of the back is absolutely essential for the sake of the general muscular efficiency of the body and other vital requirements. In addition to its being the home of the great nerve center of the body, the bone-and-cartilage structure of the spine is the central supporting column of the body, upon which everything else depends. The spine is like the trunk of a tree, from which strong central body all the branches and foliage are hung. The spine is like the upright of a powerful derrick, the upright that really supports all of the weight, while the muscles of the back are like the guide ropes. If the guide ropes are weak or loose the derrick is useless, and trouble as well as danger is inevitable. If the muscles of the back are weak, the spine no longer retains its upright form, and there is trouble. The arms are like the arm of the derrick, depending for their power upon the stability and supporting strength of the upright and the muscles or guides which control it. The man with the weak back finds himself sadly incapacitated in almost all forms of physical endeavor, and thousands of women, similarly weakened and suffering, know the hopelessness of trying to accomplish anything in their condition.

Not only are the arms attached to this central supporting

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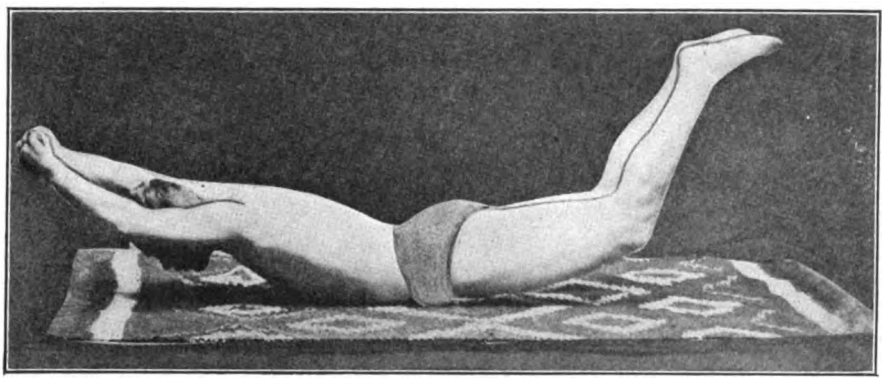
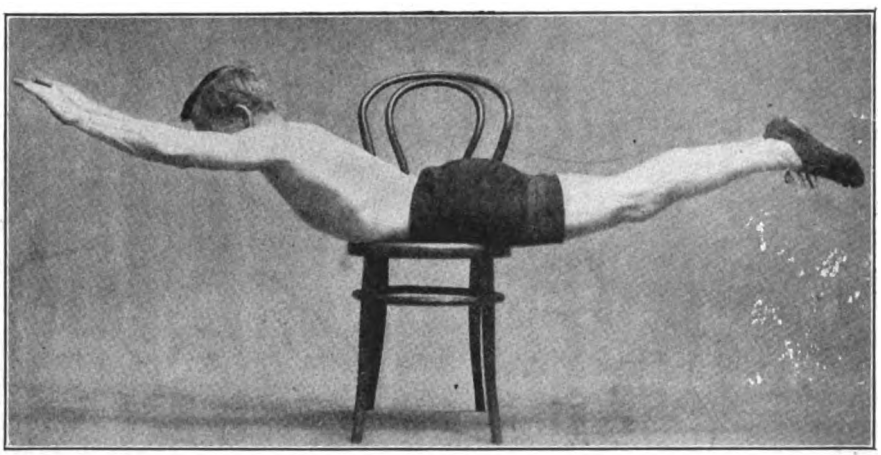


EXERCISES FOR STRENGTHENING THE BACK.

No. 3. Another exercise similar to that shown in No. 1, except that the outstretched positions of the arms beyond the head, affording much greater leverage, makes the exercise much more vigorous and difficult. This takes in the muscles all along the back.



No. 4. Another method of taking the last exercise which may be even more satisfactory in many cases. Lying with the stomach across the seat of a chair, the legs on the one side and the arms on the other may drop to the floor, calling for more action in raising them as high as possible. These exercises for the back will of course be taken in conjunction with others given elsewhere, especially those in the class drills which have to do with bending the body forward.

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column, nor is the head, whose poise depends upon it, but all of the vital organs of the trunk of the body are related to it, hanging, so to speak, vertically from the spine. Any improper position of the spine, any inclination or bending, due to the weakness of the muscles of the back, has the effect of contracting or cramping the chest, and of bringing about more or less sagging and prolapsus of all of the vital organs, thus interfering with their best functioning and as a consequence depleting the vitality of the body as a whole.

It is truly a simple matter, however, to strengthen these muscles of the back and in that way not only to help restore the tone of the vital and functional organs, but also to give increased muscular efficiency to the arms and other parts of the body as well as to the muscular system as a whole. These muscles of the back are capable of tremendous power, as might be expected from their peculiar importance in the welfare and activities of the body. By those who have undergone special training, great lifts may be performed by the strength of the muscles of the back alone, and indeed, in all weight lifting exercises the back plays a most important part, in some cases performing the active effort of the lift and in others serving a purpose not unlike the support of the upright and guide cables of the derrick. In any case, great strength and power in the back are required for the sake of normal vigor and physical energy.

In another place I have pointed out the fact that successful wrestlers and all notably strong men have very powerful back development and strong necks as well. This strength of the back and spine always insures that erect and vigorous carriage of the body which denotes vitality. It means tremendous energy, whether this is to be devoted to physical or mental activities, to the struggle on the wrestling mat or to the warfare sometimes waged with the pen, the struggle of the mind in law or literature. It is the "backbone" of those qualities which make for success.

The exercises presented here are intended to develop a powerful degree of strength in the muscles of the back, but

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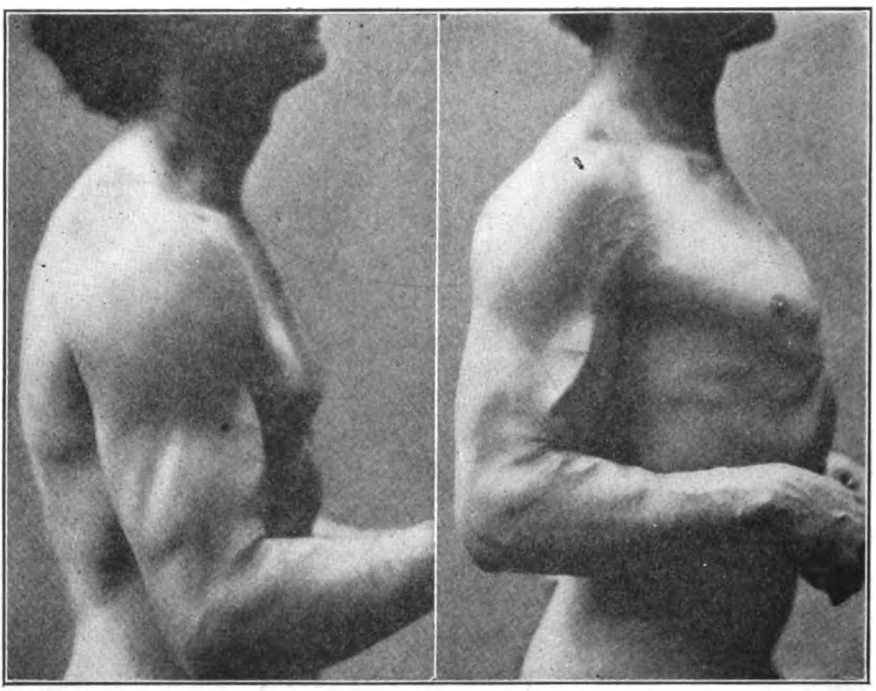
EXERCISES FOR DEVELOPING THE CHEST.



No. 1. Bring the shoulders as far forward as you can, in the manner illustrated. Then, after bringing them as far forward as possible, make two or three attempts to force them still farther forward. Relax and repeat, continuing until tired. For pectoralis or breast muscles.

No. 2. The reverse of No. 1. Bring the shoulders as far back as you possibly can, inhaling deeply at the same time, and then make two or three attempts to bring them still farther back. Continue until muscles tire. This exercise affects the muscles back of the shoulders vigorously, but is of great value in the present connection in expanding the chest, an important factor in its development. Many other shoulder exercises are of value in the same respect. These two exercises may be combined into one movement if desired.

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the student is also especially referred to the exercises in the Supplmentary Charts, appended to this volume. Though the exercises for the back and neck given in these Charts are intended particularly for the energizing of the nervous system and in that way designed to increase the power of the entire body, yet they are none the less effective for directly strengthening and developing the muscles of the back and neck.

CALVES.—See *Legs.*

CHEST.—[See also *Lungs.*]—What an unmistakable picture of low vitality and lack of resistance is seen in the flat or sunken chest! It is not simply for the sake of physical comeliness and symmetry that one should strive to overcome any deficiences in this respect, but because of what it means in its relation to the energy and stamina of the entire body, and to the question of sustained health and life. There is good reason why even the untrained eye will pick out the flat-chested as prospective victims of tuberculosis, if indeed they are not already in the throes of that disease.

A round, full chest is indicative of vitality and energy; it carries with it the promise of long life. This is because it represents a vigorous condition of the heart and lungs, these vital organs having plenty of room. The flat or sunken chest, however, represents a cramped condition, and manifestly the function of respiration is carried on in a most shallow and imperfect manner. Not only is the blood inadequately supplied with oxvgen, but even its circulation is slow and impeded.

In my general remarks on *Corrective Exercise,* earlier in this chapter, I have made reference to the importance of a full chest which the student should re-read in this connection. I have there specially referred to the influence of round or drooping shoulders and the weakness of the back in contributing to a flat-chested condition. It is essential, therefore, to give any necessary attention to the shoulders as a means of making possible the building up of a deep and

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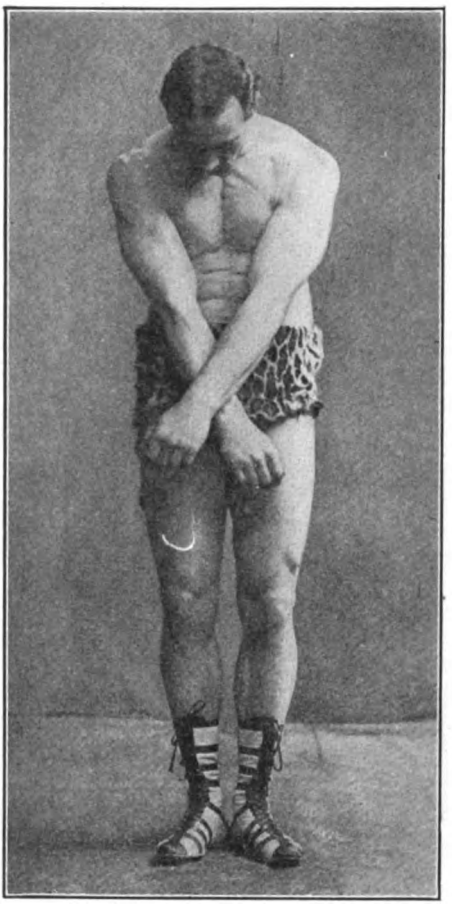
powerful chest. In a way, a flat chest is often a result of a condition of general weakness and low vitality, for in his debilitated state one is disinclined to stand upright; he slumps languidly and carelessly; his shoulders hang limply; and naturally his chest is contracted, to the still further detriment of his health and the body generally. On the other hand, the man who is saturated with vitality, so to speak, with plenty of energy to spare, stands upright with strength and with pride. It is often noticed how one straightens up and throws out his chest in the expression of pride, but this is because of the physical and mental elation which he feels. Any physical dejection, or a mental depression inducing a physical depression, will produce the opposite effect. Therefore increased constitutional strength and improved general health will in themselves have much to do with the carriage and the position of the chest.

However, where there is any lack of development of this part it is absolutely



TENSING EXERCISES FOR DEVELOPING THE CHEST.

No. 3. Standing first with arms hanging at the sides, slowly cross the arms in front of the body in the manner illustrated, bringing them both over as far as possible. Do not do this with a swing, for it should be accomplished with the contraction of the chest muscles only. Some tensing of the muscles will make it more vigorous. Remember that any movement which has to do with pulling the arms forward, or pulling them together in front of the body, brings into play these muscles.

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necessary to take special exercises for strengthening the muscles of the chest and for so expanding it each and every day that it will assume a permanently greater girth, even in its relaxed and contracted state. In addition to the exercises offered here, great care should be taken to preserve an erect attitude of the body both when sitting or standing. When sitting down, especially, it is important not to lounge or sprawl, or as one might express it, do not try to sit on the small of the back. High-backed chairs are not to be commended for this reason. If one will put one or both feet under his chair while sitting, and make it a special point to arch his back, he will find that he can sit upright with remarkable comfort, and he will experience a sense of strength or vitality in sitting so, as well as give an appearance of natural dignity, which is impossible to the man sitting on the small of his back with feet sprawling far out on the floor.

The breathing exercises which have been recommended elsewhere will be of great value to be practiced, not once a day, but many times each day, and especially when walking. Diaphragmatic breathing is of course the natural and usual method, but for one deficient in chest development this should be combined with the full, deep breaths which call for the fullest expansion of the chest as well. In other words, let the expansion, when inhaling, commence at the waist line or below, and as that part of the body becomes fully distended let the expansion proceed upward, until the entire chest is enlarged to its limit. This will gradually effect a change in the rib formation of the chest as well as in the muscles, until some day one will suddenly become surprised at the change for the better. One who never knew that he had a chest will become proud of his development in this direction.

Not only can a flat or sunken condition of the chest be overcome by these methods, but other malformations such as those known as "pigeon-chest" or "chicken-breast" can be either modified or overcome. In all cases, exercise of the proper kind will tend to bring about a normal and beautiful contour of this part of the body.

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In this position the trunk muscles are entirely inert.

The stool is here tilted forward, permitting an erect and easy position.

A stooping position of this sort forces the abdomen to bear too much of the weight of the chest and shoulders.

In this position the body is awake and co-ordinate and attentive to the mind, capable of quick response.

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Relation of Carriage of Chest and Shoulders to Health.— On the opposite page are reproduced photographs which illustrate incorrect and correct positions of the body. The posture of the body has a marked effect on the development of the chest and shoulders, and on the vital organs in general. Unhealthful positions are often caused by wrongly constructed chairs, too high or too tight collars, or shoes that throw the weight of the body on the heels. In women we often find partially paralyzed waists or hips, caused by the constant pressure of a rigid corset, tilting the body backward from the waist line up. While sewing or engaged in housework the chest is crushed and the back humped, while the neck is forced to bear all the strain and weight. Frequently the body is absolutely not only without mental care and control, but shamefully abused, twisted in all sorts of ugly shapes and robbed of its natural automatic freedom.

Most of us are sluggish, inert, half dead on account of nerve pressure. The body is in the grip of some deadly strain or collapsed condition, and we label it according to the location and organs affected by it. Maintain your body in correct position and it is positive and self-protective. Take your lesson from the tree, sustain your trunk, the seat of your vital centers, uplifted to its fullest height, with every muscle of your body, especially your back muscles, lifting. Remember to lift the trunk and not to merely throw back the shoulders. Equalize the muscular pull by lifting the back muscles. Maintain this hold upon your trunk with free neck and shoulders and joints. Take care to release the diaphragm or else you will interfere with your lung action. Carefully sustain the upper portion of the body unlifted, and at all times feel yourself actually suspended by your muscles. Never permit the weight of your shoulders to bear down on your stomach and bowels. Some persons literally sit on their abdomen.

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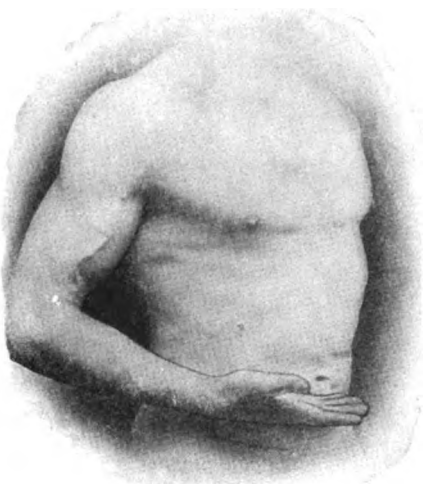
THE HEART.—[See also *The Circulatory System,* Chapter VII, Volume I.]—The heart, like the stomach, is muscular in its nature, this fact often being overlooked, as in the case of the digestive organs, because of the involuntary character of its action. Indeed, the heart may be defined as one great muscle, being a mass of muscular tissue. It is by far the most important muscle in the body, in that it is the central pumping-station of the whole system of blood purification and supply, and, in many respects, it is the most powerful. Contracting and expanding every moment of life it performs a sum of labor far greater than that of all the other organs of the body combined. It is, therefore, highly desirable that it should be strengthened so as to resist not only the general wear and strain upon it, but also any extraordinary stress to which it may be subjected.



Illustrating how one can strike the body with the side of the palm after the muscles have become hardened. Begin at the lower part of the abdomen and strike all parts within reach of the hand. It is best to strike with both hands, alternating from one to the other. Your muscles must be fairly vigorous to withstand this severe treatment, and the open hand should be used until you are hardy enough to stand the strain of this rigorous percussion.

Bend the arm as much as possible, flexing the upper arm tightly to hold it in this position, then bring the arm outward and forward. Now bring the arm inward and strike the body with the arm as far forward as you can. When you have struck the body properly, the position of the arms will be the same as illustrated in the photograph. You may not be able to do this properly at first, but a little practice will enable you to properly perform it.

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Exercise of the heart is based on the same principle as that of the digestive organs, the stimulation of its action by the exercise of the voluntary muscles of the region in which it is located. Now, the heart is immediately connected with the lungs both in location and function. Placed in the midst of the lungs, its first duty is to keep them supplied with blood to be purified by them. The amount of this supply is dependent on the call made for it by the lungs, and by their capacity to receive it. Accordingly, by stimulating this call, and increasing this capacity, you develop the heart as well as the lungs by giving it more work to do. Any of the deep-breathing exercises given later in this chapter in the discussion of the increase of lung power will be found no less beneficial to the heart. It may be said here that the essential conditions of all breathing exercises intended to strengthen the heart are, standing in the pure outer air, and breathing deeply.

How to reach back immediately unde shoulders with the hands, for percussioi treatment. It may be a little difficult fo you to do this at first, but repeated at tempts will soon develop the necessar suppleness.

Says Dr. Albert Adams: "The heart, like any other muscle, owes its vigor to the activity of respiration. The exceptional muscular strength of insects is no doubt due to the fact that they respire from nearly every part of their bodies. Individuals with organic heart disease enjoy the best health when they are able to live an open-air life."

Diet for a Weak Heart.—Warning is given not to make this elimination difficult by overloading the stomach, especially with food difficult to digest. This does not by any means suggest the necessity of starving, or eating so little that you will be poorly nourished, but your diet should be so regulated that

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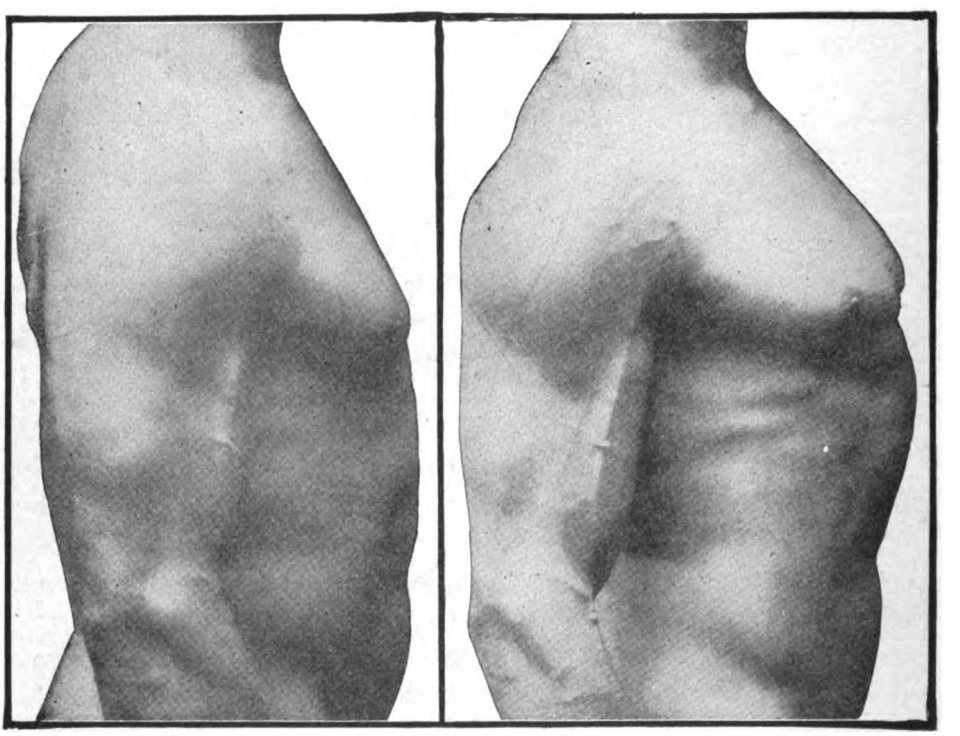
the digestion will go on in a harmonious and satisfactory manner. If your heart is weak you should especially avoid eating too heartily of meats. Stimulating drinks of all kinds should be taboo.

Medical men frequently condemn athletics, maintaining that the exercise often over-strains the heart; but it will be well to note that in nearly every instance where overstrain of this character is observed, the victim has suddenly changed his habits from one extreme to the other, from activity to entire inactivity, though he continues to eat the same quantity of food. The strain, therefore, instead of being caused by the over-use of the external muscular system, is really caused by the overwork of the stomach and other blood-making organs. Investigation will usually prove that it is not the hard train-



Showing the natural position of the body in the region of the chest and abdomen after the breath has been entirely exhaled.

The vital organs of the abdomen may be exercised by exhaling all the breath possible, drawing in the abdomen and forcing out as much air as practicable. Make two or three attempts to force out still more and then begin to inhale.

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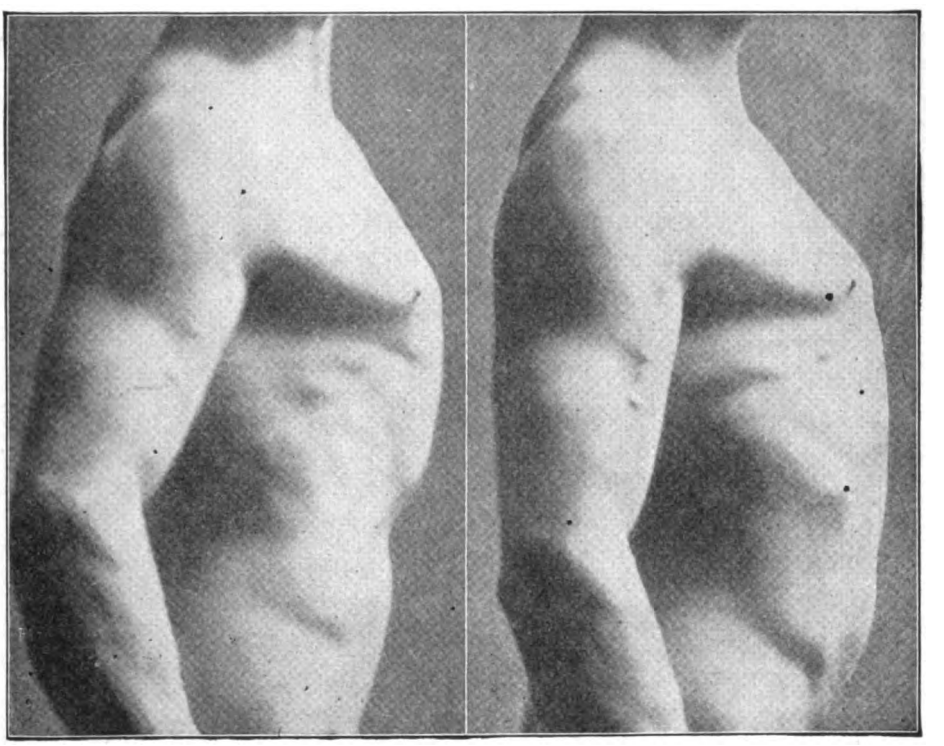
ing, but the sedentary life and the extremely heavy eating which follow the cessation of training that cause the heart troubles of athletes.

Exercise for a weak heart is as beneficial as it is for a strong one, if it is not carried to excess. It is a fact, well known to both physicians and experienced physical trainers, that any "disease" of the heart that has not progressed to an incurable stage can in time be cured, if the right sorts and amounts of exercise are used. And the heart that is not diseased in the least, but is merely not as strong as it ought to be, can be put in the full prime of condition.

When one is conscious of having a very weak heart, he must exercise with constant watchfulness at first.

Many patients suffering from heart trouble are actually



Another photograph illustrating the appearance of the torso, after all the air possible has been expelled from the lungs.

After exhaling and forcing out the breath as illustrated in the first photograph inhale as deeply as possible, expanding the chest to its fullest capacity, beginning the expansion in the abdominal region, and expanding every part fully as shown in above photograph.

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condemned to die because of the physician's fear of exercise. Now the truth is, that none has ever recovered without a certain amount of exercise. It is absolutely essential to build up the nervous, muscular and functional systems. Supply the body with a better quality of blood, build up superior powers in the stomach and in the nervous system, and the heart is naturally affected thereby. Slowly but surely it will increase in strength and at length become normal.

It is well, however, to remember the necessity of extreme care in taking exercises while suffering from a trouble of this nature. Violent exercises of every kind should be avoided entirely until all symptoms of the disease have disappeared. Light, easy movements, such as moderate walking, and swinging of the arms in various ways will be found of special advantage. You may also exercise with a chest weight for developing the muscles of the walls of the upper portion of the trunk; this, if accompanied by deep breathing, is especially recommended.

I have illustrated on another page special exercises which are intended to bring into action the large muscles located near the heart. In every instance they will prove of great benefit, often producing immediate relief if an uncomfortable feeling has been noted in the region of the heart.

In these and other exercises to strengthen the heart it should be remembered that those are most beneficial which compel you to take the greatest gulps of air without causing distress to the organ.

THE HIPS.—The muscles of the hips have great power when properly developed, and they should be thoroughly and perfectly developed if one wishes a vigorous degree of strength of the entire muscular system. They have to do with both the back and the legs, and when the legs are flexed against the abdomen, it is the muscles of this region that enable one to straighten out. One could not rise when sitting down, without them, and could not then stand erect except with their moderate contraction. The backward swing of the leg in walking and in running as well as the forward swing, is

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accomplished by these muscles, and together with the extensor muscles of the legs they give the propulsive power. Arthur Duffey, the famous sprinter, claimed that he owed much of his speed in running to a peculiar pacing style of stride, the secret being that he had acquired the knack of making the best use of the tremendous power of these hip muscles. In jumping, similarly, these muscles are most important.

It should be recalled that the muscles of the upper leg, being inserted below the knee, have to do chiefly with the movements of the lower leg, just as the biceps and triceps of the arm govern the forearm. The movements of the upper leg in relation to the body are governed largely by the hip muscles, these bearing the same relation to the upper leg that the deltoid, shoulder and upper chest muscles bear to the movements of the whole arm. Viewed in this light, therefore, the student will more than ever appreciate the importance of the development of this part of the body. When there is any weakness or lack of development here, the exercises which I am illustrating will speedily overcome it. Besides walking, hill climbing, running and jumping, kicking, rowing and bicycling, as well as many other outdoor games, will also be effective in helping to develop these gluteal muscles.

THE LEGS.—In a general way it may be very safely said that as a rule the legs are less frequently undeveloped, or at least, less conspicuously under-developed, than the other parts of the body. This is as might be expected, inasmuch as the muscles of the legs get at least a little use in carrying about the weight of the body, even when one does only a little walking or standing, whereas in many cases the muscles of the upper body are almost entirely unused.

However, a little desultory walking or the mere act of standing will not suffice for any real development of the muscles of the leg, as is evidenced by the shapelessness of the great majority of limbs which one may see at any bathing resort. And if there are so few good limbs to be seen among those sufficiently active and fond of outdoor life to go bathing, what may be judged of the condition of those without sufficient energy or

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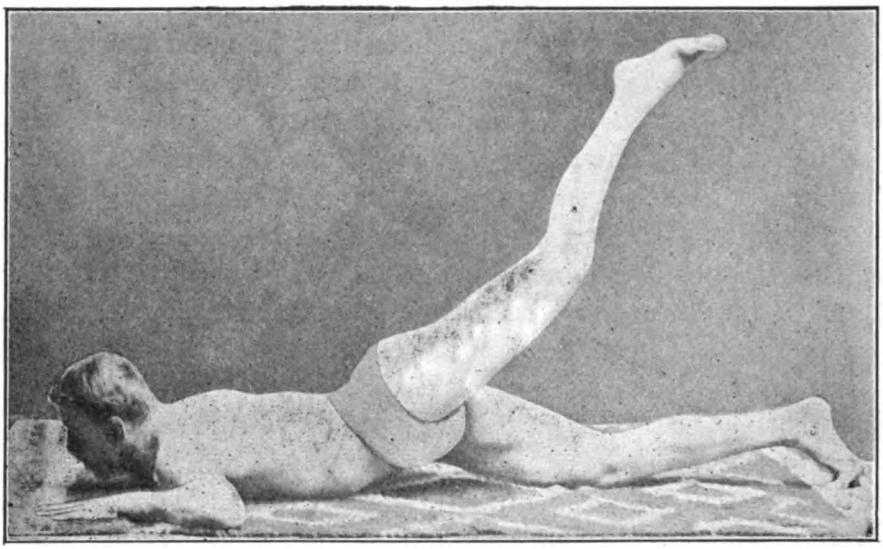
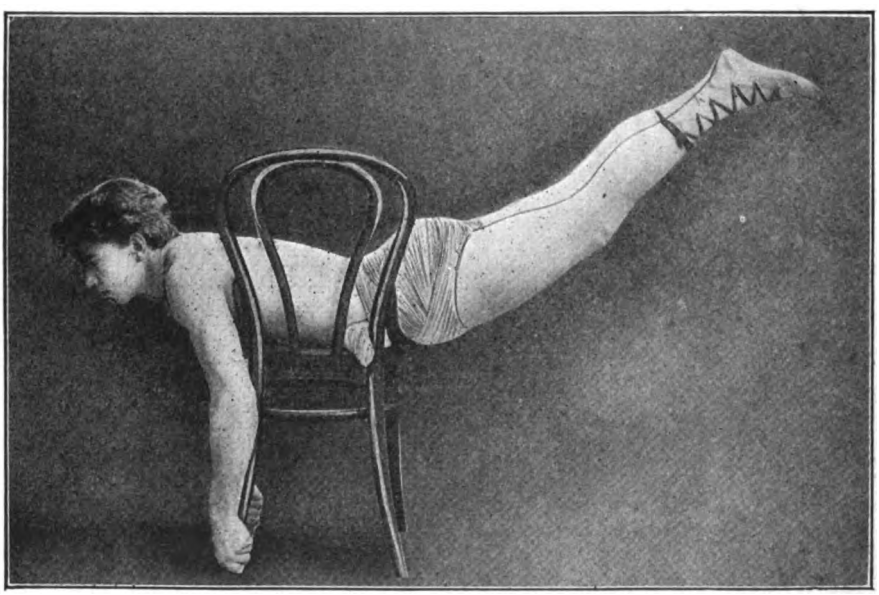
EXERCISES FOR DEVELOPING THE HIPS.



No. 1. Lying face downward, raise the legs, one at a time, just as high as possible, as in the illustration. Having reached this point, try to raise the leg just a little higher still and return to the floor. Repeat a number of times, first with one leg, then with the other.



N. 2. With chest and stomach across the seat of a chair, grasping the legs for steadiness, and with the feet first on the floor, raise both legs at a time just as high as possible, as in the illustration. Repeat until slightly tired.

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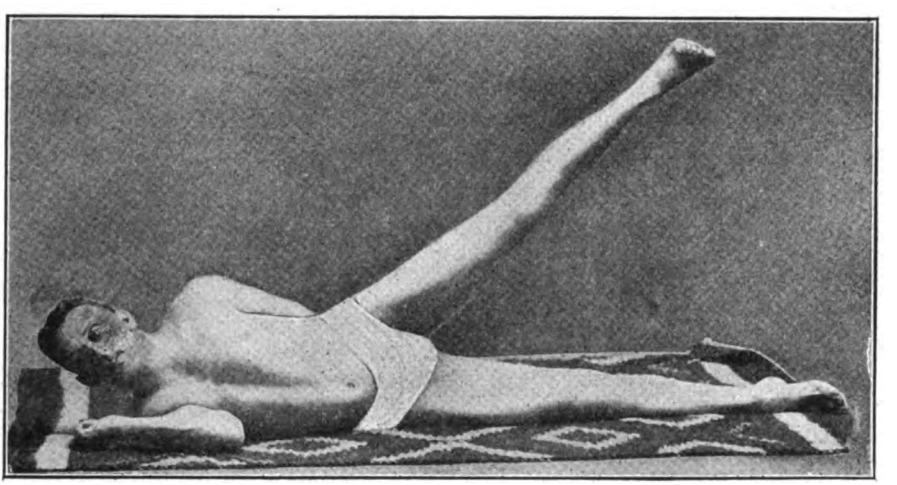
ambition even to go bathing? Any real development or symmetry of the legs requires that truly vigorous use be given these muscles.

In a great many cases, as for instance the all-around athlete, it may be unnecessary to devote any special attention to the legs, inasmuch as one's practice of running and jumping in connection with the games in which he indulges will provide him with the necessary exercise and development. Even in such cases there are sometimes defects of development, such perhaps as the inside of the leg, for which special exercise is recommended. And for the beginner who is generally undeveloped, some special exercise for the legs should be adopted in order that they may be developed symmetrically and harmoniously with the rest of the body. After he reaches a condition of approximate athletic perfection, then he may be able to discontinue the special leg exercises if he finds that his general exercises and games make sufficient provision in this respect.

The work of the legs is so important that it is especially desirable that they should be strong, and that they should not



EXERCISE FOR DEVELOPING THE HIPS.

No. 3. Lying on the side, raise upper leg, with knee straight, just as high as possible, lower and repeat until tired. Same exercise with the other leg, lying on the other side.

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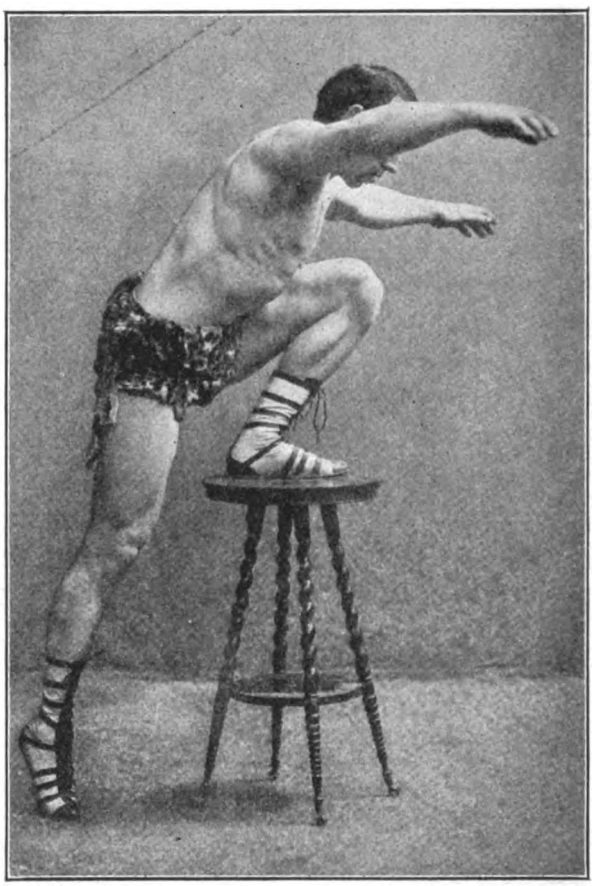
become fatigued too readily. Local fatigue of the legs usually gives one a sense of general constitutional weariness or exhaustion which is most depressing mentally, and which interferes radically with the accomplishment of any purpose which one may have in view. It is not enough that the legs should be just strong enough to permit the owner to walk about; they should be so much stronger than this that he will never know a sense of fatigue, no matter how much walking he may do. And the only way to acquire such strength is by exercise which requires vigorous exertion upon the part of these muscles. Walking as an exercise is the most perfect for constitutional benefits, but it is not sufficient to enable one to reach anything like the full development of the legs. Furthermore, a great deal of walking will never increase the contracting power of the mus-



EXERCISE FOR DEVELOPING LEG AND HIP.

No. 4. A very vigorous exercise for the muscles of both leg and hip. Place one foot on a table, stand, or other similar support, lean well forward with outstretched arms, and rise to standing position upon that leg. Should be practiced equally with both legs.

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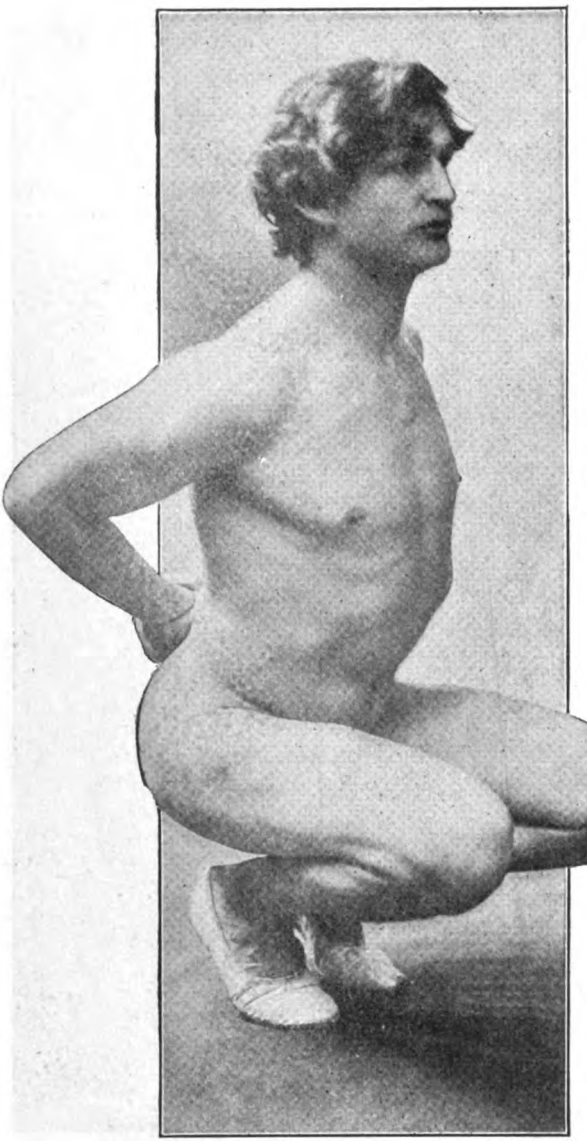
cles above a certain point. But this increased power, acquired by other exercise, will make long walking easier. The special exercises for the upper legs offered here will be valuable in this respect, and will insure a perfect symmetry.



Running is a most perfect exercise for the legs, but even in running the resultant development will depend upon the kind of running. In long distance running one requires and also develops more muscular power than in walking, but still does not make the fullest and most powerful use of the muscles. In running a sprint at top speed, the greatest possible contracting power of the muscles is required.

EXERCISE FOR DEVELOPING THE UPPER LEGS.

No. 1. Assume position as shown in illustration, with the hands clasped behind the back. Keep the body in a perpendicular position from the hips upward. Now rise to standing position. Repeat until tired. This is an old and simple exercise and is of great benefit for developing and strengthening the upper legs. The exercise can be taken quickly or slowly, as desired.

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Consequently, sprinting will develop greater immediate contracting power, or in other words, greater bulk and strength, than distance running. Endurance and repetition or continuance more largely depend upon the strength of the heart and lungs than upon the very greatly increased power of the muscles. Supplementary to these exercises, therefore, I would especially recommend sprinting (fast running), jumping, running upstairs two or three steps at a time, hill or mountain climbing, and similar activities, for the maximum development of muscles of the thigh.

As an instance of the value of such special exercise for the legs, it will be interesting to mention a case that illustrates the point. A young man who was not sufficiently developed for athletic games was greatly interested in distance running, and had developed the lung power, or endurance, to run two or three miles at a stretch, though in far from satisfactory time. But though he could run this distance, he complained of a tired feeling in the legs throughout the day when standing or walking about very much, as well as a "weak-kneed" sensation when running. He was advised to go through a short

EXERCISE FOR DEVELOPING THE UPPER LEGS.

No. 2. Crossing the legs in the manner shown, slowly bend the knees until sitting down "tailor fashion," after which rise to standing position and repeat until tired. Good for knock-knees, and also the general development of the legs.

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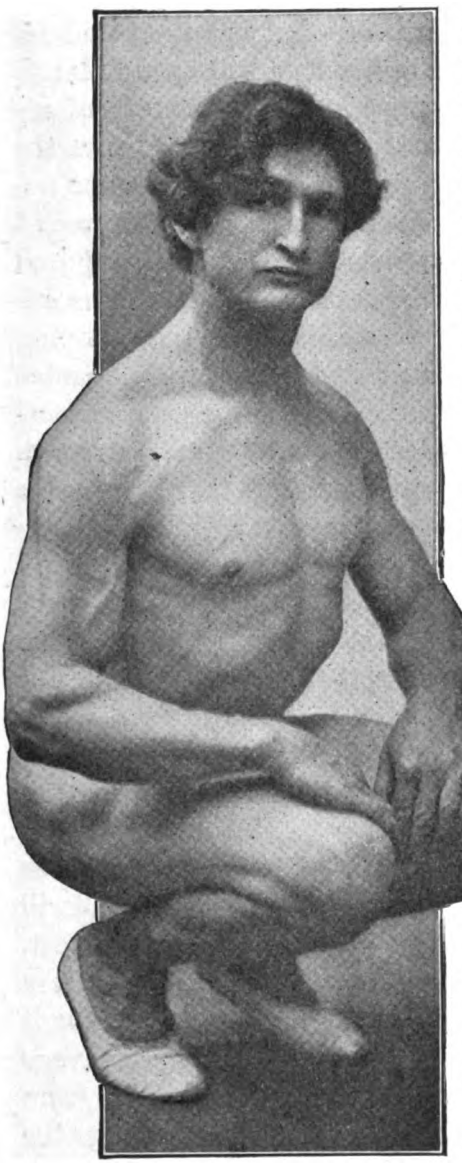

course of sprinting, and in less than two weeks of this the tired feeling of the legs disappeared entirely. The greater resistance and more energetic effort of sprinting quickly developed more strength and power, so that he took up his distance running again and found a remarkable improvement in his time.

If one ultimately reaches a point at which these exercises for the legs seem too easy, then he may increase their resistance and vigor by supporting some additional weight while executing the movements. To walk a distance while carrying another person on your back will double the resistance and greatly hasten the development. Carrying a heavy weight upstairs is also a most effective exercise for developing the thighs.

EXERCISE FOR DEVELOPING THE UPPER LEGS.

No. 3. First place your hands on the insides of the knees, in the position shown, but with knees far apart. If you cannot keep your balance in this position, lean against a table or chair. Now, resisting with the hands, bring the knees inward until the hands touch as shown in above illustration. Repeat until tired. This exercise is especially valuable for developing the muscles on the inside of the upper thighs. These muscles give the upper leg a symmetrical contour and improve its appearance quite materially if properly developed.

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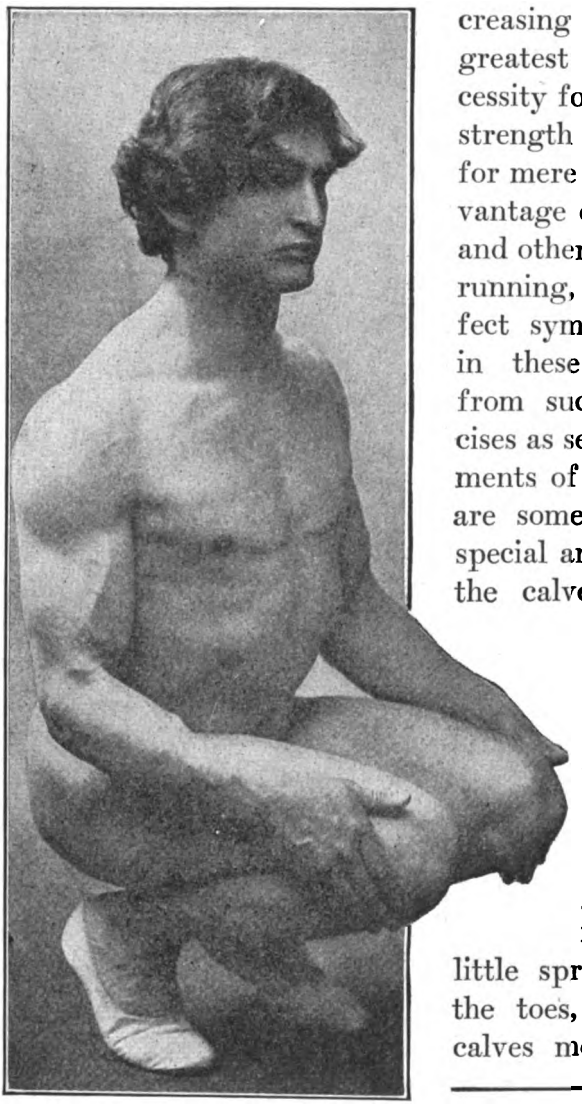
Developing the Calves. Much of what has been said regarding the development of the upper legs will apply also to the lower legs, especially in connection with matters of increasing resistance for the greatest development, the necessity for a greater degree of strength than that required for mere walking, and the advantage of running, jumping and other sports which involve running, for the sake of perfect symmetry and strength in these parts. But aside from such sports and exercises as seem to fit the requirements of the entire leg, there are some others which have special and peculiar value for the calves. Exercises which require that one be upon his toes, but without the violent effort of running or high jumping, will serve in this respect. Rope skipping is a good example, for it requires only a very little spring, and that from the toes, thus affecting the calves more than any other



EXERCISE FOR DEVELOPING THE UPPER LEGS.

No. 4. Assume position shown in illustration, placing the hands on the outer side of each leg. While pressing inward with the hands, bring the legs outward as far as possible. Continue the movement until the muscles tire. This exercise is especially good for developing the muscles of the outer side of the upper leg, though of course the crouching position tends to round the knees and develop all the muscles of the upper leg.

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part of the body. When continued for some minutes it also naturally provides for the free use of the lungs. Ordinary dancing is another pastime that brings into action chiefly the muscles of the lower legs.

The special exercises for the lower legs which I am providing here include movements for the flexing muscles of the front of the legs, or in other words, those which raise the toes, although naturally those of the calf are the more important and more powerful, since they raise the weight of the entire body on the leverage provided by the bones of the foot. It is upon these muscles that the springiness of the stride depends, which explains why one who is lacking in the development of these muscles can never walk with the least semblance of grace. A good walk has a little of this elastic quality, and is the means of avoiding a great deal of jar to the brain and general irritation of the nerves. Without this action of the calves in walking one would never rise on the toes; he would be compelled to hobble along after the fashion of the man with broken-down arches of the feet, or, in other words, like one with wooden legs from the knee down. Walking on your heels will give you a clear idea of the gait that one would be restricted to without the calf muscles and the possibility of rising on the toes, or more strictly, upon the ball of the foot, in walking.

The importance of a full and vigorous development of these muscles, therefore, is manifest. Like the thighs, they should be stronger than mere walking requires even for the purpose of good walking. Even a moderate weakness of the calves will necessarily interfere with the freedom and grace of the stride.

What I have just said about the action of the calf in walking will make plain the reason why the wearing of very high-heeled shoes produces such an awkward, clumsy and ungraceful walk, something like walking on stilts or on wooden legs. It is utterly out of the question for the woman who wears high heels to walk gracefully. One essential of good muscular condition and development is that there should be

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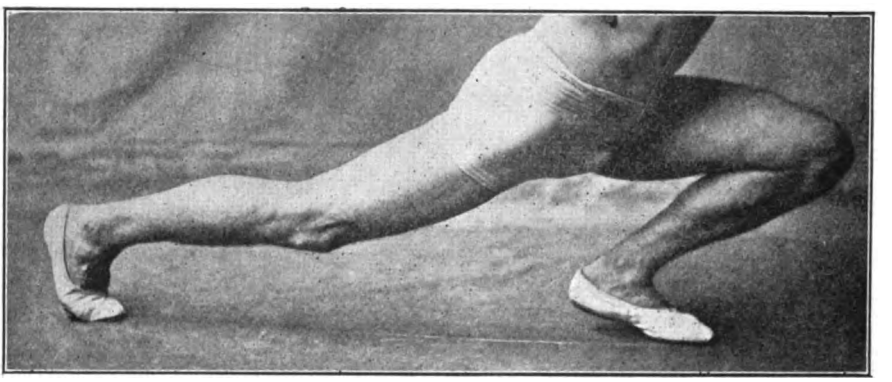
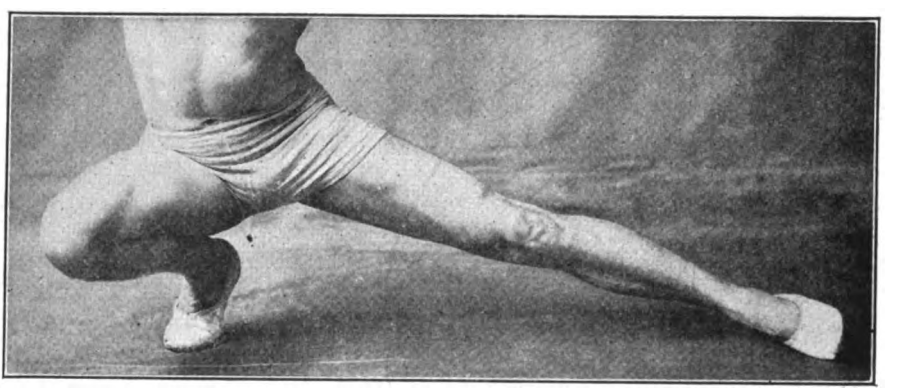
EXERCISES FOR DEVELOPING THE UPPER LEGS.



No. 5. Stand erect with left foot far forward. Now bend left leg as far as you can, as shown in above illustration. Straighten left leg and continue movement until slightly fatigued. Take the same exercise with the right leg forward. For muscles of the hip and upper leg.



No. 6. Stand with feet far apart. Now slowly bend right knee and bring weight over to the right leg as shown in above illustration. When rising make the left leg assist as much as posible. Same exercise to the left. In this exercise the straight leg should be made to assist as much as possible each time you arise. If these instructions are followed this exercise uses very strongly the muscles on the inside of the upper leg.

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the fullest possible action, but with the high-heeled shoe the movement is shortened to almost nothing. In time the muscles of the calves and the tendons become shortened, adjusting themselves to the artificial conditions, and since there is very little use made of these muscles anyway, they gradually atrophy. The habitual wearer of high shoes cannot possess a good calf development, but on the contrary will gradually lose any symmetry of this part which she may have acquired in her active girlhood days.

Skating on ice is a good exercise for the lower leg. It requires a strong ankle to keep the skate firmly in the right position and this means strong muscles of the lower leg, not so much the large muscles of the calf as those which have to do with bending the foot sideways, that is, inward and outward. Skating is peculiar in its value for strengthening these particular muscles.

THE LUNGS.—[See also *The Chest* in this chapter, and *The Respiratory System,* Chapter VIII, Vol. I.]—Breathing is the first and the last act of every individual, and it might be presumed that between the breath which expelled his first cry and that which died away in his last gasp he surely had fully learned how to respire. Nevertheless, hardly one person in a hundred breathes properly. The rest breathe only to a limited extent of the possible capacity of their lungs, and so get only a limited power out of that human engine, the body. Their vitality is a minor fraction of what it should be. In short, they are only half alive, missing the great joy which springs from a consciousness of full mastery of their physical powers.

A grown-up male of average bodily development has usually in his lungs about two hundred cubic inches of air. An ordinary inspiration, such as is made by people unversed in taking care of their bodies, accounts for about thirty cubic inches of air. But inflate the lungs as much as you possibly can, and you draw in some one hundred and thirty cubic inches of air, or one hundred inches more than you do with a "quiet" breath. Now, when you inhale but thirty cubic inches of air and exhale it quietly, only that same quantity leaves your lungs. But

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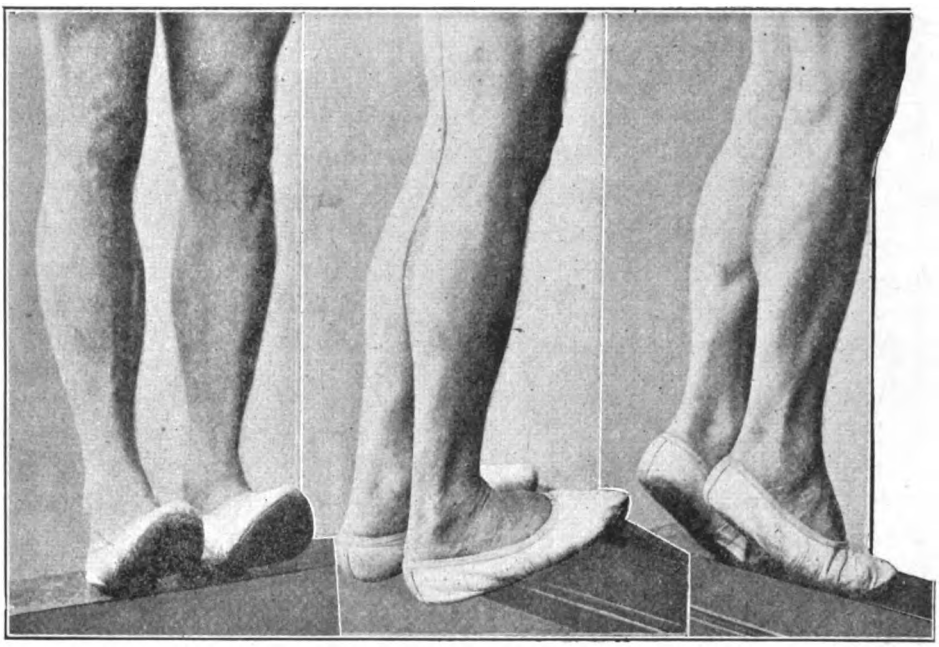
EXERCISES FOR THE CALVES.



No. 1 No. 2 No. 3

No. 1. Secure a block of wood of some kind that will raise you about four inches from the floor. Now stand on this with the heels, the toes extending over, and reaching down as far as possible with the toes in the manner shown in Photo No. 4 of this series. Now raise the toes as high as you can, as shown in Illustration No. 1. Repeat until tired. This is a splendid exercise for the flexor muscles of the front of the lower leg.

No. 2. Stand on the extreme edge of the block with the toes, as illustrated, allowing the body to drop as far as possible. Now rise slowly as high as you can to the position illustrated in No. 3, sink back again and repeat the movement until tired. A strenuous exercise for the large muscles on the back of the calf.

No. 3. Standing with the toes resting on the block, as shown, roll the feet until the body rests on the outer sides of the feet. Then roll the feet in the opposite direction until the weight is resting on the inner sides of the feet. Continue back and forth until tired. For muscles on inner and outer sides of calves.

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a strong expiration of air will relieve the lungs of some hundred cubic inches of more or less impure air that would otherwise linger in them to your harm. And as the ordinary quantity of air that belongs in the lungs must be made up at the next inspiration, pure air takes the place of the impure that has been gotten rid of by the forced expiration, and the blood throughout the body is much benefited thereby.

Strengthening the lungs and increasing their capacity for air are accomplished by one and the same means—the studied practice of deep breathing in the open air. Fill your lungs as deeply as you can, and you cause the ribs to rise and to bulge forward. The intercostal muscles facilitate this expansion of the chest, one rib being pulled upward and driven forward by the same movement of the rib above it. The diaphragm does its share by rising and forcing the lungs to expand outward. The ribs are obliged to accommodate themselves to the movement. The intercostal muscles become stronger through this constant exercise, and the costal cartilages are forced to stretch in order to accommodate this new demand on their expansion. In time, by repeated exercise, the cartilages permit of great increase in size of the cavity in which the lungs rest. And the lungs, both on account of the work of their own muscles and of that of the greater amount of chest space in which they lie, become larger and more enduring, while the heart is benefited, as has already been described, and the effect for good extends to the remotest tissues of the body.

To get the full benefit of breathing see that you are surrounded so far as possible with pure air. Be out of doors as much as you can, and, when you are indoors, secure good ventilation for the room. [See *Pure Vitalized Air,* Chapter X in Volume I.]

Breathing in a confined room renders the air foul by converting the life-giving oxygen into the asphyxiating carbonic-acid gas. Your body is giving off vapory emanations which, even though slight, befoul the air nevertheless. You may be reading or working by the aid of a lamp, and the combustion that goes on in it is making the air more and more foul. In

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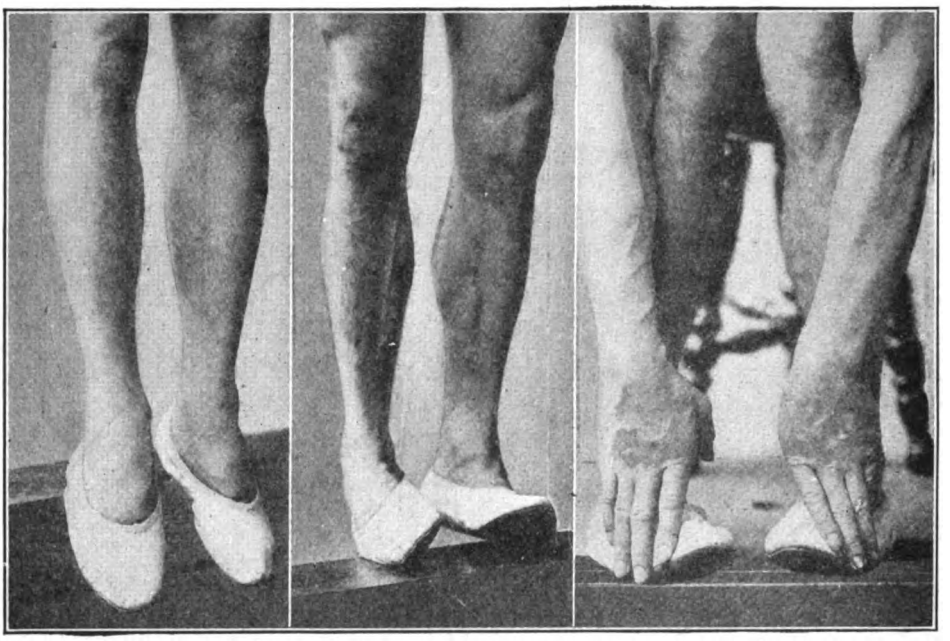
EXERCISES FOR THE CALVES.



No. 4. No. 5. No. 6.

No. 4. Stand on the block of wood with the heels, as illustrated, then roll the feet first to the inside and then to the outside in a manner similar to that in No. 3. This is a variation of the exercise for the same muscles.

No. 5. Standing flat on the soles of the feet, turn the feet outward until the weight of the body rests on the outside edge of the soles of the feet. Repeat until tired, then reverse to inside edges. For muscles on inside and outside of calves.

No. 6. Seat yourself on a chair. Now, reach down and place your hands on the outer sides of the toes, as shown in the illustration. Now, bring the toes outward as far as you can, pressing against the movement slightly with the fingers of the hand. Continue the exercise back and forth until tired. For the twisting muscles of the calves and upper legs.

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order to keep warm you have a radiator, heater, stove or grate going, each of which is taking oxygen out of the air. Throw open the windows then. Let in the pure air every moment that you are in the room. Breathe deeply. Every breath taken should be so full and so far-reaching that it goes to the uttermost recesses of the lungs. The lungs are filled with impure venous blood that needs purification by oxygen. And the blood, even after it has been made pure, needs oxygen to carry back to all the tissues of the body.

Start with a normal pair of lungs, and breathe deeply of pure air all through your life, and tuberculosis, or any other pulmonary disease, becomes an impossibility.

Cultivate the habit of carrying the head erect, with the shoulders thrown back, whether you are walking, standing or sitting. If the shoulders are allowed to bend forward, and the chin to droop, the lungs cannot expand as they should. Experiment a little with the shoulders and chin thus placed and you will appreciate the harmfulness of the position to the full.

Photographs we have reproduced illustrate the proper attitude to take and proper movements to make in exercises in deep breathing, that is, breathing which brings the air down into the farthest recesses of the lungs, inflating every cell, and which expels it again so thoroughly that every cell is collapsed. The movement should mainly be in the abdominal region and only slightly in the bony framework of the chest walls. The cultivation of an unusual "chest expansion" is more largely a "stunt" than a genuine athletic achievement.

Right here is the place to warn readers against the baneful habit, recommended by many athletes, of holding the abdomen drawn in as far as possible at all times in walking or standing. This is unnatural and injurious. It interferes with the digestive process, as well as with free and natural breathing. The abdominal wall should be relaxed and allowed perfect freedom to expand and contract with the downward and upward movements of the diaphragm essential to proper breathing.

In filling the lungs to their greatest capacity while taking

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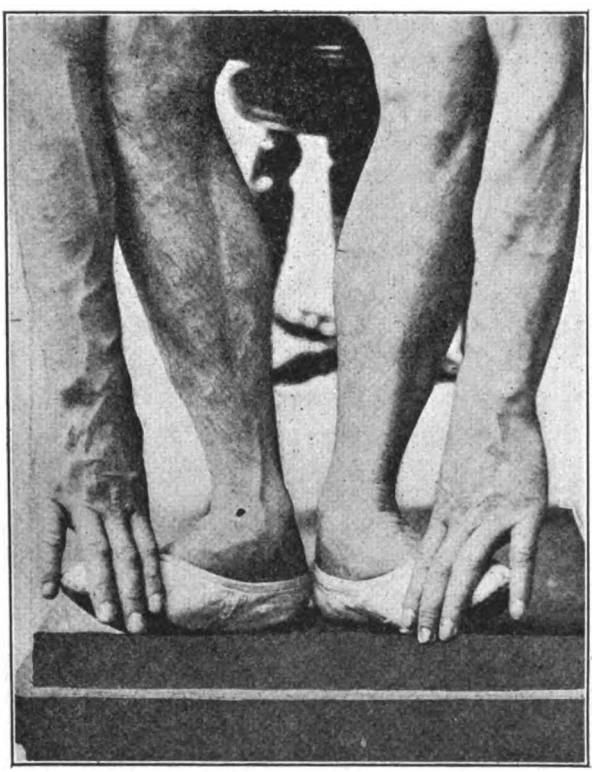
breathing exercises, it is always well to first force out all the air you possibly can, and this requires you to draw in the abdomen as far as possible. Also, while making special movements that bring into play the chest muscles, a deep, full breath retained for a few moments with rigid abdomen will tend to force the air into every cell of the lungs, and thereby expand the chest and be of general benefit. Under ordinary circumstances, however, the abdominal wall should not be made tense and rigid, or held in.

Do not for a moment suppose that deep breathing is to be practiced only as a brief spell of exercise each day. Breathe deeply all the time, for the more you do so, the longer you will live and the better will be the health that you will enjoy.



EXERCISE FOR THE CALVES.

No. 7. Seat yourself on a chair and place hands on the inner sides of the feet while turned far outward as shown in illustration. Now, bring the toes of the feet together, pressing slightly against the motion with the fingers. Continue until tired. For the twisting muscles of the calves and legs and upper legs.

The first thing that you ought to do when rising in the morning is to go to an open window —or, best of all, right out-of-doors—and there take in a great number of full,

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deep respirations. It is possible, and not only that but necessary, to combine deep breathing with all muscular exercise. When you begin such exercise, be sure to assume a correct standing position, with chin well up and the chest given every opportunity to expand, and breathe deeply and regularly for at least three full minutes. Also pay heed to your work, in order that you may go through all of the movements with vim, accuracy and precision, but at the same time remember to *keep on breathing deeply* all the time that the muscles are being brought into play.

As often as you stop the muscular work, remember to continue the deep breathing. Your fatigue will disappear the more quickly if you do this. And always bear in mind that the active employment of the muscles creates a demand for more oxygen in the blood.

If you are in a perspiration and intend to bathe, it is an excellent idea to breathe deeply and cool off somewhat before you come in contact with the water.

While every muscular exercise may be combined with deep breathing to the profit of both lungs and the part of the body exercised, the following exercises are recommended as particularly helpful to the development of lungs and chest.

THE NECK. *How It May be Developed.*—Perhaps there is nothing more unsightly or unwholesome to behold than a scrawny, undeveloped neck. Of all undeveloped parts, this is the most painfully conspicuous, and furthermore offers to the beholder a sort of index of the vitality and general physical condition of the individual. A vigorous, well-set neck indicates not only a good muscular development of this part itself, but strength and energy in the entire body. It means a good, strong spine, well supported and reinforced, whereas a full throat indicates a large open thorax, with good breathing possibilities, and large arteries supplying blood to the brain, with plenty of room for them. All this, as one will perceive at a glance, means vigor and vitality.

It is true that the building of robust health and general

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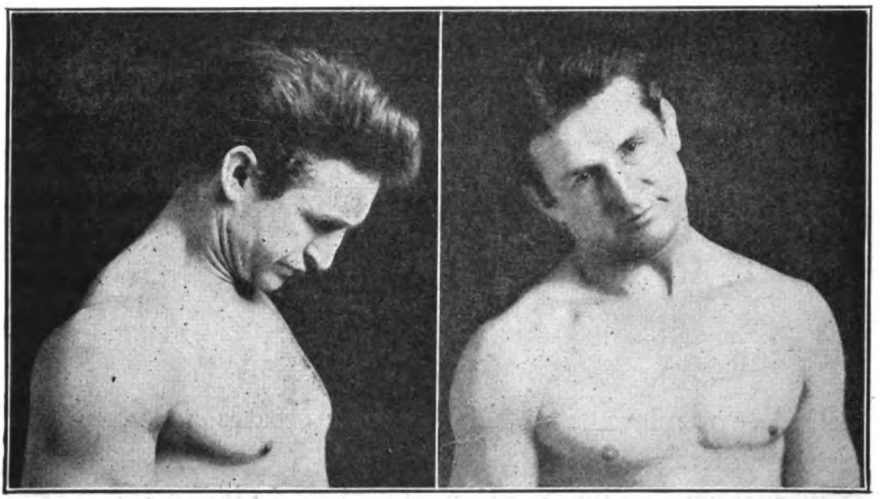
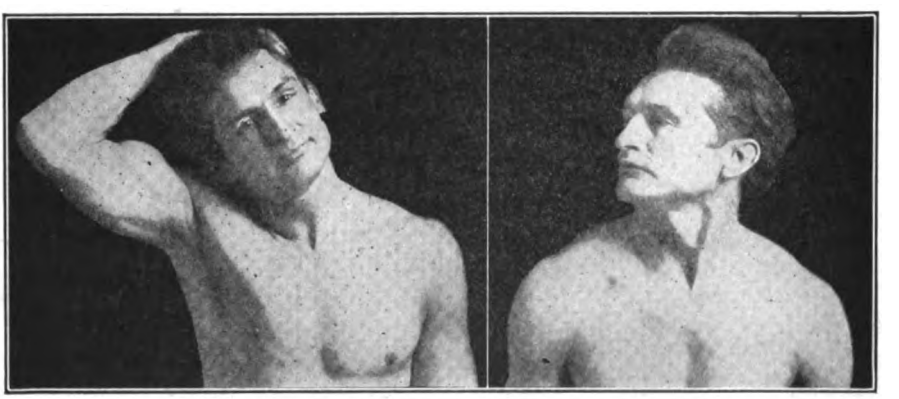
EXERCISES FOR THE NECK.



No. 1. A simple neck exercise, bringing the head far forward and then far backward. It may be intensified by tensing vigorously. Repeat until tired.

No. 2. Bring the head over to one shoulder without turning or twisting, as far as possible. Tensing all muscles, if desired.



No. 3. This is similar to the last exercise, but with resistance added. With each hand take hold of the other side of the head, reaching over the head, and then pull the head over to the farther shoulder against the resistance of the hand. Repeat on each side until tired.

No. 4. Turn the head first far to one side and then to the other, keeping it erect at all times, and tensing muscles if desired to make the exercise more vigorous. For sterno-mastoid muscles.

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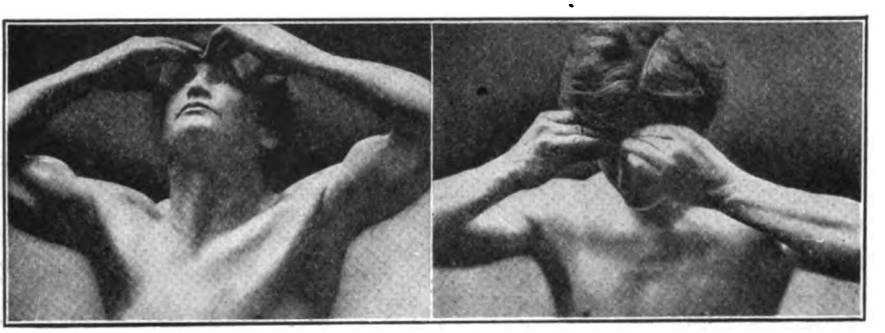
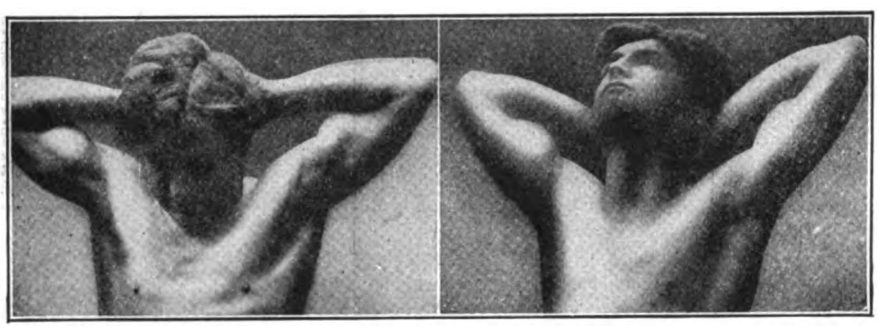
bodily vigor will naturally tend to enlarge and beautify the neck, giving it proportions in harmony with the rest of the body, but at the same time special exercises for the neck itself will help very greatly, not only in developing the muscles of this part, but in strengthening the upper spine. Such special exercises, naturally, become an urgent necessity in the case of special defects or weaknesses of the neck, and the exercises presented here will not fail, if persisted in, to round and fill out every part of the neck, giving such a degree of development and symmetry as anyone might well be proud of.

In my discussion of the Nervous System, in Volume I, I have shown the necessity for a strong neck and a powerful



EXERCISES FOR THE NECK.

Nos. 5 and 6. Showing two positions of the same movement, a resisting exercise for the neck. Placing fingers on forehead, with head far back, bring head far forward until chin rests upon the chest, resisting the movement with the fingers.



Nos. 7 and 8. First placing the clasped hands back of the head, the latter bent far forward, bring head far back as in Illustration No. 8, against the resistance of the hands.

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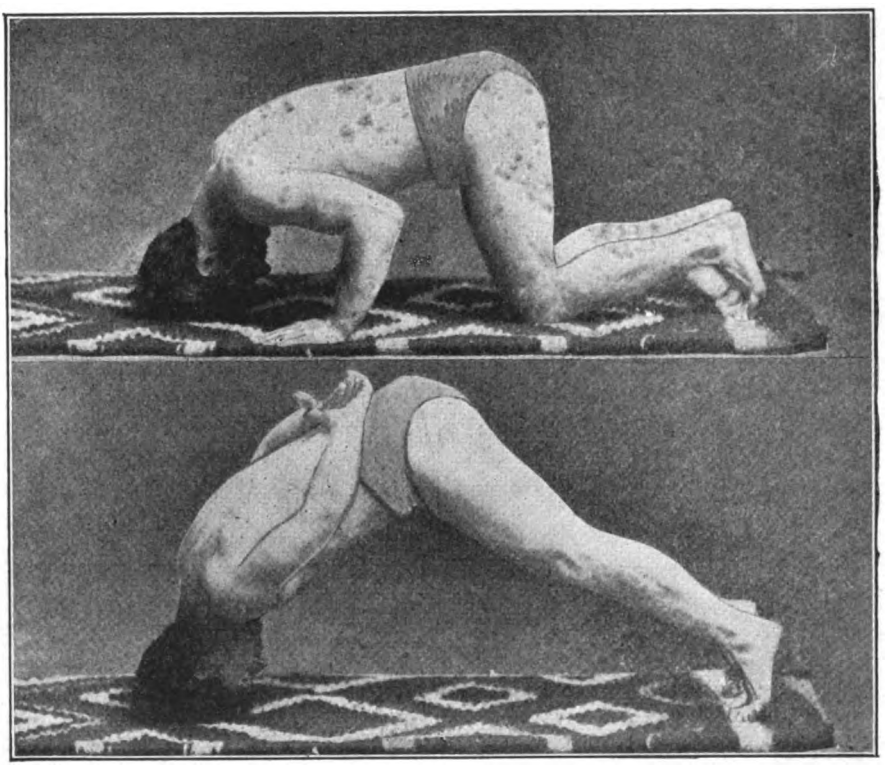
back development for the sake of maintaining vigor of the spinal cord and nervous system and indicated how the nervous system may be stimulated and energized by exercises which bring the blood to these parts and strengthen not only the muscles of these regions but also all of the adjacent tissues. The muscles of the back and of the neck, therefore, should always receive special attention, and these parts should be strengthened together. Supplementary to these exercises for strengthening and developing the neck, therefore, the student should not fail to practice those given in the special Charts accompanying this volume, for powerfully invigorating this



EXERCISE FOR STRENGTHENING THE NECK.

Nos. 9 and 10. Showing two positions of a vigorous exercise for the neck. First getting down on hands and knees, and placing head on a pillow, raise hands and knees from the floor and lift the body as high as possible, with weight resting on head and feet. Return to first position and repeat until tired.

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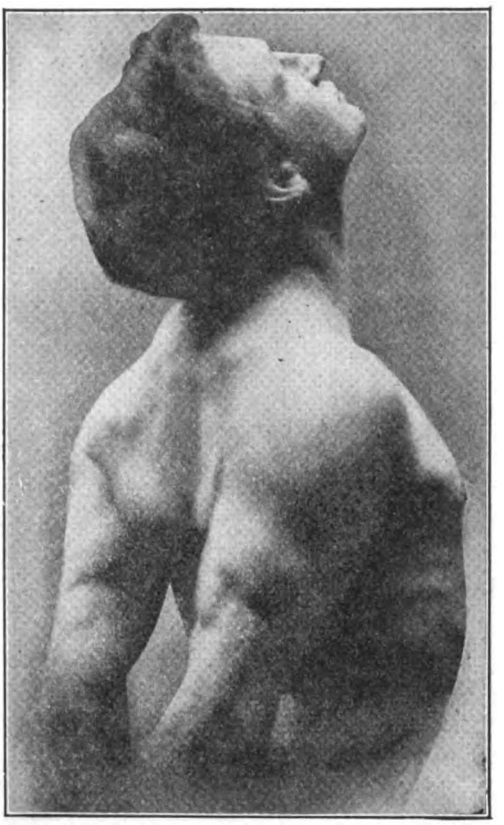

EXERCISE FOR THE SHOULDERS.

No. 1. First bring the shoulders as far forward and downward as you can, and also bring the head slightly forward. Now, with hands grasped together tightly, slowly bring the shoulders and the head backward as far as you can to the position shown herewith. Take this exercise slowly, and with the muscles strongly flexed. This is especially valuable for remedying round shoulders and will be found to affect very quickly the muscles that are used in maintaining a proper position of the shoulders. Continue the exercise each time until the muscles are thoroughly tired. Frequently when the shoulders are in a normal condition they still have a round appearance if the muscles at the back of the neck are not developed. This exercise of the neck will be inclined to remedy this defect.

part of the spine. In this way he will not alone accomplish the very greatest possible results in the development of the neck itself, but he will so add to his nerve-energy that it will be possible to acquire a much better development of other parts of the body.

If a long, thin and puny neck is distasteful to behold, it is no less so than one which is gross through the presence of a heavily sagging double chin and the accumulation of other massive rolls of fat. The back of the neck under such conditions is brutish and ugly, while the throat is shapeless and disgusting. All of these exercises, however, will work wonders in restoring the symmetry and character of the neck, and though they should be taken up gradually and with some care, yet with persistence and a progressive increase of vigor in their execution they will before long surprise every one with the improvement effected.

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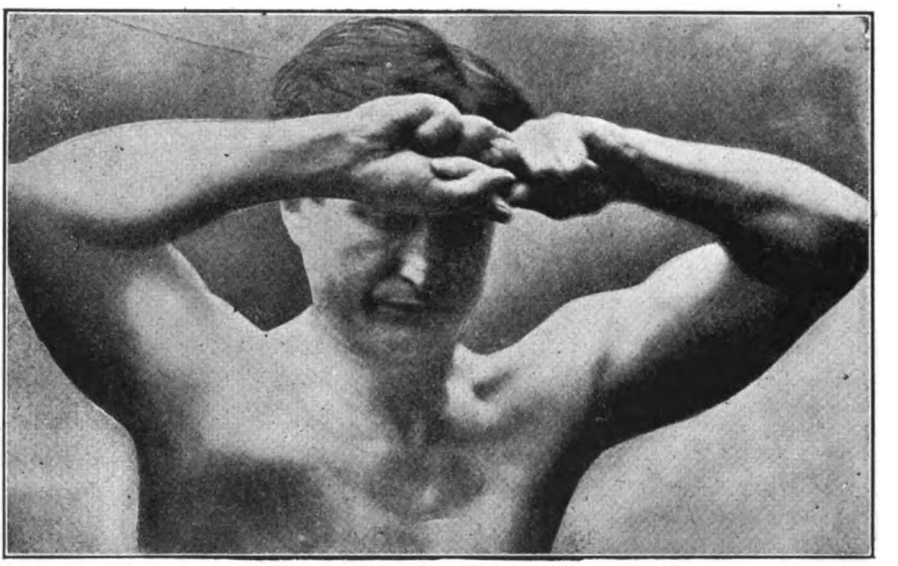
In all exercises for the neck it is essential that there be as much action as possible, or, in other words, that each movement be carried as far as possible. It is not sufficient that the muscles act against great resistance, but there should also be such complete flexion of the neck as will involve a certain amount of stretching of the muscles. In this way the most perfect results will be achieved, and grace as well as strength will be acquired.

THE SHOULDERS.—*How to Strengthen and Develop Them.*—In my general discussion of *Corrective Exercise* in the introduction of this chapter, I have made special reference to round-shoulders and their correction, and would refer the reader to the remarks made there. Round-shoulders are the result of a careless and improper position or carriage of the upper body, and primarily of the weakness of the muscles of the back and shoulders which leads to this drooping, careless at-



EXERCISE FOR THE SHOULDERS.

No. 2. Hooking fingers together in the manner shown, pull outward hard for a few moments at a time. This should be varied from position in front of forehead, to position in front of throat or upper chest, and position in front of stomach. Repeat a number of times.

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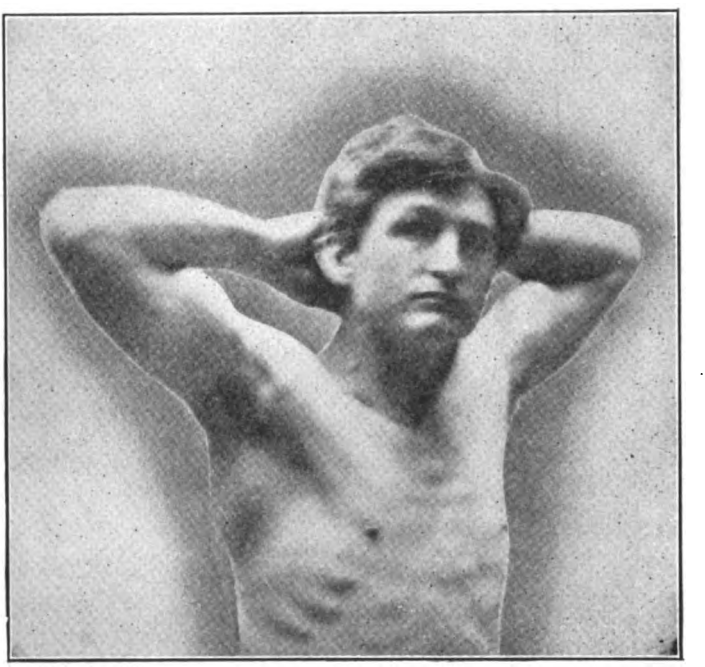
titude. In these exercises for correcting round-shoulders a twofold purpose is accomplished, that of bringing the shoulders back to their proper position at the same time that all of the muscles concerned are strengthened and developed to a vigorous degree.

The muscles of the shoulders are so much involved in most of the movements of the arm that their fullest development is essential to all-around strength of the body. One could accomplish little in any kind of work or athletic activity with weak muscles in these parts. All backward and forward movements of the arms depend not upon the muscles of the arms themselves (except for the deltoids, which might also be regarded as shoulder muscles), but upon the shoulder muscles and the complementary muscles of the upper chest, sometimes called opposing muscles because they serve to draw the shoul-



EXERCISE FOR THE SHOULDERS.

No. 3. Locking fingers of both hands behind the head, pull outward hard with both arms. A very effective exercise for the shoulders.

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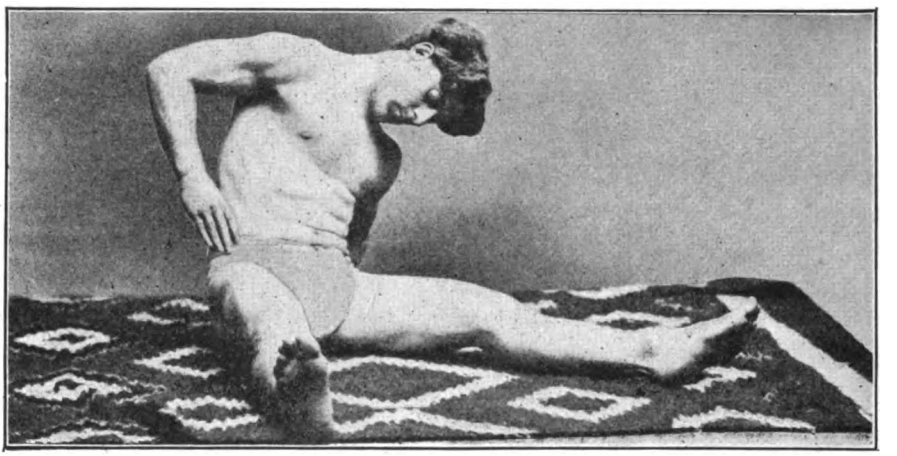
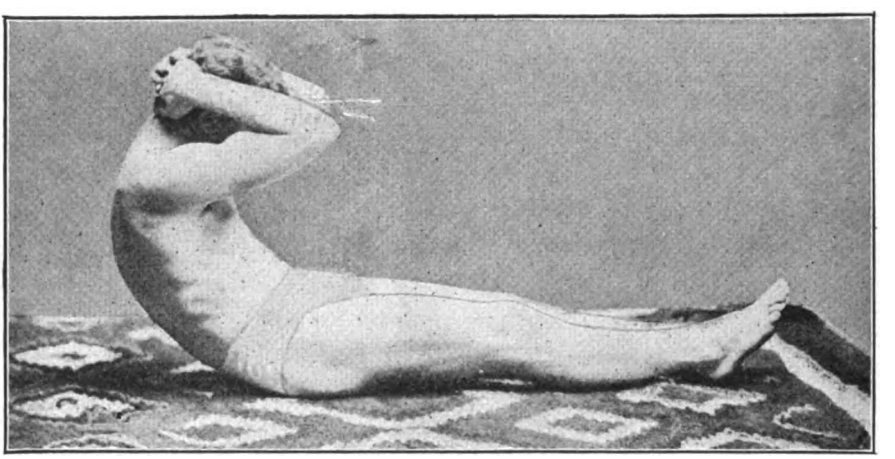
EXERCISES FOR THE DIGESTIVE ORGANS.



No. 1. Seated on the floor, with legs wide apart, hands on hips, bend far first to one side, then to the other. This has a good influence not only upon the stomach and liver, but upon the other internal organs as well. Repeat until tired.



No. 2. Sitting on the floor with hands clasped behind the head, as illustrated, let the upper body lean backward to the position shown in this photo. Then—(See next photo.)

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ders the other way, or in other words, forward. All pulling backward with the arms, as in rowing, in tug-of-war or in pulling the arms apart, brings into play these muscles, and naturally such exercises would help to develop them.

It is a very common thing to express one's admiration for the splendid physique of a well-built man by making comment upon his "fine, broad shoulders." In other words, broad shoulders serve as an indication of great physical power even to the undiscriminating eye. Certainly they are responsible for much of the robust beauty of a perfectly and powerfully developed figure. And probably one of the first things that the weakling desires to accomplish in improving his physique and his appearance is to broaden and develop his shoulders.

It is true that to a large extent the breadth of the shoulders depends upon the bone structure of the body, and that one cannot materially enlarge the skeleton after maturity. One can accomplish something in this direction, but he cannot widen the shoulders several inches if his skeleton is narrow by nature. What he can always do, and should do, is to develop the muscles of the shoulders perfectly, and then, whatever his build, he will enjoy a symmetry of this part of the body which will improve his appearance and give him vigorous strength. The shoulders, when well developed, will be filled out and well rounded, the deltoids will stand out like snug caps on the outside of each, and they will carry with them the suggestion of both strength and beauty, providing, of course, that other parts of the body are not neglected.

In a great many cases the bony structure is suited to great breadth and power, but the shoulders appear narrow because of lack of development, for one thing, and because they are rounded and droop forward. In this forward, drooping attitude they cramp the chest and give rise to other deleterious conditions, but they also give the body a comparatively puny look. The diligent practice of exercises which will bring them back to their normal position at the same time that they strengthen them, will restore their normal breadth and suggestion of power. This will also give the chest more room,

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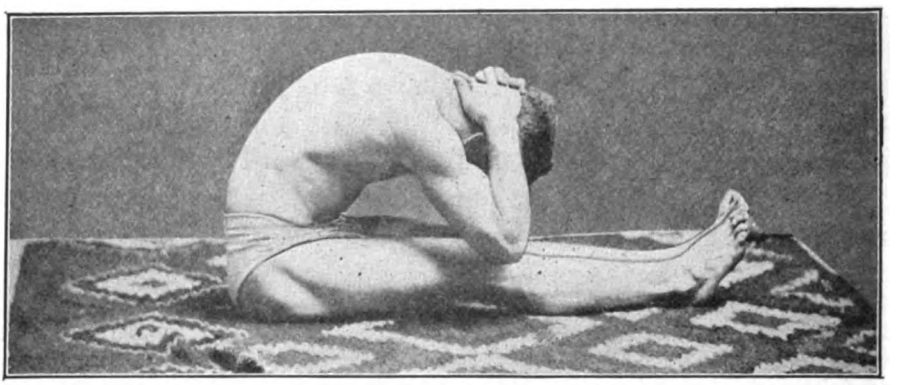
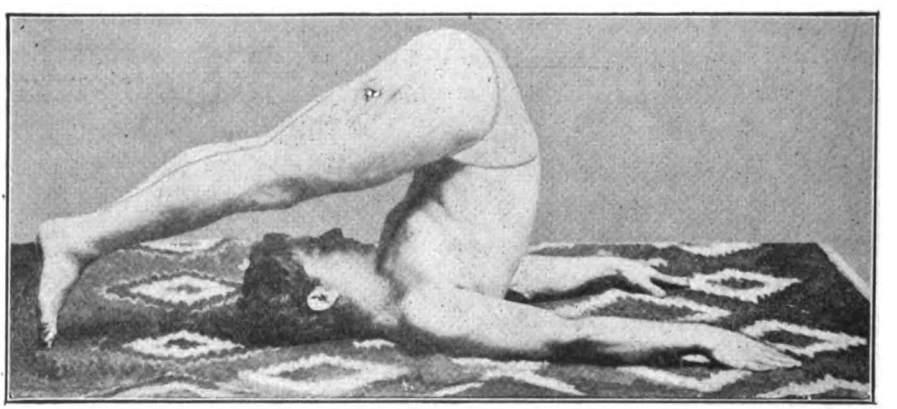
EXERCISES FOR THE DIGESTIVE ORGANS.



No. 3. Flex the body far forward, as illustrated here. To be of real value, this exercise must be performed conscientiously, the body bending just as far forward as it possibly can. Return to position in No. 2, and repeat, continuing until tired. If it is desired to make it more vigorous, as will be the case with advanced pupils, the exercise should be varied by first lying flat on the back.



No. 4. Lying first on the back and with hands at the sides, raise the legs, bringing them up and back over the head to the position illustrated, touching the floor with the toes back of the head. If this is too difficult, at first, then simply bring the feet back as far as comfort will permit. Repeat until tired.

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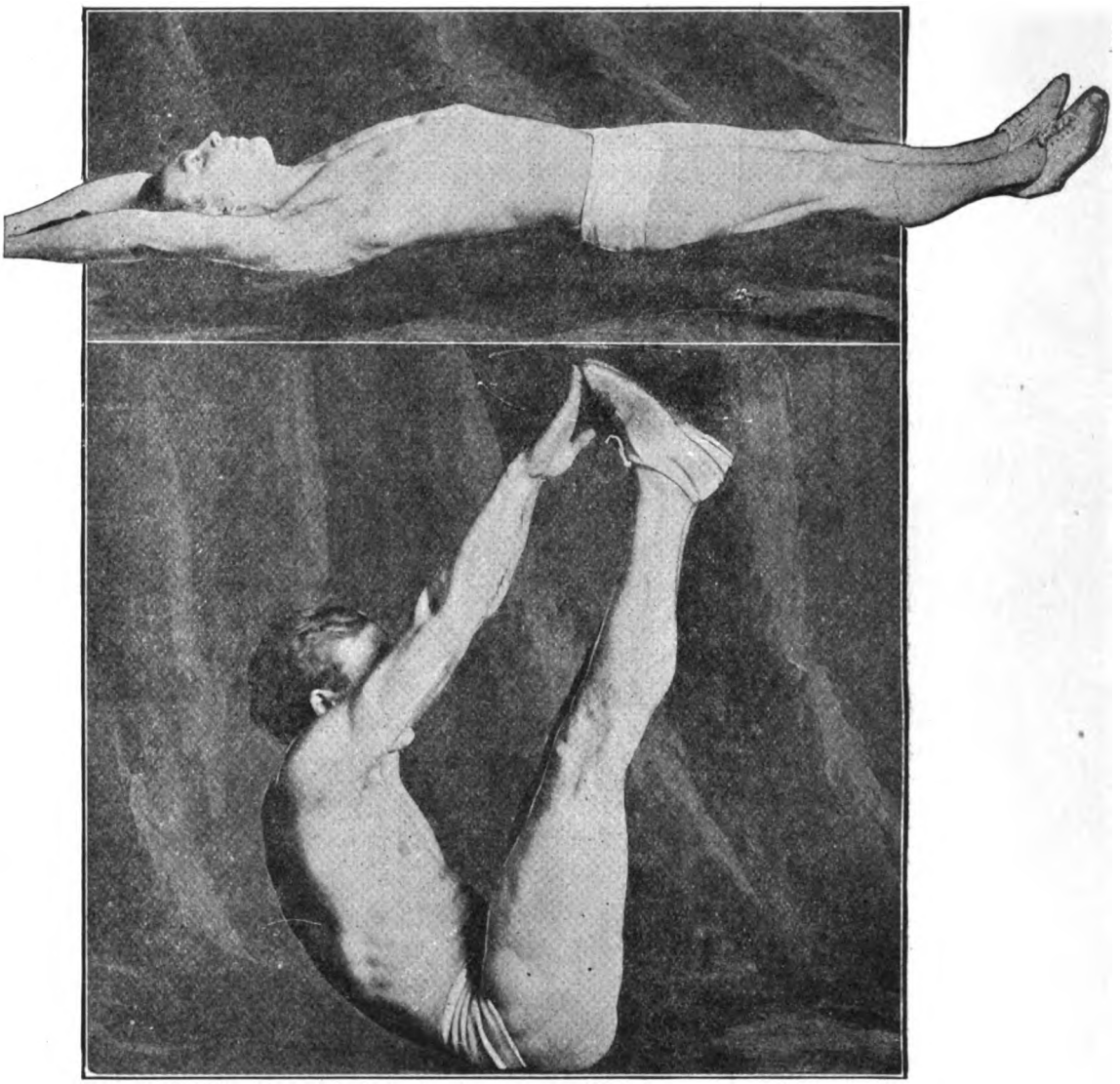
EXERCISES FOR THE DIGESTIVE ORGANS.



No. 5 and 6. Lying first flat on the back, with the arms outstretched as in the upper photograph, quickly and vigorously flex the body at the hips, bring the legs up nearly to the perpendicular, and raising the arms and back at the same time so that the finger tips may touch the toes, as in the lower photograph. Do not attempt to hold this second position, but drop back immediately to the first position and repeat. This is a very vigorous exercise for the abdominal muscles, but must be done smartly to be most effective.

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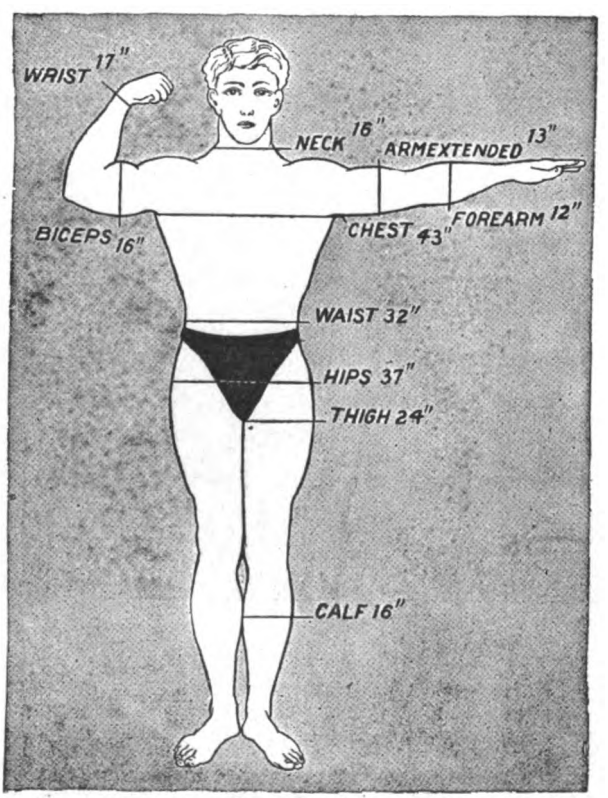
tending to cause it to expand, and will also do much to overcome any tendency toward prolapsus of the digestive and other functional organs, which is usually the result of improper carriage or position. The position of the chest depends so much upon the shoulders that it is especially urgent, for this reason, not to allow the latter to become weak or to form the habit of drooping forward.

In connection with the few movements illustrated here for this purpose, I wish also to refer to the exercises for strengthening the entire back given in the Supplementary Charts referred to in the beginning of this chapter, and published with this volume. Some of these, especially affecting the upper back, will be of great value in the present connection.

PROPORTIONS OF PERFECT DEVELOPMENT.—To students who take up physical culture as a science and get beyond the rudimentary principles, Anthropometry, the measurements of the human body, becomes an interesting subject. Many see only its esthetic or artistic side; but, really, this is outweighed by its therapeutic importance.



Measurements of Albert Treloar, winner of the $1000 prize contest for the best-formed man in the first Physical Culture Exhibition. Mr. Treloar's height is 5 feet, 10 inches, weight 182 pounds.

Obviously, a single standard is not sufficient; for men differ as greatly in bony

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framework as do horses and dogs. A calf measurement of fourteen inches in a given case might be amply large; but the same girth, with another man, of equal height, possessing a large foot and knee-joint, might fall a full inch below the lines of beauty.

It is because of these individual variations that artists take, as a computing-unit, some specific measurement of each prospective model. Various methods are employed, and much along these lines remains to be discovered.

The only way we can discuss the subject, numerically, is under the qualification that radical departures in osseous structure must, and should, modify the requirements. However, certain figures have been prepared which furnish a fairly good guide in dealing with the average man.

The following table is the one generally accepted in the United States. It is the Grecian standard with certain American alterations and additions.

Measurements of Grecian Ideal Male Figure.

Height		Weight	Neck	Chest, normal	Waist	Biceps	Thigh	Calf
Feet	Inches	Pounds	Inches	Inches	Inches		Inches	
5		103–107	11⅛	32–33	29		15	
5	1	107–111	11½	33–34	29½		16	
5	2	111–116	12	34–35	30		17	
5	3	116–121	12½	35–36	30½		18	
5	4	121–127	13	36–37	31		19	
5	5	127–133	13½	37–38	31½		20	
5	6	133–140	14	38–39	32		21	
5	7	140–147	14½	39–40	32½		22	
5	8	147–155	15	40–41	33		23	
5	9	155–164	15½	41–42	33½		24	
5	10	164–174	16	42–43	34		25	
5	11	174–185	16½	43–44	34½		26	
6		185–196	17	44–45	35		27	

Same as for Neck

Same as for Neck

On the whole these figures represent the "perfect development," but they are difficult of attainment and when I have found men so developed, they have not always impressed me favorably.

In some particulars, perhaps, the English table which follows is the better.

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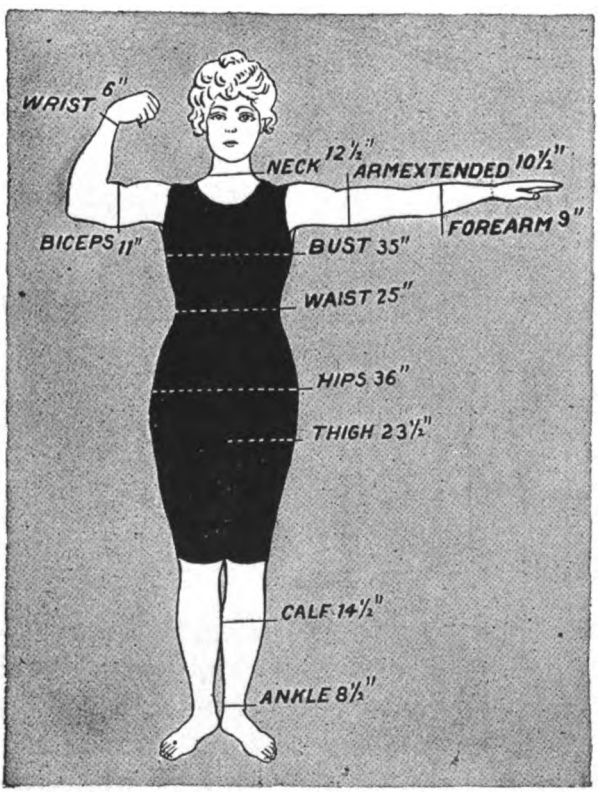
English Standard for Perfect Male Figure

Height		Weight	Neck	Chest, normal	Waist	Biceps	Thigh	Calf
Feet	Inches	Pounds	Inches	Inches	Inches	Inches	Inches	Inches
5		113	13	34½	26	12	17¼	13
5	2	121	13½	35½	26½	12½	17¾	13½
5	4	129	14	36½	27	13	18¾	14
5	6	139	14½	37¾	28½	13½	19¾	14½
5	8	151	15	39½	30	14¼	21	15
5	10	166	15½	41¾	32	15	22½	16
6		185	16	45	34½	16	24	17

The rule that the neck, normal, calf, normal, and upper-arm contracted should measure the same, obtains in nearly all estimates and has been proved correct in male adults from every standpoint. It should be observed that no one can possess this desideratum constantly. It has been proved by numerous experiments that the time of measuring plays an important part. At night an athlete might boast his fifteen inches "all round," and if remeasured early the following morning might present a difference of half an inch between the biceps and calf running perhaps 15⅛ in the former and 14⅝ in the latter. This is due to the influence of position on the circulation.



Measurements of Miss Emma Newkirk, winner of the $1000 prize contest for the best-formed woman in the first Physical Culture Exhibition. Miss Newkirk's height is 5 feet 4½ inches, weight 136 pounds.

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In a comparison of chest and waist measurements, the second table is preferable. True, our American chart, showing less difference between these parts, comes closer to conditions as ordinarily found, but when a greater difference is encountered its superiority is readily seen.

Taking a height of 5 feet 10 inches as ideal, we can arrange a better list by selecting from both tables than by adhering to either one. First, we shall have the neck, biceps and calf 16 inches; chest, 42 to 43; waist, 32 and thigh 22½. Unquestionably, though, this last should be half an inch larger. Other figures, by my own suggestion, should run as follows: Girth of head, 23 inches; hips, 39; forearm, 13; wrist, 7; arm-span, 70 to 72; sitting height, 37; length of foot, 10½ and capacity of lungs 350 cubic inches. Our creation would weigh about 175 pounds stripped; and should be a capable all-round athlete.

For women, the following chart, prepared after examination of the requirements in numerous leading institutions, has been almost unanimously approved.

Proportions of Ideal Female Figure.

Height		Weight	Neck	Chest	Waist	Biceps	Fore-arm	Wrist	Hips	Thigh	Calf
Feet	Inches	Pounds	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
5		100	11½	27	22¾	9½	7¾	5½	32¼	19½	12¼
5	1	106	11¾	27¼	23	9¾	8	5½	33	20	12½
5	2	112	12	28	23¾	10	8¼	5¾	34	20¾	13
5	3	118	12¼	28¾	24½	10½	8½	6	35	21½	13¼
5	4	125	12½	29½	25¼	10¾	8¾	6	36	22¼	13¾
5	5	132	12¾	30½	26	11	9	6¼	37	23	14
5	6	140	13	31¼	26¾	11½	9 ¼	6½	38	24	14½
5	7	156	13¼	32¾	28	12	9 ¾	6½	40	25	15
5	8	166	13½	33½	29	12½	9 ½	6¾	41	25½	15½

Among critics who admire the smaller type the measurements of the Venus De Medici are taken as a standard. Height, 5 feet 3 inches; neck, 12.3; chest, 33.6; waist, 27.3; hips, 36.6; thigh, 21.1; calf, 14; arm extended, 11.4; forearm, 10.6; wrist, 6.5.

Others claim that the "perfect woman" should be taller; and the fact that the average female stature has sprung up

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some two inches during recent years of revived attention to physical culture, would seem to justify their stand.

The average height of the human race is a trifle over 5 feet 5 inches; Baxter gives the average of the American male as 67.67 inches. Galton gives 67.50 for the English. The Chinese run only 65.35 and a certain tribe of Bushmen even lower, 52.75.

As one of the measurements of vital strength the sitting height is important. As a rule a trunk long in proportion to standing height, is a good indication of organic power.

THE STOMACH AND HOW TO STRENGTHEN IT.—The chief organs of digestion are the stomach and the small intestine, where, with the aid of the juices, gastric and intestinal, which are respectively secreted in these organs, food is prepared to enter the blood in the forms of chyme and chyle.

The fact that the stomach and small intestine are essentially muscular organs is not generally recognized because their muscular action is *involuntary*—not like the muscles of the arm, for example, which we can cause to contract by a conscious exercise of the will—and gives no evidence of its operation by sensation, such as the involuntary action of other organs does—that of the heart, for example. The stomach and small intestine go on working whether we are awake or asleep without our slightest consciousness of their efforts. The only sensation which we can experience in them is caused by the weight of superfluous food, or the pains of indigestion. Indeed, a good stomach is that which gives no signs of its existence.

The involuntary muscles of the stomach, controlled by the nerves of the sympathetic system, set up a churning movement that continues from the instant that food enters the organ until the last morsel of it has been expelled. Without this churning there could be no proper admixture of the gastric juice and the food.

The same state of affairs prevails in the small intestine. Here the movement is controlled by a long series of ring-like muscles that alternately contract and relax, forcing the par-

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tially digested food along through the intestine and mixing the bile and pancreatic juice with it.

It is apparent, then, that if the power of these involuntary muscles is less than it should be normally, just so much is the digestive ability of the body lessened. For this reason one of the first steps in increasing vital power, which is based upon good digestion, must be the strengthening of the muscles of the stomach and of the small intestine.

Now, the only way of increasing the strength of a muscle is by exercise. But how can an involuntary muscle be exercised? It may occur to you that, in the case of the stomach and small intestine, these may be forced to increased effort by giving them more food than they are demanding by hunger. This, indeed, has been advocated, but it is an unnatural and, hence, an injurious practice.

The proper method of exercising all involuntary muscles is by exercising the voluntary muscles that are in close connection with them, thereby giving vital power to the particular

Close the hands as shown in the illustration, and strike the lower part of the abdomen with the right and left hand alternately, tensing the muscles of the abdomen vigorously while taking the exercise.

With the closed hands strike the sides of the abdomen, beginning with the waist line, and gradually striking upward as far as you can reach, tensing the muscles of the abdomen vigorously while taking the exercise.

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region of the body, and so stimulating the involuntary muscles to increased action. Now, in the abdomen there are a great many muscles of the voluntary kind, ranging from those that are thoroughly under the control of the will, to those that are partially under this control, and which can be brought thoroughly under control by practice. This you can prove by breathing deeply and rapidly and forcing your abdomen to rise and fall just as you wish it to. It is possible, even, to make these abdominal muscles move while breathing is practically suspended.

A little investigation and thought will show you what forms of exercises are needed for furthering the strength of the involuntary muscles of the stomach and of the small intestine. Any movement of the abdomen that is quick enough and vigorous enough to constitute exercise answers the purpose.

As auxiliary to these exercises percussion of the abdomen should be employed to stimulate the flow of blood in the organs within. Tap the front and sides of the abdomen with the open hands or the fingers. Strike lightly and smartly, going over the entire external surface. Do not do this in a lackadaisical way, but with vim and thoroughness. At the same time avoid striking too heavily, since the aim of percussion is to harden, not to bruise, the delicate muscles. One method of percussion is illustrated on the preceding page. Naturally it would be unwise to attempt percussion when the stomach is filled.

The man who is deficient in the development and strength of the muscles of this part of the body is at a decided disadvantage. If he is not suffering from some form of rupture, then at least he is subject to the danger of easy rupture at almost any time, and from a preventive standpoint this consideration alone should be sufficient to warrant measures for a vigorous development of muscles of this part of the body. In a state of vigorous development, the entire region of stomach and abdomen is walled in by a stout covering of muscular tissue, not only making rupture impossible, but giv-

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ing tone to the internal organs and preventing tendencies toward sagging and prolapsus. These muscles will keep these organs in their proper place and thus enable them to perform their functions with the greatest possible efficiency. Considering the importance of the function of digestion and assimilation in the building of vitality and the maintenance of health, one really cannot afford to neglect these organs in the least respect. How many men and women are able to declare that their digestive organs, in their daily work, represent 100 per cent. efficiency? And yet no one should be satisfied with anything less, just as no one should be satisfied until he is assured that the development, strength and activity of every part of the body represents a full 100 per cent. efficiency.

A sense of weakness and laxity in the region of the stomach and abdomen is truly a deplorable thing, but yet just as unnecessary as it is undesirable. It is the most simple thing in the world to strengthen and develop these muscles, and I might add that one will probably find no other part of the body that seems to respond more quickly to the influence of exercise. The flabby condition will disappear, the tissues will become firm and the contour rugged. One will soon begin to take pride in feeling the well marked outlines of these muscles in their contracted state. And what is more, the sense of strength and power, in place of the sense of laxity and weakness, will make one fearless of disease or digestive disturbances.

It is true that the muscles of the external body are not directly concerned in the digestion of food; and that this is carried on first by the muscular action of the stomach itself, and later to some extent by the peristaltic and other small muscles of the intestines. But aside from the influence of strong outside muscles for supporting these organs and keeping them in their proper places, the energetic use of these external muscles indirectly invigorates the involuntary muscles of the inner body. The powerfully accelerated local circulation due to such exercise strengthens and improves all of the adjacent tissues and organs.

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The student is naturally aware that in case of any weakness of the stomach it is nearly always necessary to make inquiry into the errors of diet which have probably been most to blame, and so to modify or correct the diet that the stomach will not be subjected to any undue strain in its work. With this advantage, the weakened organs will right themselves and gain strength accordingly, but in most such cases it is also best, indeed, we may say necessary, to adopt special measures for energizing and strengthening the stomach itself. This will enable one much more quickly to overcome any disorders of this kind, and the ideal method is exercise. By no other means can the same results be accomplished.

WEIGHT LIFTING.—The lifting of heavy weights is a form of exercise of great value in some cases and of questionable value in others. This depends chiefly upon the build and physical characteristics of the individual, but to some extent also upon the manner in which it is practiced. As in many other matters, there are right methods and wrong methods of weight lifting. The prejudice which has arisen in many quarters against weight lifting is the result of the irrational application of this form of exercise. If one is of a robust or stocky build, and bones are not too light, then he may profit by intelligent methods of weight lifting. If he is very light-boned, apparently intended by nature for the exercise of speed in his physical make-up, rather than for manifestations of prodigious strength, or in other words, if he may be compared to the race horse type rather than to that of the heavy draught horse, then he might do better to let weight lifting alone entirely.

The lifting of bar-bells or large dumb-bells is unquestionably adapted to the development of the greatest possible muscular strength, and it may be said that practically all of the famous and phenomenal strong men have cultivated their strength through this method, even though some of them later recommend or give instruction in other methods. The heavy iron bells offer that resistance which is essential to the most powerful contraction of the muscles and if one follows a system

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of progression in weights, gradually adding one or two pounds as his strength increases, he will grow continually stronger until he reaches his maximum physical power.

Before attempting any form of weight lifting, it is indispensable that the student should thoroughly understand *how* to do so. Otherwise he may strain himself and acquire all kinds of errors of form. Furthermore, without knowing how to handle both the body and the weight, one will be able to lift only a fraction of that which he could comfortably handle, with the same strength, if he did know how. There are those who fancy that weight lifting is only a knack, and that it does not indicate real strength, but in this they are mistaken. It is true that the "knack" is necessary to accomplish anything, but one must also have the strength or he can do nothing. Knack cannot take the place of strength, for it absolutely requires just so much power to raise a certain weight. The knack means simply the concentration of strength in the most effective way, rather than the most disadvantageous use of it.

Weight lifting should never be taken up by the beginner in physical culture, for it should be regarded as a form of advanced training. After one has thoroughly strengthened and hardened every part of his body by ordinary exercises, then he is ready for the practice of weight lifting, if he desires, and it will then increase his strength still further, provided he uses such weights as will offer greater resistance than that supplied in the exercises to which he has been accustomed. For some muscles, gymnastic and resisting exercises may accomplish much more, as in the case of the muscles of the neck, or the *latissimus dorsi,* used for pulling the arm downward, in chinning, on parallel bars or flying rings. Weight lifting naturally has to do with pulling upward and pushing upward, although in this one may vigorously employ most of the muscles of the body.

It is not every one who wishes to acquire the phenomenal strength and development necessary for exhibitions in a circus or theatre, and even the prospective teacher of physical culture will not desire this. Perfect symmetry, grace and activity,

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combined with normal vigorous strength, are better than the extremes of muscular bulk which some exhibiting strong men acquire. As a general thing, therefore, I do not advise trying to reach such extremes. They are not possible to every one anyway. Every one may be physically perfect along the lines of his own build, or as Nature has provided for him, but it is not every man who can ever acquire the power to raise two hundred and fifty or three hundred pounds over his head with one hand. Such men are born with unusually great possibilities of strength.

If one takes up weight lifting, therefore, it should be as an exercise and as a means of development, and not with the hope of some day startling the world with the execution of seemingly impossible feats. As in athletic sports, the aim should be physical benefit and pleasure, and not the making of a record, which is usually impossible, anyway. One should make up his mind in the very beginning that he will indulge in weight lifting with a certain moderation, and that he will use moderate weights, rather than those which will daily test his powers to the extreme limit. This moderation, in most cases, will develop the greater degree of strength, for in going too far one will overreach himself, and will defeat his own purpose. In his exercises he should stop before he is exhausted and should not attempt to lift within ten per cent. of what he judges to be his utmost limit. Remember that vitality is the all important thing, in strength development or in anything else, and if one attempts to lift a weight beyond his power to handle with pleasure and convenience, then he is using up too much nerve-energy. As in other exercises, if he feels a sensation of trembling afterward, he may know that he has exceeded the limits at which his expenditure of energy may prove profitable or beneficial in building still greater energy. Let him be warned thereby not to attempt so much again until he is far stronger.

Weight lifting may be termed a natural form of exercise, as compared with some of the ingenious and freakish methods taught by some correspondence instructors. In a natural state

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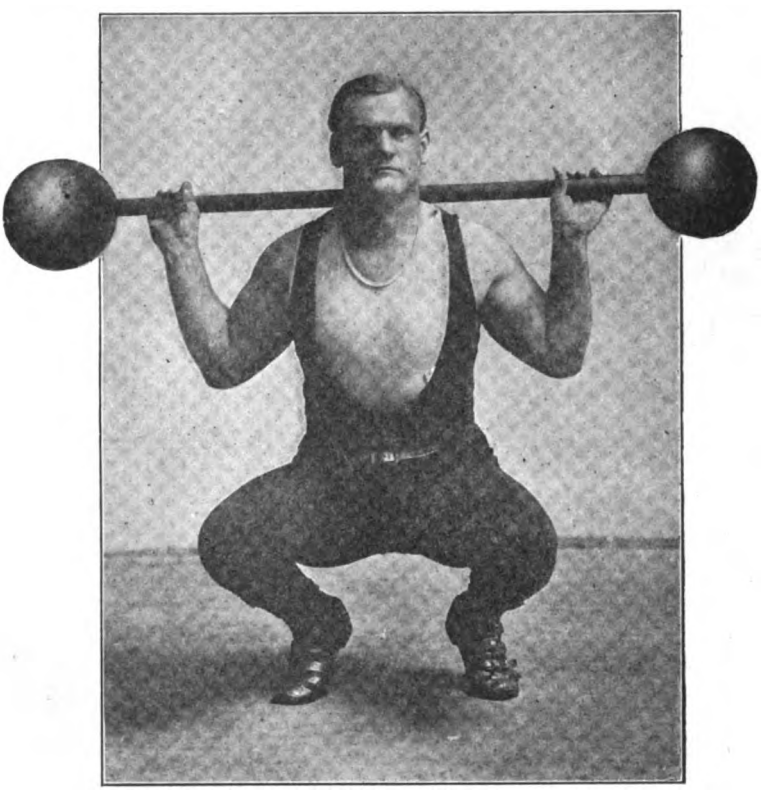
the muscles have to do with moving the body itself, or some of its parts, or else with the handling of external objects. In short, the lifting of things is and always has been a fundamental part of everyday life. Weight lifting as an exercise is a natural development of this everyday activity in handling things. And for purposes of exercise it is not essential that one become a master of all of the little tricks in handling bar-bells, though they help to make it interesting. It will suffice for strength-building purposes to have a general knowledge of the fundamental principles, and this may be gained here.



No. 1. The use of the bar-bell is an ideal method of developing the most powerful degree of strength in the legs. With bar-bell resting across the shoulders as shown, standing first erect, bend the knees and lower the body to the squatting position illustrated. Since success in weight lifting depends very largely upon strength of the legs, this exercise should be practiced a great deal before taking up the regular feats of strength.

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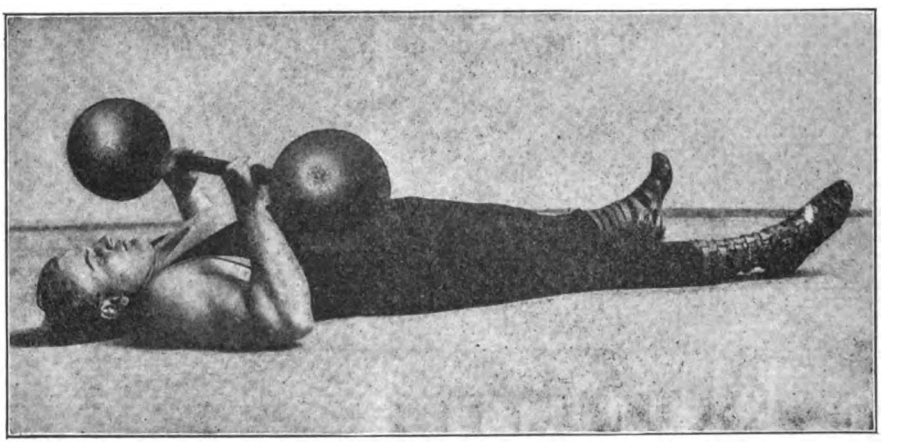
The fine technical points, as in wrestling or boxing, would best be learned from a personal instructor. Sometimes the practice of very simple exercises with a bar-bell will accomplish more in the way of development than the tricks, or feats of strength, as, for instance, in the matter of strengthening the arms. Most lifts in which the arms are employed ostensibly to do the work are really executed chiefly by the strength of the legs, or other parts, whereas in a simple exercise the novice would push up a bell of half the weight by sheer strength of the arm muscles, and in that way develop the arms.

I would therefore recommend, as the first thing on taking up the use of a bar-bell, the practice of the most simple movements for strengthening the entire body, using a bell of such weight that it can be handled comfortably and without strain, perhaps forty to sixty pounds, according to the size and strength of the individual. A bar-bell is preferable to a dumb-bell, because it can be used with one hand or both hands, while the dumb-bell is limited. The student who is strong enough or advanced enough to take up this work will already be familiar with a full system of free movements or calisthenics, and by using similar movements with the bar-bell, adapting them as



No. 2. A fine exercise with the bar-bell for strengthening the extensor muscles of the arm and also the muscles of the upper chest. Lying flat on the back, and with bar-bell held above the chest in the position shown, push straight upward to arms' length.

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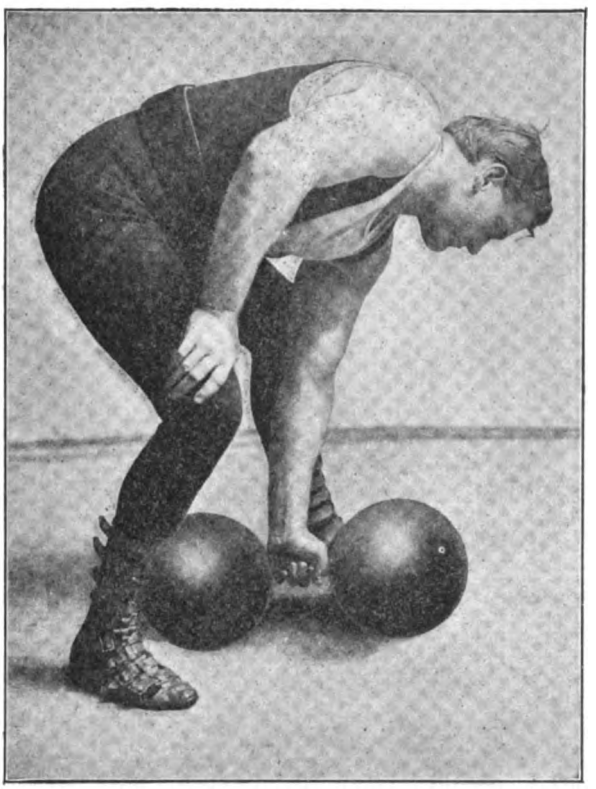
may be necessary, he can employ every muscle of the body. Movements which had come to be too easy can be made effective by the resistance found in the weight of a bar-bell. For instance, rising high on the toes becomes far more effective for the calves if one adds this extra weight. And so with other movements. I would especially suggest the following, using a bar-bell of forty or fifty pounds, or any weight that can be handled readily, and which permits of eight or ten repetitions of each movement comfortably.



No. 3. Method of picking up a dumb-bell, though in the case of a bar-bell to be picked up with one hand, or a very heavy dumb-bell, the palm of the hand should be forward, and the bell placed parallel with the line of the feet. Note especially the position of the back and legs, the back being held straight, and the body bent from the hips.

With bar-bell lying on floor, and the knees straight, pick it up and rise to standing position. Return to floor and repeat until only moderately tired. For the back.

Holding bar-bell resting on shoulders, back of neck, rise high on toes, repeating as necessary. For the calves.

Starting with same position, bell on shoulders, bend the knees and the lower body to a squatting position, rising and repeating. For upper legs.

With arms at sides, holding bar-

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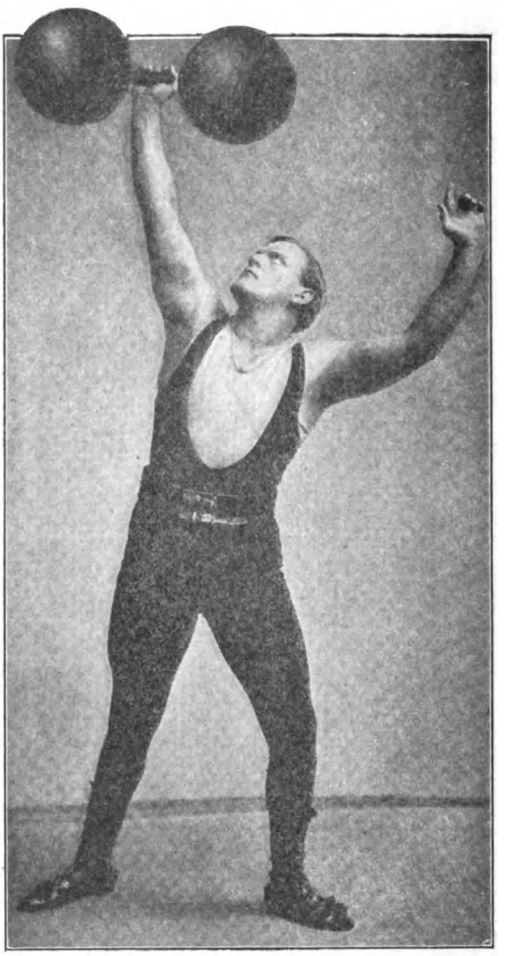
bell across the front of the body, hands in supination (palms turned upward or forward), flex the arms while keeping the elbows at the sides until the bar-bell is brought up across the front of the shoulders. Then vary the same movement by having hand in pronation (palms down). This should not be done too quickly, lest it be accomplished through momentum of a swing. If done slowly the bell will be raised throughout the whole movement by the contracting power of the muscles only. For biceps and forearms. This may be improved by curling or bending the wrists as much as possible during the movement.

From position in front of shoulders, hands in pronation (palms forward), push bar-bell slowly over head to arm's length, till arms are straight, and it cannot be stretched up any higher. Repeat until slightly tired. For deltoid and triceps, deltoid first part of movement, chiefly triceps for latter part. Do not do this with a jerk.

Lying on back, bar-bell across the chest, push straight upward with arms to arms'



No. 4. Position with weight high above head, in one hand. It is most important that one keep his eye on the bell at all times when it is above the shoulders, and it should be balanced above a point midway between the two feet.

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length. An excellent exercise for triceps and pectoral muscles of chest.

Lying on back, with bar-bell across stomach or abdomen, heels doubled under the knees, raise the back off the floor and as high as you can, weight resting on shoulders and feet. Repeat until tired. For back and buttocks.

Standing with back straight, but bending forward at the hips, back parallel to the ground, pull bar-bell straight upward to the chest with both hands, lower to arms' length and repeat. If desired, forehead may rest on a table while doing this. For biceps and muscles back of shoulders.

The above simple exercises will employ in a general way all parts of the body, and it would be well to practice them for three or four weeks for building strength before attempting regular feats of strength in lifting. In executing all of these movements, be sure to stretch the arms as far as possible when extending, or when raising weight above the head, and to flex just as far as possible when bending arms or legs. In other words, make movements just as complete as possible, which should apply in weight lifting feats as well in these plain exercises. If one will rigidly adhere to this rule of complete extensions and flexions of all parts of the body, he need have no fear of becoming "muscle-bound" through the handling of weights. (See *Muscle-binding,* preceding chapter.) The muscles will retain their full length, and there will be no impairment of the movements of any part of the body. Perhaps in the case of extreme development from weight lifting, there may be some such interference, but it should be slight.

In taking up weight lifting, it would always be well to take some exercise for speed and flexibility to counteract the tendency to become slow. Weight lifting alone has a tendency to make the muscles slow, but hand ball, bag punching, sprinting, jumping, boxing and fencing will to a very great extent counteract this. There are numerous examples of powerfully developed men who are exceedingly quick and active in their movements. At the same time, it must be admitted that one who specializes in heavy exercise, even if he tries to cultivate

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speed simultaneously by light quick exercises, can never be quite as fast as the man who is built for speed and who devotes all of his energies to its development.

In many feats of strength, however, it is well to combine a measure of speed with strength. The result will be the development of tremendous energy. Some moves in weight lifting require to be done quickly, otherwise they cannot be done at all. In a great many cases practically all of the work is accomplished by the quick energetic action of the large muscles of the legs, and the importance of the legs in this connection should be well kept in mind. Another most important matter is the necessity of *keeping the back straight* when lifting from the floor. In bending forward, bend from the hips, always, but with the back straight.

Raising a bar-bell to the shoulders is an easy matter when the weight is moderate, but above a certain point it will be necessary to use what is sometimes dignified by the name of the "science" of weight lifting. This means the "knack" or the concentration of strength to the best advantage. In lifting a heavy bell to the shoulders this means the use of the legs rather than merely the arms. Stand with feet well apart, perhaps a distance of the width of the shoulders, and take hold of the bar-bell with both hands just in front of the instep, or over the toes. In this way you will be well over the weight. The back should be straight, but the knees fairly well bent, so as to give a strong upward pull with the legs. Hands in pronation (palms down or backward). Now give a straight hard pull upward, with both arms and legs, though chiefly by the effort of the legs, and with as much quick momentum as possible, pulling the bar-bell up to the front of the neck and shoulders. At this point, just as it reaches the highest point to which its upward momentum will carry it, quickly bend the knees and drop down a few inches so that you can shift the elbows under the bar, instead of over. This should be done very quickly, and the forearms should then assume a perpendicular position under the hands. In short, the bar-bell will then be in front of the shoulders and it will only be necessary

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to straighten the knees and rise to the upright position. In doing so, step back a step with the right foot, feet at right angles with each other. You are now well balanced, and ready to push weight above head. Hands will be bent slightly backward at the wrists.

Lifting a heavy bar or bell to the shoulders with one hand is accomplished by the same quick dip of the knees, and a similar forward hitch of the elbow at the right moment, by means of which the elbow and forearm may be brought directly under the weight. In starting for a one hand lift, however, the hand should be in position of supination (palm forward). Practice these movements thoroughly with a light weight until you have mastered them, before trying a really heavy weight, and then increase only gradually.

For strength of the arms, as said before, a slow push up is the thing. With a weight above a certain point, however, this is impossible, whereupon it will be necessary again to call in the use of the legs.

The jerk, as it is most commonly called, is the method by which one throws up or "jumps" up a bar-bell from the shoulders to arms' length above the head. Simply bend the knees so as to lower the body a few inches, and then suddenly straighten them with a jumping effect, thereby starting the bar-bell upward with great momentum. In many cases this momentum will be sufficient to send the weight all the way up, but in any case it should go up three-fourths or four-fifths of the way, in which event it is only necessary to finish straightening the arms to complete the movement.

With a weight above the head, there are two considerations which should *always* be kept in mind, since they are absolutely essential. The first of these is *perfect balance.* Keep the body directly under the weight, which means that the center of gravity should be above a point midway between the two feet. The second point is necessitated by the first, and requires that the lifter *keep his eye upon the weight* at all times when it is above his shoulders. Never for an instant take your eyes off the bar-bell or dumb-bell.

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A compound jerk is necessary with an even heavier weight, with which the ordinary jerk will not accomplish the purpose, though this also should be practiced first with a moderate weight. Suppose that with the best possible effort in a jerk you can only succeed in giving the bar-bell enough momentum to throw it halfway up, or barely above the top of the head, and that the arms cannot push it up the rest of the way, then, just as it reaches the highest point acquired by its momentum, quickly bend or dip the knees a second time, dropping the body down under the weight far enough to enable you to straighten the arms under it. Once the arms are straightened, it will only be necessary to straighten the legs and rise up to the full standing position, watching the bar and keeping the balance carefully. This dip of the knees and getting the arms straightened under the bar must be done in an instant, though after this you can rise by straightening the legs slowly.

In executing the jerk the legs should act with great energy and speed, as though to throw the weight from the shoulders as high up as possible. The legs should be bent for this purpose only far enough to get the greatest possible power. To bend them too far would mean loss of power. In the second movement of the compound or modified jerk, however, for getting the arms straightened under the bar at the psychological moment, it may be necessary to bend the knees much more, indeed, just as far as may be necessary to drop down sufficiently to get the arms straight. And always keep in perfect balance.

The two-hand snatch is a spectacular and interesting feat by which the bar-bell is raised from the floor to a position at arms' length overhead in one continuous movement. It is of course done chiefly with the energy of the legs, though the back and arms help as much as possible. The back should be straight, bent forward at the hips when taking hold of the bar, and the legs so bent as to give the greatest possible upward pulling power. The lift is made quickly and with great energy, giving sufficient momentum right at the start to send the weight all the way up. In case the weight is so heavy that this can-

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not be accomplished, then the legs must again be brought into play as in the second movement of the compound jerk. Suppose, for instance, that with the best effort the bar-bell can be raised only to the level of the top of the head with the first pull upward, then at that point the legs should be quickly bent and the body lowered so that the arms can be straightened under the bar, whereupon the legs can be straightened again and the upward passage of the weight continued without interruption, or at any rate without any apparent or noticeable interruption. If this is done smoothly and effectively it makes a beautiful lift, and all in one continuous movement.

The *one hand snatch* is similar to the two hand snatch except that it is done single handed, starting with palm turned backward. It is much more popular and more widely practiced. One can lift almost as much and it is more spectacular to see it done with only one hand. It is sometimes mistakenly called a "swing," but the swing proper consists of swinging outward and upward from between the feet, with straight arm, to high over head. The swing is available for limited weights only, and is of little value, except as an exercise for the back. In performing the one hand snatch with the right hand, for instance, the left hand may be placed and braced upon the left knee, helping to start the lift, the left arm swinging up and out on a level with the shoulder for balancing purposes, as the weight goes above the head. The same dip of the knees and straightening of the one arm is to be employed whenever necessary to complete the snatch, as in the two handed version of this lift.

The *one hand jerk,* similarly, is identical with the method of the two hand jerk, the bar-bell or dumb-bell being first balanced carefully at the shoulder, with the other arm outstretched. The movement of this, and those of the compound jerk, should be thoroughly mastered with an easy weight before attempting any such lifts with a weight that offers real resistance.

In pushing up a moderate weight with one hand, the strength of the arm is best brought into play if the body is held as nearly motionless as possible, or as consistent with

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proper balance. But the weight may be put up easier, and a good exercise for the muscles of the sides afforded, by a certain sideways swing of the body. Using the right hand, for instance, with the dumb-bell at the right shoulder, first bend well over toward the right side, with the left arm stretched outward and slightly upward. Then bring the left arm down and swing the whole upper body well over to the left as you push the bell upward with the right hand. This exercise should be practiced with each hand.

The *bent press,* so-called, is a peculiar method of raising a heavy weight above the head with one hand. It is used with weights too heavy even for the jerk, and consists in causing the body to raise the weight which to the unsophisticated one may seem to have been put up by strength of arm merely. By this method Arthur Saxon has lifted 312½ pounds, probably the greatest authentic lift. Other greater lifts have been claimed, but without any reliable record. However, anyone may be well satisfied if he learns to put up in this way the equivalent of his own weight.

In commencing the bent press, with the right hand, for instance, though it should be learned with both hands, it is assumed that the bar-bell is at the shoulder, well balanced in the hand. First bring the weight well back of the shoulder, and with the bar parallel with the line of the back of the shoulders. With a long bar, in other words, the thumb end should pass back of the neck. An important thing throughout is to *keep the forearm absolutely perpendicular* under the weight. Starting from this position, gradually bend down toward the left side, keeping the eyes on the bar-bell, and turning the thumb end slowly forward, or in other words, turning the palm outward. As the body bends far down the angle of the right arm at the elbow will gradually widen to a right angle, and then, continuing, form an ever widening abstruse angle. The left arm, first bracing the body on the inside of the left thigh, will gradually slide down, and the bending of the body will continue until the left shoulder comes close to the left knee. Meanwhile, the right forearm, under the weight has been kept

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perpendicular and the arm is now almost straight. Having straightened it, with the weight thus above the body, one can straighten up and the feat is accomplished. In short, instead of pushing the arm up with the weight, the body is bent down under it until the arm is straight, or nearly so.

The bent press is usually a difficult thing to learn, and the student need not be surprised if he does not learn it in three months. It seems awkward and unnatural at first, but it is an efficient method, as is proven by the fact that one can lift infinitely more in this way than by any other one hand method. It should be the last thing to learn in weight lifting, and one should be very strong before attempting it.

There are a number of fancy tricks, but they are not essential and need not be considered here. Most of these regular feats may be best learned from a personal instructor, but if he is poorly qualified in imparting his knowledge to others, one may even do better by following the instructions given here.

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CHAPTER IV.

COMPETITIVE EXERCISES AND SPORTS.

IT may be said that there are two great general classifications of exercises, those of a special and systematic nature, for the sole purpose of building strength and developing the body, on the one hand, and those of an entertaining or so-called recreative nature, on the other. The latter take the form of play and are commonly indulged in primarily for the interest and pleasure to be found in them, though they are none the less valuable on this account for purposes of developing and promoting the general welfare of the body. Outdoor exercises of this character are particularly to be commended. It is with these and with all wholesome phases of outdoor sport that the present chapter has to do. The list is arranged alphabetically for convenience.

Before discussing these exercises and sports in detail, it is well to give some general advice on the subject of Training.

TRAINING.—The question of training in preparation for an athletic contest is one little understood by the novice, and one in which those with experience often go wrong.

Training really means such an amount and kind of practice in a special athletic event as will enable one to be at his best when competing in that form of sport, though in most cases true training should also include such other body-building exercises as will develop the strength and endurance necessary for the best success. It is in this respect that many athletes fail, and for this reason it is the first important point to be made here. No matter how much interested one may be in some athletic specialty, and also granting that much special practice in that specialty is necessary, it should never be forgotten that the greatest possible all-around strength will be of advantage. There are some games which tend to test and to show the qualities which one may have rather than to develop them. In the running broad jump, for instance, the great essential is speed, and the training for this event

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should be confined chiefly to practice in sprinting, with practice in the actual jumping only twice a week. And in boxing, stamina and endurance, as well as strength, are to be gained very largely by distance running, special gymnastic exercises and other activities, as well as by the actual practice in boxing itself. Therefore, in all sports, one should aim first to gain a perfect degree of strength and symmetry through all-around physical culture methods. The question of diet in training is discussed under the heading of *Diet in Athletics.*

An important factor of successful training lies in knowing how to limit one's exertions. The ambitious youth, eager to achieve, is prone to carry his endeavors to the limit of his strength each day, and this is a grave mistake. Over-training is one of the most common of all faults in athletics, and while its consequences are not serious, and are readily dispelled by a period of rest, yet it does detract from the pleasure of the game and prevents one from doing himself justice in competition. It is important for the novice to keep in mind the fact that it is his purpose to increase his strength and vitality from day to day, gradually, so that when he reaches the time when he expects to compete he will then be capable of his very greatest achievement, instead of trying to see what is the limit of his powers each day in training. I have seen young men training for the 440-yard run, get out and run a quarter mile every day as though they were in a race, finishing exhausted. They naturally improved as long as their vitality could stand the strain, and then came the slump which was inevitable. They went "stale." If they had done only a fraction of the work, sprinting shorter distances, and taking easy jogs for longer distances, they would have gradually gained both speed and endurance, until some day they would have surprised themselves at the way in which they could run the race. While training they should not attempt to do their utmost speed for the full distance they are aiming at more than once every week or two.

There is a minimum amount of training that one can do without actually failing to develop the requisite strength.

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There is also a maximum amount of work, beyond which one's vitality cannot respond to the demands made upon it, and beyond which one cannot avoid going stale. It is essential that one keep between these two limits. These limits will naturally vary with different individuals, and one should naturally understand his own temperament well before he can decide the matter for himself. It may be said generally that big men with a heavy muscular development, and perhaps a phlegmatic temperament, can usually stand a tremendous amount of work in training, indeed, require that much to get in the right condition. Lighter men, however, particularly those of the so-called nervous temperament, can get into condition quickly and need to be very careful to avoid too great a consumption of their energies. Some featherweight boxers can get in good condition in two or three weeks, and sprinters of a similar weight sometimes require scarcely more than a month of special training, always provided, of course, that they are in good health and fair general condition when they begin.

The athlete in training should not "run himself out" or "work himself out" more than a couple of times a month, if even that often. He should use his muscles just enough to build strength, instead of wasting it every day. This matter of conserving one's energy is not understood except by experienced athletes. For sprinting, there should be the hardest, concentrated work, but only a little of it every day. For a ten-mile run, it is necessary to prepare the system for a heavy demand upon its energies, and harder, more continued work is necessary, but it should not be carried too far *every* day. *Only occasionally* should the heavy demand be made, always allowing time for perfect recuperation. Just here is the whole secret—perfect recuperation—and one should keep within his powers to recuperate.

At the least indication of going backward, the athlete should rest completely for two or three days. This will bring him around better than ever. But if he notices it too late, and suffers a general physical and nervous depression then

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he will have to drop training entirely for a couple of weeks or even more. He should make it a point to get all the sleep he can, taking an extra allowance on Sunday afternoon, if possible. He should eat lightly until his appetite returns in full vigor, and then he can resume training. And he will know that in the future he will have to gauge his efforts more moderately. But if he attempts to continue training in spite of his condition, he will only go from bad to worse. In short, one can largely follow his instincts in the matter, training just so long as he finds it a joy, and avoiding it whenever the protests of his overworked system make it a tedious effort, or in the vernacular, "too much like work."

In the splendid article on boxing which Mr. Fred Welsh has contributed to this Encyclopedia, he has included a brief training régime which should be of great value to athletes generally and to boxers in particular. It illustrates splendidly the relation of other exercises to the necessities of training for this particular exercise, though it should be said that the amount of exercise which Mr. Welsh is able to take in training might prove to be too much to some one else of less vitality and endurance, or at least so during the first year of his participation in athletics. It is sometimes surprising how little work is necessary to get good results in those games which depend upon speed rather than upon endurance. In the discussion of sprinting, under *Track and Field Athletics*, a brief outline of a weekly plan of training is given, which illustrates this point.

ARCHERY.—Archery is a pleasant outdoor pastime suitable for practice on the lawn. From an athletic standpoint it has no very great value, and depends for its interest largely upon the cultivation of skill. In this respect it is of course far superior to rifle shooting as an exercise, though the arms and shoulders only are concerned. It is naturally a survival of the activities of primitive life, and much of its interest is due to this fact, the same as the pleasure which many men find in fishing and hunting.

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BASEBALL.—Baseball is the most popular of all sports in America, and is played in every city, town and hamlet in the land. It is a clean game, for even the big professional leagues are free from corruption. It is a game that men love as much as boys, and for the sake of the game itself, not because it offers a betting possibility, as in some varieties of so-called sport.

Although the action of the game is not so continuous as in many other vigorous pastimes, yet speed is an essential when the batter hits the ball and gets the players into action. The physical demands of baseball are not so severe as in many other games, although the pitcher often undergoes a strain upon the muscles of the arm that leaves him unfit for play for some time to come. Baseball is a game that carries with it a keen mental interest, and it is largely this that accounts for its popularity. The base running is naturally splendid exercise, while throwing, catching and batting are splendid for muscular co-ordination, but there are many other games that are better for purposes of exercise and development. In baseball there is always the larger part of one team that is unemployed, waiting for the opportunity to bat, while at the same time a part of the team in the field has nothing to do except to wait for something to happen. Where the pitching is poor and the batting good, there is naturally plenty of action. In a really good game, however, in which the pitcher is successful, it must be said that the interest of the game is far greater than its value as a form of exercise. It is perhaps better for demonstrating or making use of great physical fitness and efficiency than for developing the muscular system and building strength. The fact that it gets more people out-of-doors than any other American sport, however, makes it our greatest and most valued recreation.

Because of the lack of any special physical demands upon the player, the average youth takes up baseball without any special training whatever. Certainly he does not undergo the rigid and faithful preparation of training that is necessary for the boxer to condition himself. However, since strength and co-ordination of mind and muscle are such important factors

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for success in baseball, it would more than pay those who expect to take up the sport to go through a course of special training throughout the winter to acquire the greatest possible physical fitness. The complaint commonly known as "Charley-horse," merely a soreness and stiffness of the joints and muscles, which is very commonly experienced by so many ball players in the spring of the year, might be avoided entirely by such a course of preparatory training. Speed in base running should demand a large amount of special practice in sprinting, away from the diamond, and at other times of the year, but there are few young men interested in baseball who think of such a thing.

Throwing and catching are of course largely a matter of practice, though it may be said here that one should never take up pitching and the throwing of curves, no matter how gifted he may seem in that direction, without spending one or two years in acquiring a powerful development of the throwing arm. Throwing curves is a tremendous strain, not only upon the muscles but also upon the ligaments and tendons of the arm, and it is advisable to have an arm of great power to stand this strain.

"Cy" (Denton) Young, for twenty years a successful professional pitcher.

Good batting is of course one great essential of the successful ball player, and good batting is really a matter of being able to get one's eye on the ball, judging it properly. To acquire this ability one should have a great deal of batting in practice. In learning to bat, one cannot train the eye as

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to the course of the ball if he is also trying to swing violently with the bat. After he has acquired the ability to find the ball every time with a bunt, then the aspiring batter may commence to hit it out, until he fulfills his ambition to send it over the farther fence.

A great deal of interest is taken in the games of the various teams of the big leagues, and the money represented in baseball runs up into tremendous fortunes. For purposes of health and physical benefit, however, it is infinitely better to play in a little game of ball than to watch a big one, and this is the suggestion which I would make to all readers. Even though one plays the game badly, yet he will at least have the exercise and the fresh air. He may get the air, to a certain extent while sitting on the bleachers watching the experts, but if he throws and bats the ball, and runs the bases a dozen times, the full deep breathing induced by this exercise will cause him to get a hundred times as much of the oxygen of the fresh, pure air, as he would while sitting still among a crowd of fellow fans. "Rooting" or shouting at a ball game may use one's lungs a bit, but it is not like the full inspiration that goes with vigorous exercise.

BASKET BALL.—There are few indoor sports which so favorably affect the various parts of the body as does basket ball.

In 1898 Professor Naismith, later of the University of Kansas, but at that time an instructor at Springfield Training School, invented the game as a sort of gymnasium exercise for the students, and very little thought was given to it. To-day the game is played all over the country, and is one of the leading sports at many of the great colleges.

Unlike many of the other sports, basket ball does not tend to develop any particular part of the body, but acts as a general up-builder. The arms are exercised by throwing the ball, and passing from team-mate to team-mate; the legs are developed by their continuous action in running up and down the court, and the condition of the chest and lungs is improved by the active work required of them and the free deep breathing induced by the game.

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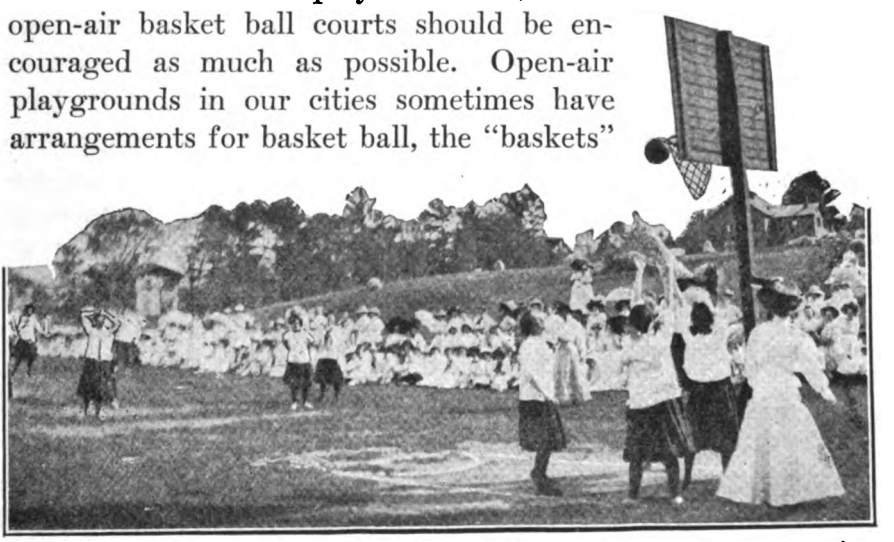
A large part of the game, in fact, the success of a team, depends upon the brainy work of the players, who should take advantage of every opportunity presented to cage the ball. In this manner the game offers a certain degree of mental training, as does boxing and many other sports.

Accuracy is one of the requisites of a player, and the eyes receive good training in the basket shooting practice. Many a man sound in mind and body, but with poor eyesight, has been benefited to a great extent by this practice.

The game is played by ten men, five on each side, and the time of play is divided into two periods of twenty minutes each, with a rest of fifteen minutes between both halves. During the twenty minutes' play in both halves, the players are allowed but three rests of five minutes each, if necessary, so that they are practically on the go all of the time.

Two baskets and a ball make up the paraphernalia of the game. The ball is a little larger than a soccer football, and weighs more. The idea is to cage the ball in the baskets, which are suspended from the ceiling or are placed on stands.

For the gymnasium, there is no better game. At the same time, when played in the gymnasium, there is the disadvantage of the fact that it is played indoors, and for this reason the open-air basket ball courts should be encouraged as much as possible. Open-air playgrounds in our cities sometimes have arrangements for basket ball, the "baskets"



Showing a splendid open-air basket ball court. The game is at its best when played outdoors.

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fastened to posts instead of to the walls as is common in most gymnasiums. One may enjoy it as much in the gymnasium, and may develop nearly as much endurance and speed, but the constitutional benefits are much greater when it is played out-of-doors. While it is considered a winter game, from the fact that it is usually played under a roof, there is no reason why it should not become equally popular as a summer game when played out-of-doors.

BATHING.—See *Swimming.*

BICYCLING.—See *Cycling.*

BOATING.—See *Canoeing, Ice-Boating, Rowing* and *Yachting.*

BOWLING.—Bowling is a popular sport, because of its attractiveness to both beginners and experts. As an exercise it is fair, though one-sided from the fact that one uses only the one arm with which he has become most expert. From the standpoint of exercise it would be far better to learn to use both arms equally well. It would sometimes add to the interest of the game for a couple of right-handed players to match each other in a game with only the left hands used. Bowling is fairly good for the back.

Occasionally an enthusiast of means constructs an open-air bowling alley, though sheltered from the rains by a roof, on the grounds of his country home, and under such circumstances the game is to be recommended. Unfortunately, however, it is usually played in cities in public places, in low-ceilinged, unventilated quarters, adjacent to a bar-room and in an atmosphere dense with tobacco smoke. While presumably seeking the exercise, the youth learns the habit of alcoholic indulgence, and if he has not already fallen into the use of tobacco he is almost certain to take it up in such surroundings. Even if he does not smoke, he must endure, at second hand, the smoke of others. For these reasons it would be just as well if bowling were neglected and forgotten, unless a more enlightened public sentiment should lead to bowling in the open air. The old game of *bowling on the green* was well worth while.

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BOXING.—[I am indebted to the courtesy of Mr. Fred Welsh for the following contribution on the subject of boxing, written especially for this Encyclopedia. Mr. Welsh is perhaps the most skillful boxer in the world to-day, and he also knows how to make his methods clear to others, making these instructions of exceptional value. Much of what he has written here has never before appeared in any article or book on boxing. Fred Welsh (Fred Hall Thomas) was born in Pontypridd, Wales, in 1886. He was an instructor in the Macfadden Physical Culture Training School when it was first organized, and later took up professional boxing, meeting with success from the very first. In the five years in which he has been in the game, up to this writing, he has suffered only two adverse decisions, out of nearly one hundred contests. In 1909 he won the Lightweight Championship of Great Britain. He expects to win the World's Championship title as soon as he is able to make a match with the present holder of that title. He is a vegetarian and a thorough physical culturist from the standpoint of the various methods and practices advocated in this work. For the photographs illustrating this article, we are indebted to poses by Mr. Welsh and Boyo Driscoll, a clever and successful featherweight boxer, of England.—THE EDITOR.]

MODERN SCIENTIFIC BOXING.

By Fred Welsh.

Boxing is a most valuable exercise, not only for building strength and endurance, but for developing all of those qualities which go together in the making of splendid, virile manhood. It trains not only the body but the spirit as well, develops courage, moral and physical stamina and teaches rigid self-control in all emergencies.

The boxing game dates back to the beginning of history, though it has not always been the delightful and beneficial sport that it is now, in its modern refined interpretation. Among the ancients a boxing match was sometimes not much less serious than other gladiatorial combats in which the sword was used. In place of the padded mitts of our own time, com-

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monly called boxing "gloves," the cestus was used. The hands were covered by strong leather thongs, and sometimes these were reinforced with bands of iron, the fist of the boxer being made so formidable in this way that a well placed blow might mean death. In any case the result was a terrible mutilation and permanent disfigurement.

Modern boxing, however, takes on the character of exercise rather than of real fighting, for it is seldom that a boxer who is sufficiently well trained is truly injured. If boxers are fairly well matched in speed and skill, then in many cases the outcome of the contest will depend chiefly upon their stamina and endurance. Boxing is now a "sport" in the true sense of the word; it is the "play" form of fighting, and while it prepares one for competent self-defense in time of emergency, it also makes him stronger and more vital. It trains the eye, makes one more alert, gives him more confidence, develops decision, perseverance and firmness. In short, it is a splendid exercise for both the moral and physical education of any young man, developing the qualities which he will need throughout life for attaining success in almost any field of endeavor.

Naturally, I have no sympathy with those who talk of the supposed brutality of the boxing game, for they probably have in mind the old time "prize-fighting" days when bare fists were used and the pugilist could do almost anything he chose to his antagonist. Boxing to-day is entirely different, for there is a strict set of rules which permit of hitting only in certain parts of the body where the blows are not vital, and there is a referee in the ring to see that the contestants abide by these rules or be disqualified. Well-padded gloves are worn on the hands, and matchmakers and promoters everywhere endeavor to match boxers who weigh the very same to a pound, so that they will be evenly matched. Before the contest both boxers are compelled to "weigh in" to see that these conditions are fulfilled. They go through a preparation of training which necessitates strict clean living and faithful exercise, putting them in the ring in a splendid physical condition to go through

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a trying contest, trying chiefly from the standpoint of endurance. It should be said that after boxing at terrific speed for some time the inevitable fatigue of the muscles takes the sting from the blows so that in a twenty-round contest one does not hurt the other very much. Even in the beginning of the contest, both are so well trained and hardened that they do not suffer from the blows delivered with these pillowed gloves.

One of the first qualifications of the modern boxer is intelligence. The day of the old-time bruiser who required nothing but brute strength is passed and dead. There is money in the boxing game to-day as well as glory. It has been brought down to a commercial basis, and so has attracted young men of intelligence and brains the same as other professions. One must be clever, alert, quick thinking.

But apart from the intelligent, quick thinking mind, the physical essentials of the boxer are *strength, speed, stamina* and *endurance.* First of all one should build strength, which later will help in developing endurance and stamina, but while securing strength one should be careful not to become muscle-bound or stiff, or his strength will be of no use. One should exercise in such a manner as to keep his muscles elastic and supple and to develop speed. After this will come the knowledge and skill in boxing.

Perhaps an even more important factor in some cases is learning *how to nurse your strength.* And the secret of this is *relaxation.* One should make this a fine point. Often a boxer who is not nearly as strong as his opponent may so conserve and employ his strength that he will seem far stronger, allowing the other to waste much of his great energy. The secret is complete relaxation except when actually doing something. There is no need for tenseness of the muscles when fiddling and sparring for an opening. If one's muscles are so tensed he cannot possibly strike quickly when the opportunity comes, for he must first relax and then contract the striking muscles. If relaxed, the muscles may contract with great vigor at the moment of impact, but the instant the blow has been struck, they should be relaxed again until the next blow. I also

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nurse my strength in another way. While relaxing as much as possible on my own account, I try to keep the other fellow tied up with muscles tense in expectation of my attack, which brings him to a condition of fatigue all the sooner. This I accomplish by constantly feinting and changing my position by shifting my feet, so that he is parrying or blocking blows that never come, and sometimes making and missing wild swings that tire him out.

In another way it is well to let the other man use his own strength against himself, and by these tactics I have often been able to get the better of big fellows of apparently twice my strength. If I can get the other man pushing against me, to show me how strong he is, I will resist him a little for a moment and then, suddenly discontinue my resistance. As a result he goes plunging or sprawling forward, and surprised at the strength with which I appear to throw him around. I may also use his own strength to make my blows more powerful. I feint to make him lead, and when he is rushing toward me my blow has nearly double force. Meanwhile I am always relaxed except when actually executing some effective move. I have been credited with wonderful endurance, but while my endurance is better than most athletes, a great deal of this is due to making use of the other man's strength to my own advantage and also to this practice of relaxation. In many cases I have boxed the last few rounds of a twenty- or twenty-five-round contest faster and stronger than the first few rounds, simply through nursing my strength. During clinches and "in-fighting" it is quite common for boxers to push and wrestle each other with all their strength, but I never do this. I find it more easy to simply lean against my opponent with my relaxed weight, although he may think I am pushing, and in this way I sometimes induce him to hold me up or sustain much of my weight.

Now for the actual boxing itself. I do not believe in strictly orthodox styles, but would suggest that to a large extent each individual develop his own natural style. But there are certain radical errors which should be avoided and

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certain fundamental "first principles" that one should learn. The most important thing is the general position, and this some amateurs never get right, to their disadvantage. Get this right, and they may then drift into their own styles and peculiarities.

The left foot and the left hand should be forward. The left toe should point straight at your opponent, and not be turned to the right a little, as it may if one is careless. The left leads are likely to go where the toe points, and if this is not directly toward the other man these leads are likely to miss. The body should be turned with the left side toward antagonist, showing as little front or body surface as possible. Thus there is not so much space exposed to attack. The left knee should be bent slightly, the weight chiefly upon the right leg. The left elbow should be bent, the glove on a level with the shoulder, and ready to be extended quickly for a lead. Both elbows must be well in at the sides, for it is chiefly upon them that one should depend to block body blows.

The right arm should be carried across the body, the elbow close to the right side, the forearm across the solar plexus, called the "mark," and the glove up by the chin. Many blows may be stopped here by the open right palm in front of the chin or with the half closed glove resting on the chest and near the chin. The head should be held well forward, the chin down and inward, almost resting on the chest, and sheltered by the left shoulder from any wild right swings from opponent. The attitude of the whole body should be loose and relaxed.

I will invite the reader to a careful study of the illustrations, showing some of the important positions and movements. I do not expect these instructions to teach all there is to be taught about boxing, but if they will enable one to grasp the "first principles," they will enable anyone to acquit himself splendidly in a very short period of practice. By following these suggestions, one may develop a splendid defense, and as a result of this will be able to enjoy his boxing much more right from the start. The pleasure of the game lies much in the skill and science, not in getting hit.

(Continued on page 873)

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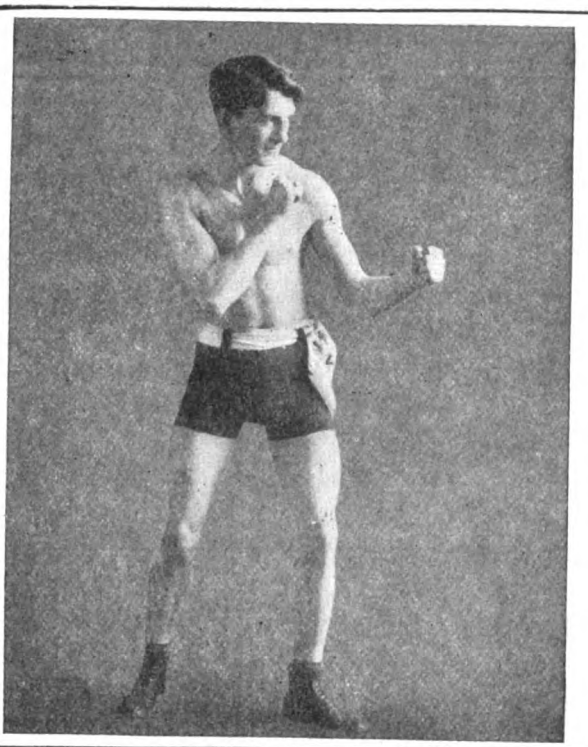

PHOTO NO. 1.

General boxing position, ready for either attack or defense. Left knee slightly bent, toe pointed toward opponent, left hand extended with glove on level with left shoulder, right forearm across chest, chin down under protection of left shoulder, and body turned sideways toward antagonist. Read carefully discussion of position in accompanying text. In attacking, the crouching attitude shown in Photo No. 7 is advantageous, affording a good defense while advancing.

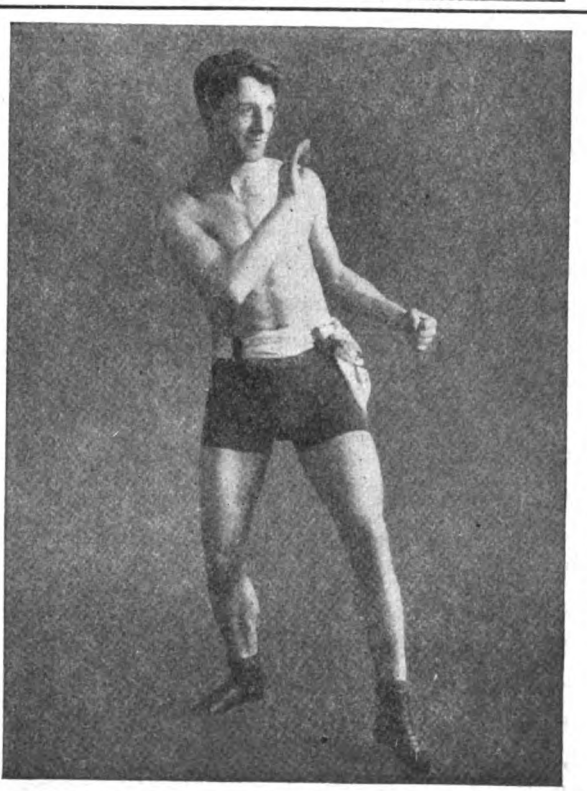

PHOTO NO. 2.

Drawing back from a left lead or right swing, and ready to block the blow with the right palm if necessary. The drawing back will often be sufficient to escape the blow, but sometimes it is necessary to step back at the same time with the right foot. The force of the blow will be minimized in this way, even if it lands. Blocking blows to the face with the open palm is a very effective method and should be practiced. Meanwhile the left is ready for a hook or swing to the body or jaw.

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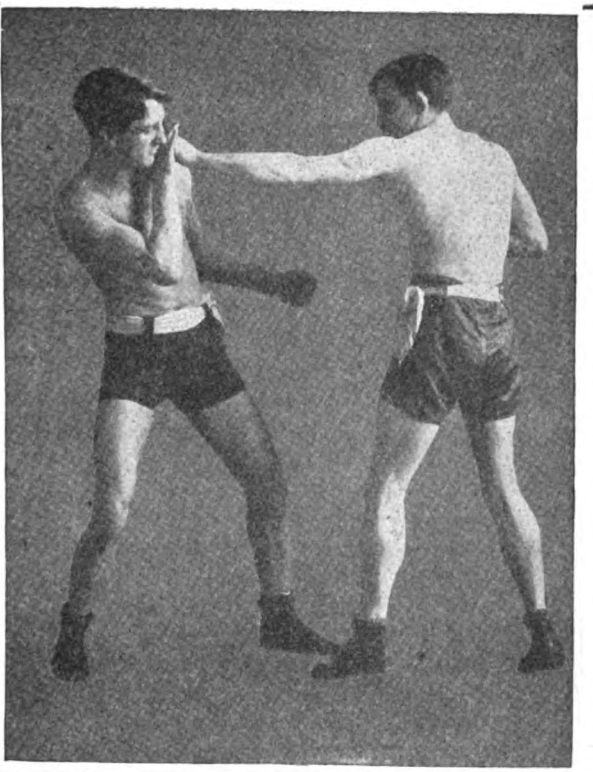
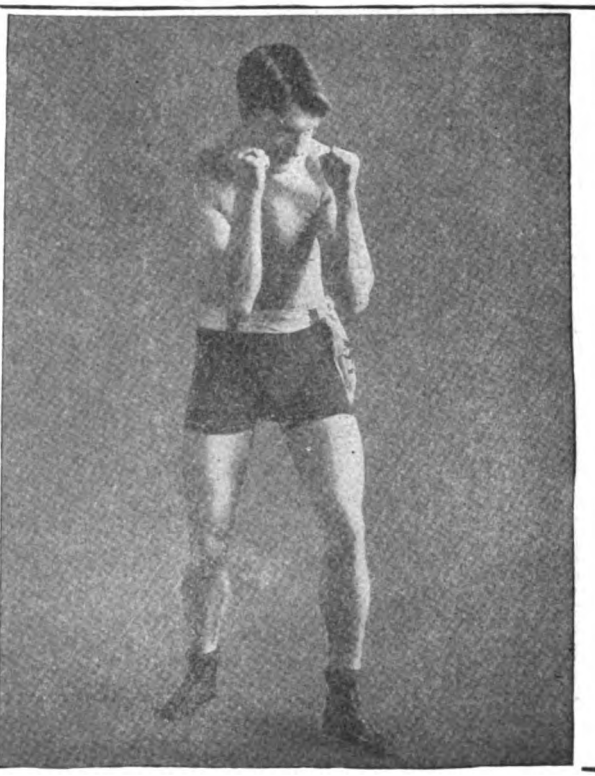


PHOTO NO. 3.

Showing the straight left lead and also the operation of the method of blocking shown in the preceding illustration. Welsh (on the left) steps back slightly with the right foot, taking away any force in the blow, which is effectually blocked with the right palm. In executing the left lead, do not draw back the elbow first, but simply shoot the arm quickly and forcibly from the position shown in Photo No. 1, at the same time stepping forward a few inches with the left foot and throwing the weight of the body with the blow. The glove (lightly closed), must land on the opponent's face the identical moment that the left foot touches the floor, otherwise most of the force of the straight left lead is lost.

PHOTO NO. 4.

The most effective of all defensive positions. When opponent is raining a fusillade of blows upon you, this is a safe position to get into, but it also has the advantage that you are in a position to hit at the same time. It embodies the idea of the crouch, the chin drawn down near the chest, and protected from swings by the shoulders. The elbows are in a position to block all blows to the body, while hooks, swings or leads to the face are blocked by the wrists and gloves. If one is tired, this protection will enable him to weather it until his strength recuperates. To guard against left or right uppercuts while in this position, bring the elbows close together. Uppercuts aimed at the body will then be blocked by the elbows, and uppercuts aimed at the face will be blocked by the gloves, wrists, or forearms.



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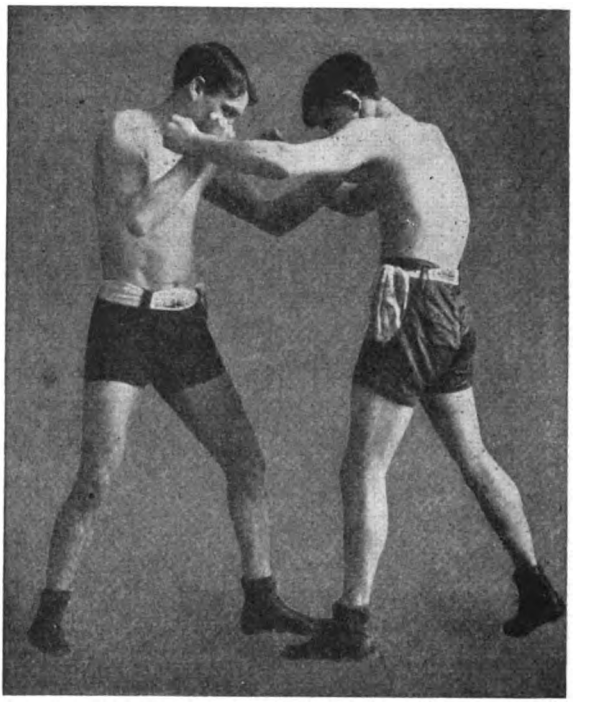

PHOTO NO. 5.

Showing the working out of the position shown in the preceding photograph. Having blocked right and left swings to the face, and being "inside" the other's guard, a quick left chop to the jaw is a simple matter. It will be seen that the right also is ready for a similar quick chop to the jaw. This can be worked when stopping all swings to the face with the wrist, either right or left.

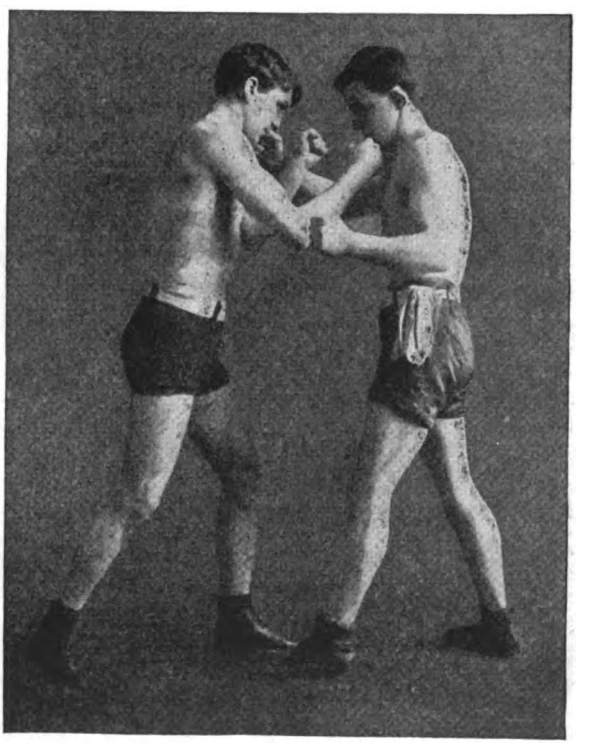

PHOTO NO. 6.

Another illustration of the effectiveness of the defensive position shown in Photo No. 4, as a means of readiness for attack. This shows how a left swing to the body has been blocked by the elbow, a right swing to the face on the other side being avoided by receiving it on the left wrist, countering with right and left hooks to the jaw. This shows the advantage of short arm blows over wide swings. They are two or three times as quick, having a shorter distance to travel and one is able to start them from the position in Photo No. 6, without having to waste time drawing them back before hooking them to the jaw.

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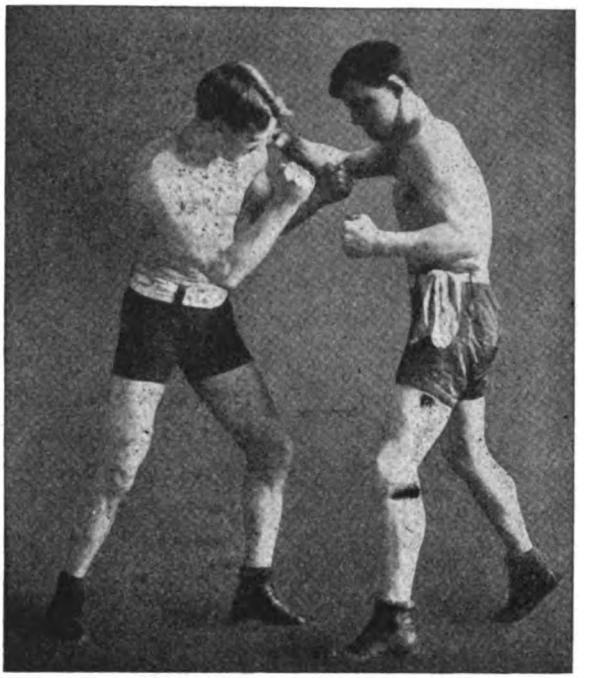

PHOTO NO. 7.

Showing a "crouch," a good position for getting inside of opponent's guard, and especially if he is one of the wide open, swinging type of boxers. The chin is well protected behind the left shoulder, so that a right swing for the jaw is stopped by the shoulder. In this crouch you are not only in a position to defend yourself but to start almost any kind of a blow, jab, hook, uppercut or left and right body drives.

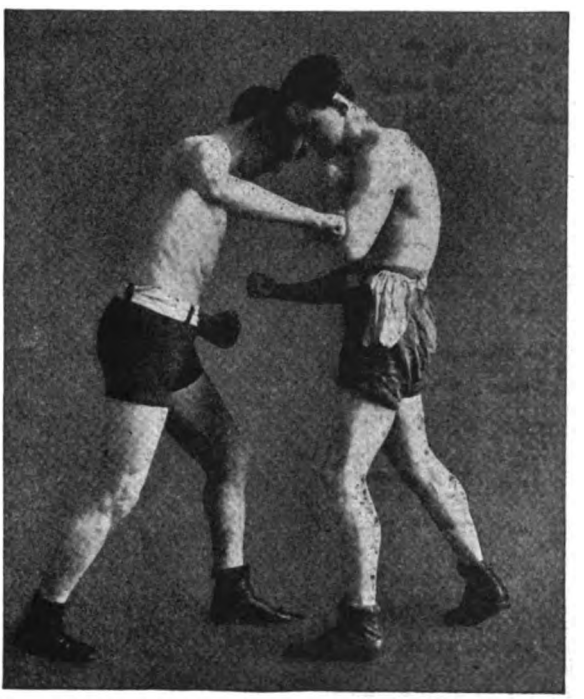

PHOTO NO. 8.

This shows opponent blocking a right hook to the body with the elbows, and countering with a right to the body. The elbows should never be spread out at the sides like a pair of wings, as is the habit of some amateur boxers, for this leaves the body exposed. The elbows should be kept well in, but not so close to the body that the jar of blocking with the elbows will hurt. By constant practice some boxers are able to contract their arm muscles just at the right moment and block terrific blows with their elbows or wrists about an inch away from the body or jaw. If handled properly, they will enable you to stop practically all body blows in this manner.

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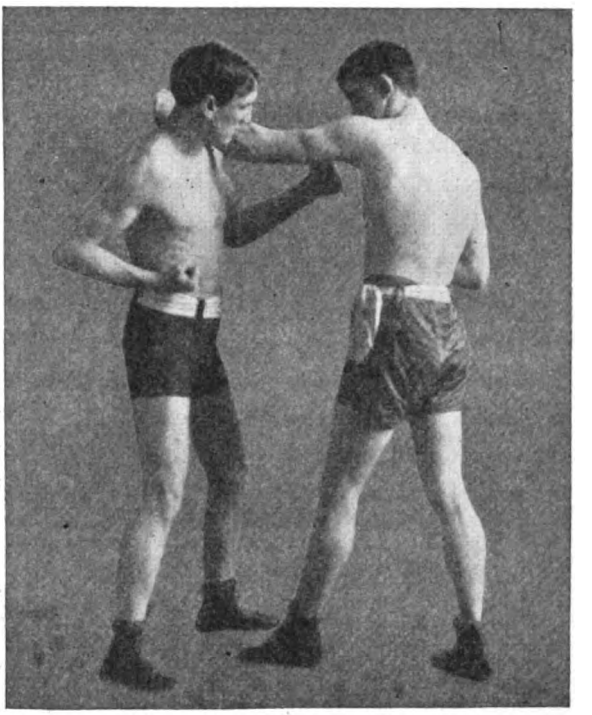
PHOTO NO. 9.

"Side-stepping," one of the most effective of all defensive boxing manœuvres. This requires only a quick little step to one side or the other. It is necessary to move the head only a few inches, or just sufficient to avoid the lead that is coming, whereupon it will go over the shoulder, as in this case. To make a wide step would be a waste of energy, and take you out of position for attacking. To turn around and run away is very bad boxing form. It is always better to side-step and counter. This photograph shows a left hook to the chin, having side-stepped a straight left lead, with the right ready for a drive to the body.



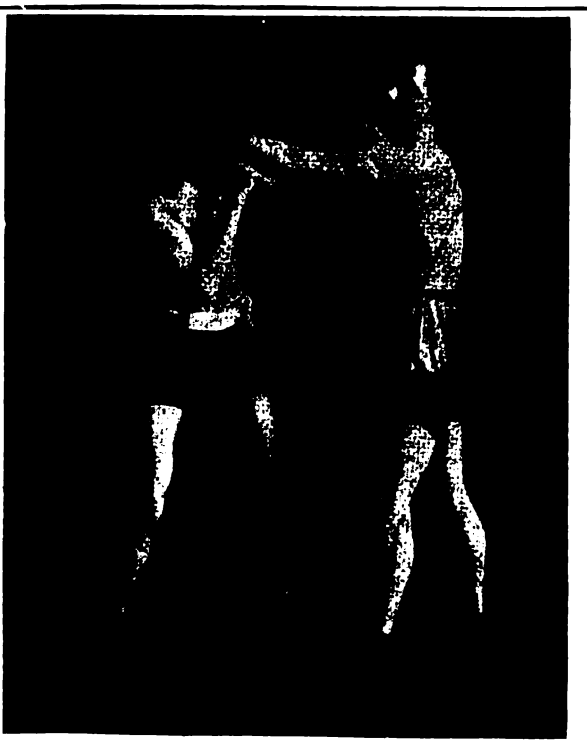


PHOTO NO. 10.

"Slipping" the head, and countering with left hook to chin. This "slipping" of the head should be practiced until thoroughly mastered, as a means of avoiding leads and right swings. It will be noticed that from the usual position the head has been turned toward the right shoulder. In doing this, the head should be kept well forward and down, the chin moving along across the chest, or touching the chest as it moves across.

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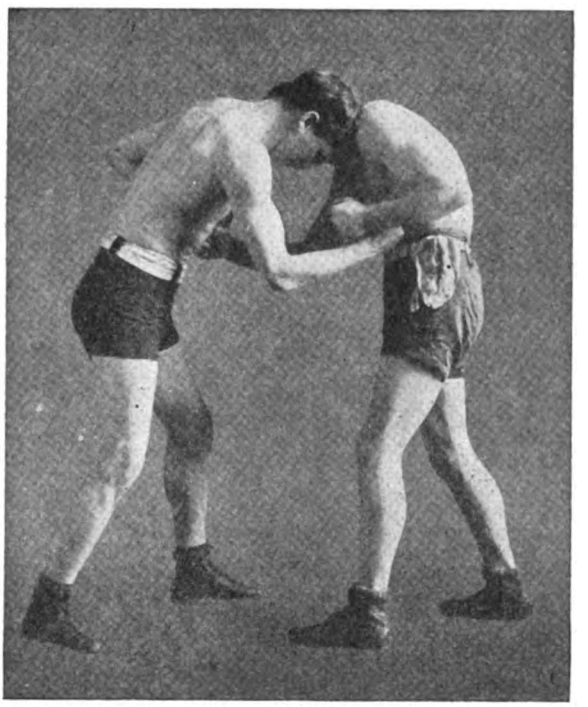

PHOTO NO. 11.

An example of what is known as "in-fighting." After sparring at long range the boxers have come close together, with heads on each other's shoulders, exchanging left and right drives to the body. In the position of in-fighting especially it is important to keep the elbows in as a protection against body blows, whereas the forearms and wrists may be used effectively in blocking uppercuts to the face. Often after such an exchange of drives to the body it is well to switch over and shoot in a couple of jolting uppercuts from this position. It will be noticed that this is a legitimate form of boxing, since it is not a clinch, for there is no "holding." Neither boxer is allowed to seize and hold the other's arms. If he does so, he must "break" loose at the command from the referee.

(Continued from page 867)

There are some teachers of boxing who regard defense as of first importance. There are others who regard attack as the most vital and important element, while some repeat the old platitudinous paradox that "the best defense is offense." I would take sides with neither, inasmuch as both defense and attack are necessary factors of good boxing, and the ideal style is one that aims to combine the best possibilities of both. By following closely all of the brief instructions given here, the pupil may develop a defense that is almost impregnable, but one which does not interfere with his readiness for attack, as he will find. By these methods he may be aggressive without sacrificing the security of his defense.

The lower jaw especially should be protected. The chin is called the "point," and knock-outs are scored chiefly on the "point" of the chin and the solar plexus (the "mark"). Never having been knocked out, I am unable to describe the experience or its sensations, but I am told that a blow close to the solar plexus gives one a nervous shock, and is the most

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unpleasant blow in boxing. A blow on the point of the chin does not hurt but it dazes, and is therefore a common object of attack.

Having acquired the proper position, one should take up one by one and practice thoroughly the various important blows, parries and moves of boxing, before trying to put them into use in a real boxing bout. Boxing wildly without method or knowledge leads to bad habits which are hard to correct. It is better to take a beginner who has never seen a boxing glove, and then to start him out right, than to correct the confirmed mistakes of one who has done much incorrect boxing. Get a friend who is equally interested and practice leads, hooks, swings, with parries, blocks and counters, side steps and everything else, getting them down fine before boxing in earnest.

The left hand should be held out on a level with the shoulder, as I have said, and in front of opponent's face, so that you can snap it out quickly for a *left lead,* which is the most important blow in all boxing tactics. There are many who naturally take to the wide swinging style, seeking to gain power in these swings, but just here let me advise the novice to train himself in the straight leads and short arm blows, jolts and hooks. The swing is the easiest thing in the world to block or avoid, and if you see your opponent coming for you with these swings, just remember that a straight line is the shortest distance between two points, as a principle of physics, and that you can beat him to it by straight jabs.

Alternate with your friend in practicing the left lead and method of blocking it, as shown in Photo. No. 3. In leading, turn the hand slightly so that the blow lands with the palm down. Other times the straight left can be delivered with hand held so that thumb is uppermost when the glove lands on the face. Throw the weight of the body forward with the blow, vigorously, and step forward a few inches simultaneously with the left foot. Step in with the blow, and not before or after, Sometimes the left lead is used without stepping in with the left foot. In that case it is just snapped out into your opponent's

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face. It is often used as a counter in this way, and if your opponent is jumping in at you a straight stab on the nose has a lot of sting to it, besides preventing your opponent landing a blow on you. After one lead, step forward immediately with another lead, and then another. Follow up with a series of straight left leads if you see they are landing properly, all the time looking for an opening to shoot over a right punch. Incidentally this will give good practice in foot work, for this is similar to the principle of advance and retreat in fencing, and of the greatest importance. In fencing the right foot is first, followed by the left foot, but in boxing, of course, it is just the reverse (left foot forward followed by the right). In advancing, the forward foot moves first, with the blow, if one strikes, and the other foot follows after. In retreating, the rear foot moves first, stepping back a few inches or as far as need be, and the front foot follows after. In the series of left leads to be practiced as just described, the retreating movements of the other man should be simultaneous with the advances of the man making the attack. As will be seen from the photograph, the left lead is blocked by the palm of the right hand, and also by stepping back to minimize the force of the impact; the forward foot following immediately by stepping backward the same distance. With the next lead the retreating movement is repeated. The same general scheme of foot work should be practiced in connection with all of the other blows, advancing and retreating, and also learning to move around in a circle as in a ring, both when advancing and retreating.

Great care should be taken not to get both feet together. They should always be about eighteen inches apart, according to height of boxer. A tall man would probably require his feet more than eighteen inches apart, while a short boxer may have a better grip on the floor with his feet about twelve inches apart. It is just a matter of feeling secure and safe on one's feet. If the feet are too close together a blow will easily knock one down like a nine-pin. I try to grip the floor with my feet just as an expert rider grips a horse with his knees. On the other hand, if the feet are spread too far apart a

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boxer is unable to move about quickly enough to get away from the attack of his opponent.

By practicing "following" an opponent and retreating, as explained, a boxer will soon be able to do circular foot-work. This is more difficult than the ordinary forward and backward movement, but if the feet are never brought closer than twelve inches together, and a great deal of practice is indulged in, the novice will soon find that he can jump in to attack or retreat from the most difficult positions.

After some practice with the left lead the man on defensive should practice countering with his left, man attacking blocking this also as he leads. The same use of the open palm is effective in blocking a right cross or swing, and left and right blows should be practiced the same as the left lead, the right foot moving toward opponent simultaneously with the right hand blow, the other retreating accordingly. This is a very effective series of blows. It is usually known among the initiated as the "one two punch." Similarly the student should practice hooks, swings and uppercuts with both hands, side-stepping and other foot work. He should particularly note the "crouch" shown in Photograph No. 7, with its description, the side-stepping and "slipping" of the head shown in Photos Nos. 9 and 10. The weight of the body should go with all blows. In hooks and swings this means the swing of the shoulder along with the arms. Uppercuts should seem to rise with the full force or momentum of the entire body, from the toes up.

Good boxing depends much upon its strategic aspect, and one should make a study of this. In giving suggestions for feinting I can probably make myself most clear by telling simply the methods which I use. I not only feint with my hands, but also with my eyes and with my feet. Feinting with the hands is very simple, for a quick little movement may look like a blow starting on its way. I may feint for the body with the left, dropping it a couple of inches quickly, and then shoot over the right to the face, or perhaps draw back the right as though to hit hard and then put in a quick left jab. Or

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pretend to hook the left high on the face which often has the effect of making opponent put his guard higher up, thus leaving his body exposed. Quick as a flash one may whip over a left hook or drive to his body. The same applies when you feint at the body; the opponent lowers his guard, exposing his face to attack, then you may rain a hurricane of blows on and around his jaw. Remember that there is nothing so quick as a left lead, and if one does it quickly he can sometimes get it over even when the other is on his guard, expecting such things to happen. It should be like lightning. One or two feints or false moves followed by a lightning and vigorous left jab will often score.

Feinting with the eyes is often very effective. I usually keep my eyes on my opponent's eyes, but in feinting I suddenly drop them and look at his stomach. The first once or twice that I do this I actually do hit him in the stomach, so that he comes to expect this. The next time, I suddenly look down at his stomach and he puts both his arms down there for protection, whereupon, still looking at his stomach, I whip one over to his face like a flash, often a one-two attack with both left and right.

Much can also be done with the feet. Sometimes I step forward, pretending to attack, and then draw back, which leads him to lunge. If he leads hard, any blow which I might deliver at this moment would have double effect because he is coming to meet it. A feint at side-stepping, a little to the right, for instance, will lead opponent to think that I am shifting my base of attack in that direction, and he will move over to face me. Instead of this, however, I quickly step far to the left, and attack him to great advantage from this position, to one side of him. One may work all possible variations of this.

I often mislead an opponent by placing my left hand on one of his shoulders, or sometimes upon his forehead, and pressing against him. Invariably he resists this pressure, pushing as hard as he can against it, perhaps to convince me of his strength. This is just what I want, for not only is he

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then partly off his guard, but when I quickly release the pressure and strike with my right, he plunges with full force into the blow. This little stunt nearly always works. It is the same with pulling, for if I cannot get my hand on his shoulder or head, sometimes I hook my left wrist in his and start to pull. Immediately he forgets about boxing and commences to pull hard against me, so that while his left arm is locked in pulling against mine, I can usually shoot a right uppercut under it to the body or a cordial and well meant right hook over it to the face.

Remember that a boxing contest is made up of both aggressiveness and defense. It is not merely a question of self-defense. Aggressiveness wins more boxing contests than anything else. The man who lacks confidence will be hopelessly handicapped. The plan of continually advancing upon your antagonist will be found among the very best of all boxing tactics, and if your knowledge of boxing is what it should be, and you have mastered the few "first principles," which I am here trying to make clear, you may be aggressive and protect yourself pretty well at the same time. This is the essence of good boxing. If you can attack successfully, and at the same time thwart the attacks of your opponent, you win. But always, be aggressive.

As for training methods, in preparation for a contest, it might be said that different individuals may require somewhat different methods, but there are some general principles which every one should adhere to. It should be the aim of the boxer to do such an amount of exercise every day in training that he will be sure of going through his contest without getting tired. Naturally, it will not take so much preparation for a six-round bout as for a long contest.

In my own training I first follow a diet of fruit and fruit juices, for a few days. I start my training very gradually for each contest, never jumping suddenly into hard training. After I have prepared myself for really hard training, however, by a week or more of gradually increased work, the following is my daily routine.

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I start in the morning by twenty minutes of all-around exercises, floor movements, dumb-bells, elastic exerciser and devoting special attention to the abdominal and back muscles. I practice very faithfully some special exercises for developing a powerful back which were shown me by Bernarr Macfadden, and which I believe absolutely necessary for boxers and wrestlers, if they wish to reach the most perfect condition. I also develop great strength in the "washboard" muscles across the front of the stomach, which protect me against any heavy body blows that I might not succeed in blocking. I usually avoid such blows, but if they should land they do not have the same effect as in the case of a boxer with less development of these muscles.

Each morning also I practice deep breathing exercises, after which I put on my sweater and go out for my road work. I walk and run out into the country for three or four miles, adopting the plan of alternate runs and deep breathing exercises while walking. Walking, I take a set of twenty long deep breaths, and then run a distance of several blocks, take another set of twenty deep breaths, then another run, and continue so on until I have taken ten sets of breathing exercises, or some two hundred altogether, and ten such runs. By this time I have reached the distance of three or four miles out, after which I turn around and run all the way back to my quarters. Returning from this run, I have a cold bath followed by an hour's massage. Following this massage I have my first meal. After this comes a rest until about half-past four in the afternoon. To start my afternoon training I do a little more exercise.

I then punch the bag for twenty minutes, not attempting any fancy work, but practicing on the bag all of the various blows which I use in boxing, so that I may become accustomed to the continuous hitting without getting tired. After this comes twenty minutes of shadow boxing, in which I have a system of my own quite different from the method employed by many others. With some boxers shadow boxing is little more than the dancing about on the feet which one will practice

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in the ring. As one might judge from its name, shadow boxing is supposed to mean sparring with an imaginary antagonist. In my own shadow boxing I take up separately each and every one of the various blows which I use, and practice it repeatedly, with the accompanying foot work, side-stepping and parrying.

After this I box eight, ten or twelve rounds with different sparring partners, mixing them up so that I may develop strength, endurance and speed. Perhaps first I will take on a big, strong, rough boxer who will tear into me and give me a lot of "rough house" work, for a few rounds, and then for the next few rounds I meet a clever, fast boxer. After the boxing I have a cold shower, a massage, and supper.

CANOEING.—To the uninitiated and the over-timid, the canoe is often regarded as the acme of all that is treacherous and foolhardy. To the careless or venturesomely inexperienced, so it is! But if the tyro will merely obey the injunction to attempt no "smart" tricks and use ordinary judgment, with careful following of certain fundamental principles, he will speedily learn to handle a canoe with a fair degree of expedition, comfort and practical safety. The canoe is as sensitive as a watch to conditions. If you use common sense,

Canoeing on a Maine lake.

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paddle with a long, steady, regular stroke; do not attempt any eccentric stunts; never try the idiotic feat of changing canoes on the water; keep your wits about you and handle the craft as the North American Indian—the man who invented it—does, you can enjoy one of the most fascinating and health-giving of pastimes. There are perhaps none that supply finer exercise and more refreshing recreation for either sex.

One special benefit of learning to canoe is that it induces a desire to learn to swim.

The Indian will always remain the undisputed master of canoeing as a fine art. His methods should be followed by all who want to canoe in the best possible manner. The Indian does not sit so far down in the canoe as to strain his abdomen in paddling, nor does he perch himself too high and thus well nigh break his back. He merely curls himself into a compact, easy, comfortable pose, paddles with a long, steady but powerful stroke, and the speed with which he can send that frail bark over the water in an emergency is something truly wonderful.

In case of capsizing the Indian method of getting back into the craft and keeping it from shipping water is most ingenious. He grasps it firmly by the gunwale and gives a sudden but powerful jerk. The canoe will turn clear over. At the moment he jerks, he will give a peculiar spring and land astride the gunwale every time.

Good exercise is afforded in the use of either the single paddle or the double paddle, the latter being a long oar with a blade at each end so that one may alternately dip on each side of the boat without changing hands. The course of the canoe is not so direct and steady, however, as with the single paddle.

In using the single paddle the blade is rather inward and under the canoe instead of out to the side, as in ordinary rowing, which would turn the direction. To keep the course straight in spite of paddling on the one side, the beginning of the stroke should be slightly inward, finishing up with a slight

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outward inclination. One should learn to paddle equally well on each side, not only for symmetrical development but also for the greater pleasure.

It may be remarked that after trials of many kinds of making, the canvas canoe has come to be regarded as undoubtedly the best. There is a sheathing of cedar and over this is drawn the canvas. This is treated with waterproofing and then painted in any color or design.

COASTING.—Coasting and tobogganing could be highly recommended for building and maintaining health if only on account of the wholesome pleasure and the outdoor air associated with such sport. The out-of-door life in winter is especially beneficial because the bracing cold has a powerful influence in building resistive vigor, and in making one hardy and warm blooded. But if the slide down the hill is calculated to set one's blood in active circulation through its joyous thrills, it is only the inducement for climbing the hill. And when one has climbed a long, steep hill dozens of times in an afternoon, not

The joys of coasting. A bob-sled starting the long slide.

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laboriously and slowly, but eagerly and with no thought of fatigue, there's exercise for you. All that may be said of walking can be said for coasting, with considerably more besides. The alternating slide offers just the right amount of relaxation and recuperation between the climbs, so that one can keep it up for hours at a time, hours of incalculable profit both from the standpoint of pleasure and health. Normal, natural, wholesome pleasure, in its own self, has a biologic value that we know is great, though just how great is yet beyond our powers of computation.

Every child, therefore, should have a sled, and every family, if possible, a bob-sled. If it is good for the young, it is just as good for keeping Mamma and Papa young. It will make them better fathers and mothers, and the fellowship in sport of the parents will only add to the enjoyment of the youngsters.

CROQUET.—Croquet is a lawn game which for several decades enjoyed considerable popularity, though in recent years it has been somewhat neglected for the sake of more energetic pastimes. Long handled wooden mallets are used for driving large wooden balls through a series of wire arches set in the ground. The game is played on a small court and depends upon skill and delicacy of stroke rather than on strength.

It is an exercise suited to those who are frail or convalescing from some weakening disease. The best thing about it is that it takes one out-of-doors, but as an exercise for the healthy man or woman it is so mild as to be worth little. The arm exercise is almost nothing and while there is occasional bending and thereby a little exercise for the back, the chief exercise is that of moving about leisurely upon one's feet. From its mental interest it is an attractive game to many people, and may be recommended because it offers entertainment that will take one into the open air, and with little excitement. It would be a good game at any sanatorium.

CURLING.—The Scottish game of "curling" has so many devotees in this country that it may be properly included in our list of winter sports. It is a fu' pawky sort o' pastime that is usually indulged in by elderly or aged men having

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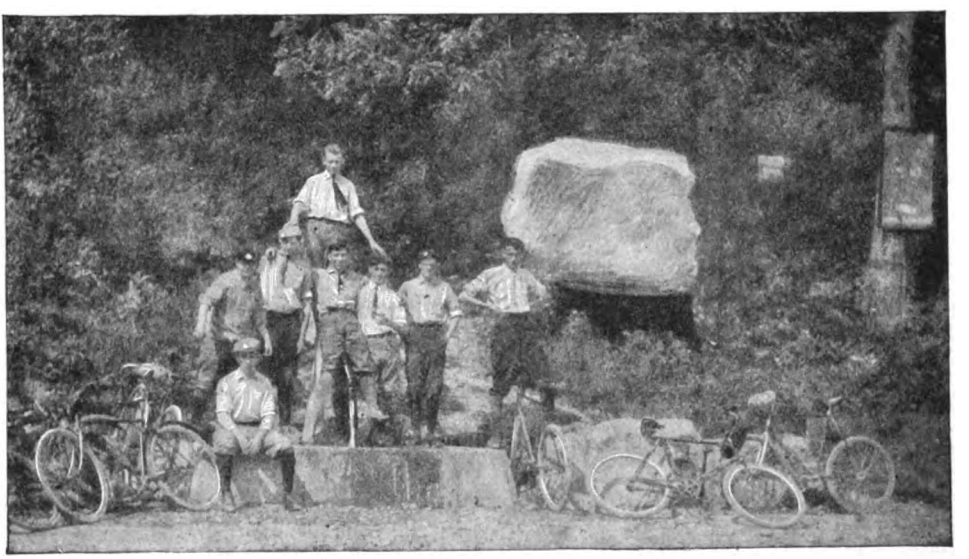
full beards and wearing Tam o' Shanter bonnets and plaidies. Curling calls for smooth ice and a spot sheltered from the wind. Unexciting as the game may seem to outsiders, yet experts aver that it is full of moving chances and incidents that make it most interesting. In any event, the sweeping rush of the "stones" and the swish of the brooms are as music in the ears of the confirmed curler.

CYCLING.—The bicycle offers a truly valuable form of recreation and exercise, though it may be said that as an exerciser the wheel is not all that is to be desired. It is of value chiefly as a means of pleasurable outing, frequent trips far into the country for the sake of the sunshine and the air, being a matter of easy convenience. On this account I would highly recommend the bicycle.

As a form of exercise walking is much superior to cycling, though one may say for the latter that it will quickly take one distances and to places which would be impossible by the more modest paces of the walk. I would advise, therefore, that one do not attempt racing on the wheel, and not to try to depend upon it for bodily development, thereby perhaps losing much of its advantage as a means of true out-of-door pleasure. The bicycle develops a limited number of muscles,



The wheel brings its riders into close touch with Nature.

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of the hips and legs, while neglecting others, and the general position of the body required for racing or very fast riding is unfavorable. The "hump" of the bicycle racer's back is a familiar object, and should be a warning object lesson. The low handle-bars and the bent position of the body necessary in racing for avoiding too much atmospheric resistance have the effect of cramping the chest and interfering with the internal vital organs. It is an unnatural position and should be avoided. In riding for health, therefore, one should be content with mild exertion and a moderate speed, enjoying the scenery, the sunshine and other things which make bicycle trips worth while. The handle-bars should be high and the seat adjusted so that one may sit erect, enjoying absolute comfort even though remaining on the wheel for hours.

Used in this way, the bicycle may be of great value. Otherwise it might better be left alone.

DISCUS THROWING.—See *Weight Throwing.*

EQUESTRIANISM.—See *Horseback Riding.*

FENCING.—Sword-play of various kinds has been practiced since the very earliest ages, and as its outgrowth we have our modern fencing. The fact that fencing still holds its place in the field of sport is enough to show of how great interest the art is, when so very many other means of exercise are now being practiced.

After the Greeks and Romans introduced sword-play, the people of Spain, Italy, France, and later Germany, England and America became enthusiasts and ardent students of fencing.

In olden times much heavier weapons were used, but these have given way to a finer, more tapering blade. After the rapier had been used for some time it was replaced by a much lighter weapon. This makes possible the parry, feint and lunge; the latter having been discovered by di Grassi, an Italian fencing master of the sixteenth century.

There are two schools of fencing, the French and Italian. Frenchmen are the superior fencers. To fence well in accordance with the French school one must acquire great skill, tech-

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nique, delicacy of touch and the finest foil play possible. A good Italian fencer must be a Hercules; for in this school one is taught to overpower one's opponent by strength. Politeness, agility and sensitiveness of touch help make the French fencer the superior. As far as strength is concerned, a woman might develop into the best fencer. Grace, quickness and skill are most required to make a good fencer of the French style.

Some people maintain that fencing is a one-sided exercise; they say that *scoliosis* is bound to result. This is not so if the proper positions are held. Notice any prominent fencing master, a man who uses the foil nearly all day, and nowhere will you see a man of better carriage.

In the position of "on guard" the shoulders are at an even height, the left arm is bent as well as the right, the left knee is bent equally with the right knee. When the lunge is executed the left leg receives as much or more exercise than the right, and the left arm is thrown down parallel to the left leg with just as much force as the right arm is extended. As one recovers from the lunge the left knee acts as a hinge and both arms are bent to aid in returing to the "on guard" position. The only difference that can be found in the right and left sides of a fencing master is in the right forearm. The extra weight of the blade and the movements of the muscles of the forearm give added strength to the tissues there.

Fencing requires a great deal of nervous expenditure. The rapid response that one must make to the various attacks of one's opponent and the ready *ripostes* and fresh attacks call for neuro-muscular control. One must quickly judge the weak and strong points of one's opponent and direct attacks and feints accordingly. To be keen and quick in foil play are essentials. A good fencer should make a better lawyer, a better business man or a better professor because of the exercise. The mind receives much work when one is fencing. As soon as one fails to be alert and ever ready with parries the battle is lost.

Fencing matches are most interesting to watch. The bout continues for four minutes, each contestant working for two

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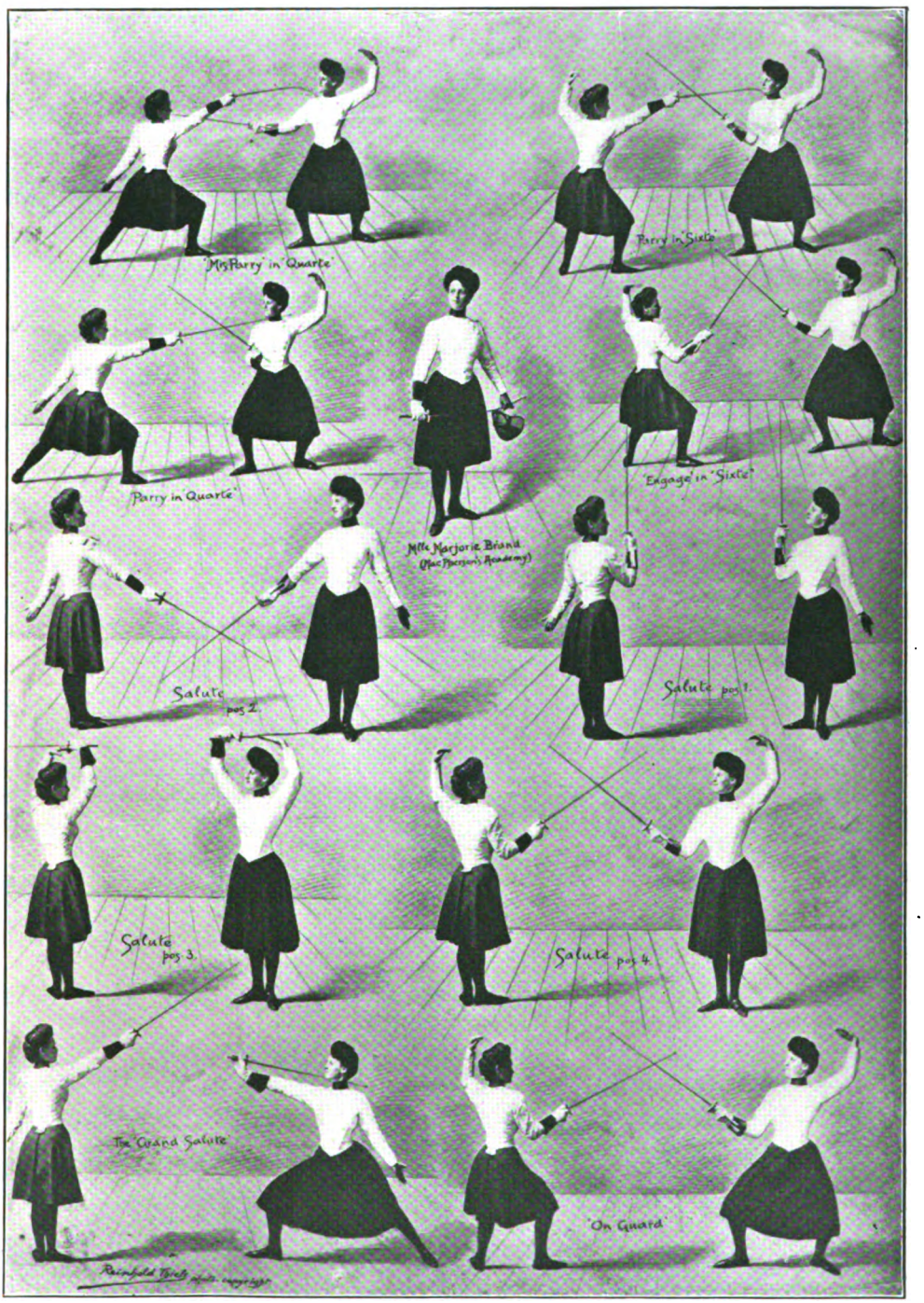

The Salute and chief movements in fencing.

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minutes on each end of the mat. The change at the end of the first two minutes is for the advantage in the light. The fencer's mat is usually about three feet in width and less than twenty feet long. All the work is carried on lengthwise of the mat, never side to side. Stepping off the mat at one side or the other constitutes a foul. As soon as one of the competitors is touched, he should call out to that effect. Some men are slow in acknowledging good touches; in that case, the referee may award a few points to the other contestant. Form counts for a good deal in this form of exercise as in others, and mat etiquette has its points in form for or against a man.

Fencing is one form of exercise that cannot very well be learned from written instructions, but will require a personal instructor. The colored illustration on another page, giving a number of positions, will only indicate the general nature of the exercise, and that imperfectly, but cannot suffice to teach one how to fence. This will take one some time, for aside from the general form there are always a lot of little details which the pupil is likely to forget or overlook, and which he can scarcely hope to master without practice and the help of the instructor.

It is of course understood that the foil will be equipped with a "button," and that masks and gloves will be used. One should never attempt to fence without the mask, for it is dangerous. Women should also wear the padded chest protectors. Also thrusts, parries and movements should be thoroughly practiced and mastered before free fencing is ever attempted.

The different attacks and parries, tierce, carte, seconde, sixte, septime, octave, prime, etc., are so named because of the division of the torso into sections referred to in this way. The parry will be determined by the position of the foils in attack and the point aimed at. In parrying, however, the hilt of the foil is shifted just enough to deflect the thrust, while the point of the foil is held as nearly as possible where it was before, in order that it will be ready for a counter attack.

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As an exercise, fencing has many points that strongly recommend it. The movements which it involves are so varied that it calls into play almost every muscle of the body. It also demands a marked degree of mental concentration. Those who are unable to devote their every energy to the occupation that they may have in hand can never hope to become successful fencers—unless, indeed, they find in the sport a means to acquire the complete control of their faculties. This is by no means unusual, and one of the most useful features of fencing is that it develops the mind and the body simultaneously, and tends to produce the all-around development which makes the ideal man or woman.

One of the most marked effects produced by a constant indulgence in fencing, is the remarkable degree of grace of movement it produces in men as well as in women. It is impossible to become an expert fencer unless one possesses, or acquires, a swiftness and certainty of movement, and ability to move in exactly the proper manner at exactly the proper moment, which at times appear truly remarkable. This statement applies more directly to exponents of the French rather than of the Italian school of fencing—although both methods have many strong points, and numerous staunch adherents to advocate them.

FISHING.—Fishing, under many conditions, is a lazy man's sport, though it at least has the advantage of taking one out-of-doors, and in some cases of lung trouble or of nervous weakness, might be valuable just because it is a lazy, restful sort of recreation. From the standpoint of exercise, there are two varieties of fishing which may be recommended, the first of these being deep water fishing from a boat, which may include a great deal of rowing, and which means a stubborn resistance upon the part of big fish. This will apply both to salt water fishing and that on the inland lakes provided with pickerel, pike and bass. A second form of fishing which provides good exercise is trout fishing in small, clear brooks which require that one keep moving up or down the stream almost continuously in order to get a catch. Scrambling

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through dense brush all day long, up and down the bank of a stream, under such conditions, or even wading down the stream, which is usually better, will give one that appetite and that ability to sleep which prove the value of any true recreation.

FOOTBALL.—In speaking of football, no matter which form of game is referred to, one is safe in saying that it is one of the greatest, most vigorous and most fascinating of all team games, and the popularity of the different phases of football in those localities where they are known is evidence of the pleasure found in such stirring games. As a matter of fact, football is played all over the world, from Europe and North America to Australia and New Zealand.

Football is not a game for weaklings, either physical or moral. The man who is not heavy enough or strong enough to endure the taxing demands of this game should seek some form of exercise for which he is fitted. The man who does not have the moral stamina to control his appetites and his temper ought to take up fasting instead of athletics. Football is a game for men who have strong bodies, clear minds, and clean morals, and who desire a thrilling sport which will tend to develop sturdy manhood.

The right kind of a player, one who goes into the game to

Line-up of football teams in the American intercollegiate game. Backs behind these lines. Bodies of all players, except the snapper-back, must clear points of ball.

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do his best, win or lose, who strives in every way to bring honor to his team and true development to himself, may have a few bruises, and sprains, or even a broken bone among his fond recollections; but he will also enjoy satisfying memories of happy experiences on the athletic field. He will appreciate the fact that there he received most excellent training for use in his honest struggles for true success. Football helps to develop a strong, healthy body, a quick, active mind, and a character of courage, fairness and self-control.

There are three important phases of football, though two of these are really modifications of each other. On the one hand we have "Soccer," or Association football, the straight kicking game, and on the other we have the two divisions of Rugby football. The original straight Rugby football is played extensively in the British Isles and in most of the British Colonies, though very little in the United States, whereas the great national autumn game in the latter country is what may be termed Modified Rugby, though it is now so different from the parent game that the term Rugby is almost never applied to it. It is sometimes referred to as "Intercollegiate" football, to distinguish it from the other phases of the game, but when the simple term "football" is used in America, this is the variety understood.

Soccer.—The Association football, more commonly known as "Soccer," is the same in all countries, and is very, very far from the nature and style of play of Rugby, and especially from that of the American game. Association football is really a true *football* game, inasmuch as the ball, a perfectly round one, is handled almost entirely by the feet, kicking or dribbling. It cannot be carried; cannot even be touched by the hands or arms, except by the goal-keepers, though it may be bunted with the head or any other part of the body, exclusive of the upper limbs. It is a kicking game throughout, and it not infrequently happens that when a player is unable to reach the ball with his feet, he drives the toe of his boot instead into the shin of a more successful, though in this respect unfortunate opponent. What is known as Gaelic football is

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very popular in Ireland, and also among the foreign-born Celtic population in America. It is a variation of its own, though similar in many respects to the Association game.

In Rugby, however, while the ultimate aim of each side is to advance the ball to the goal of the opposition, yet it may not only be kicked, but may be carried, or even thrown in a backward direction from one member of the team to another, in order that it may be carried farther forward, it being left to the opposing team to stop the ball or the man carrying it if they can. And this, in the main, is the plan of American football, with some notable differences in the rules and style of play. The ball in both cases is oval in character.

There are scrummages in both games, although the "scrimmage" as Americans know it, and as they term it, is radically different in formation and action from that of the Rugby game. There are similar rules in regard to "off-side" play, with penalization for offenses in this respect. There is in both games the passing back of the ball from the scrummage, to be put in play by the backs, these passing it to each other as the action of the play may demand. After this either kicking or carrying the ball is in order.

A football team consists of eleven players in the American game, while in Rugby there are fifteen, though it is sometimes played with thirteen on a side. Rugby is the more open game of the two, and, possibly, the faster. In the Intercollegiate style of play there is a rather close formation of the entire team, with a great deal of man to man resistance when the ball is put into action. A few years ago the game was almost entirely a pushing, straining series of so-called "mass-plays," but on account of the frequent injuries due to this style of play there is again a tendency to more open play with more frequent kicking, or in other words, a partial return to some of the more distinctive elements of Rugby.

Intercollegiate. The American game is often said to be dangerous. It is certainly true that it is rough, but for those who know it the game has a certain charm and fascination that is not associated with any game less violent.

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It offers many of the same advantages that wrestling affords for physical development, though it is more violent and apparently of greater interest from the fact that the contest is not merely between two men but between two diminutive armies, each, however, working with much of the same co-ordination and unity of action with which a single individual would employ the various members of his own body.

The action is as nearly continuous as one could wish, the brief pauses between the scrimmages merely affording that momentary relaxation which enables the contestants to endure the tremendous demands upon their strength.

The formation of a football "eleven" in the American game, when engaged in offensive play, consists of a "line" of seven men, for protecting the "backs" while the ball is put into play, and behind this line a "quarter-back," two "half-backs," and one "full-back." These are all grouped usually within five yards of the "line," which consists of the "center," who holds the ball and snaps it back when ready for the play, two "guards," one on each side of "center," two "tackles" next and outside, two "ends." Everything depends upon team play, and the various members of the team must work as a unit. Secret signals in the form of numbers and letters called out by the Captain are used in order that each one may know what the play is to be, while keeping the opposing team in ignorance of it. It may be either an attempt to plunge and push directly through the other line, a run around the end, a kick, or some variation of these. On defensive play, the line is about the same, though the backs may shift to any positions, sometimes much wider apart, for the purpose of interfering with and stopping the attempts of the attacking team to advance the ball. It would be almost useless to take up in detail the rules and methods of play, inasmuch as the rules are changed considerably each year by an Intercollegiate Rules Committee. The game is still in a state of transition and evolution and will probably be modified a great deal more for years to come before it settles down to anything like that permanency of organization and style of play that prevails in baseball.

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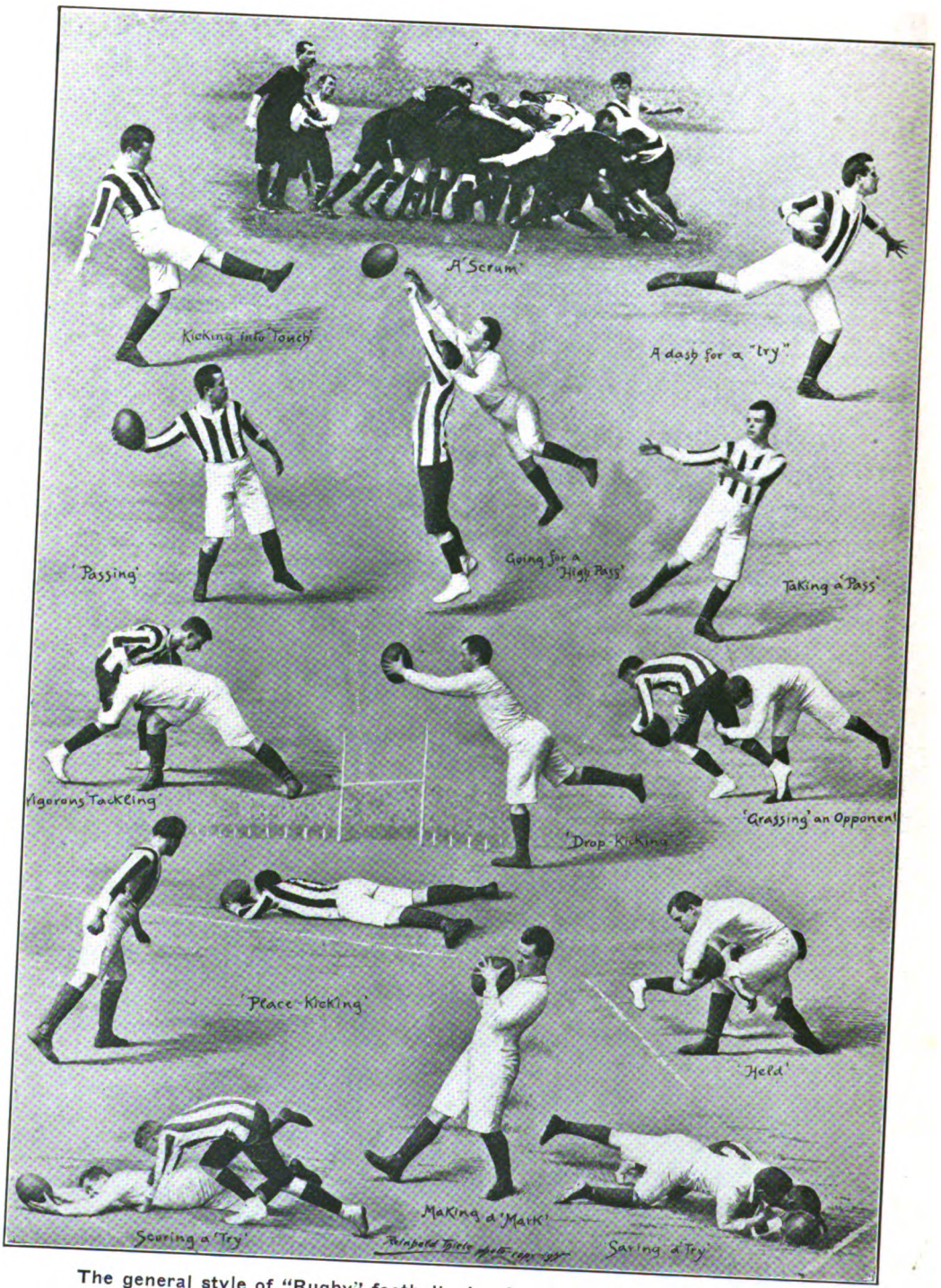

The general style of "Rugby" football, showing a "scrimmage" at the top.

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Rugby. In the disposition of a Rugby team, there are usually eight of the men detailed for duty in the scrummage. This varies sometimes, as in the case of the New Zealand teams, in which only seven men are used for this purpose. The scrummage is also called the "pack," a term which is also applied to the act of lining up in place for a scrummage. It is the business of the scrum men to hold the opposing pack until the ball has been "heeled out" and put into play by the backs, after which they break up and render any further service possible in any part of the field. They are also known as "forwards," in contrast to the names of the half-backs and the others. Of half-backs there are two, one of whom, known as the "scrum-half," occupies a position which has some relation to the duties of the quarter-back in the American game. The scrum-half, just back of the pack, gathers the ball as it is heeled out of the scrummage, and transfers it back to the other half, who then will probably determine the character of the play from that time on. In most cases he will find occasion, either at once, or after a short run, to pass the ball back to one of the "three-quarters," of whom there are four, forming a line across the field in the rear of the half-backs. Back of the three-quarters, and completing the membership of the team, is the "full-back," whose especial and sacred duty it is to defend his goal against attack, though also to render any other service that may come within his power. The most active and conspicuous members, therefore, are usually the half-backs and three-quarter-backs.

One may be sure that after a ball is heeled out of the scrummage and put into action by the backs, the opposition are not idle, for it is as much their purpose to stop the advance of the ball as it is the desire of the possessors to accomplish that result. Whenever possible, the ball is intercepted by the enemy during a pass, but this is seldom, and tackling must be resorted to. But just as one tackles the man carrying the ball, or the instant before, he will contrive if possible to pass it back to the next three-quarter behind him, who will in turn endeavor to carry it forward, pass it back yet again, or perhaps, punt

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it down the field, as the circumstances demand. The statement that it is passed back does not mean directly back, but more usually in a sideways direction, though slightly backward, and never in a forward direction.

Such perfection in team work is accomplished that the runner does not need to turn to see his team-mates behind him when compelled to pass the ball to them. They will see to it that they are there, and he takes it for granted. Furthermore, he does not pass the ball directly to the point at which they are located at the instant, but usually a couple of yards in advance of that point, so that they can catch it while running at full speed and lose no time. Passes are usually made with both hands together, a one-handed pass being unreliable. Great precision and skill in passing is acquired, and it is a sort of unwritten rule that the ball is to be passed and caught while in full speed. The manner of advancing down a field in the face of the opposition is partly suggested by the tactics used in basket ball in America. Strategy goes a long way in Rugby, as in all sports.

When the ball goes "out of bounds," as we express it in America, it is said to be "in touch," and the play is stopped for the moment, being presently thrown in by a member of the other side. This is called the "line-out," the players taking positions opposite the point at which the ball went in touch, and one player throwing it in.

When the man carrying the ball is too thickly beset with tackling adversaries, and finds no team-mate at hand who can advance the ball better than himself, it is usually good policy to punt, and often to punt in touch. This is a safe manœuvre, particularly if his own goal is threatened. The full-back, always a strong kicker, most frequently has occasion to punt in touch, and thus place his goal out of danger for the moment. Rugby football is played intelligently for the most part, but sometimes unintelligently, as for instance when the unschooled members of a team waste much energy in passing a ball all across the field without an advance. They have seen the ball passed by other players, perhaps, and go about wildly passing

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An illustrated lesson in scientific golf-playing.

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because that seems to be a part of the game, but without any advantage being accomplished through their efforts. A ball should be passed to another only because that other will be in a better position to advance it than the individual relinquishing it.

Speed and skill are at a premium in Rugby, while in the American version of football weight and strength count for a great deal. The school boy who wishes to take up this game should first undergo a preparation of special training by systematic exercise in order that he may harden and strengthen his body for the tough usage which it will receive in this rigorous though splendid game.

GOLF.—It is said that in order to make the rounds of the holes of a golf link, one has to walk about ten miles, this distance, of course, including the deviations due to badly driven balls. While the player may not always be called upon to undertake a journey of this length, yet walking and golfing are inseparable, which accounts for much of the latter's healthfulness. If a sport leads one unconsciously to take a good deal of fine exercise, and that too without feeling fatigue during the effort, you may depend upon it that it is of an ideal nature in an athletic sense. And this golf does. If one feels tired it is only *after* the game, and not while one takes part in it. The sleep which follows is that which waits only on him who has honestly and healthfully earned it, and such sleep, by the way, is a sure sign that the sleeper enjoys a high degree of vitality. Broken rest is due to causes which tend to lower one's vitality. Insomnia is nothing more or less than a manifestation of a nervous condition produced by a disturbance of one's mental and physical poise, or in other words, an upsetting of normal vitality. Golf is a great game to abolish such a condition. One never ceases to learn the game, which is the same thing as saying that it makes a continual demand on one's mentality. It offers so many developments undreamed of by the novice that one may play for years and learn something, on every occasion. The unexpected situations which it creates and the unlooked for eventualities that it presents keep the

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mind pleasantly busy, and here again we have another reason of its mental healthfulness and why it adds to one's vitality. To properly "address" one's self to the ball, which means that the player must place himself in the recognized position to strike the ball, to know how and when, and why to use the cleek, the brassie, or the lofterer; the mashie, niblick, driver, or putter; to learn how to "slice" or "pull," to make due allowances for wind strength, to avoid the perils of bunkers or hazards in general, to know how to "honor" with credit and skill. These are but a few of the things that go to the making of a skillful player and, incidentally, add to his vitality while he is learning them.

Then there is the actual exercise which is demanded. To the unknowing, it may seem an easy matter to strike a ball with a club especially made for that purpose. As a matter of fact, the reverse is the case. To learn properly to handle a club, that is to say, to "grip" it, is in itself a portion of golf technique, which calls for careful training on the part of the tyro. Then, again, each club is only suited for a given purpose and must be used in a special way. At present, what is known as the overlopping grip seems to be the favorite with professionals and advanced amateurs. With this grip, the fingers of the right hand are placed below the left on the handle of the club. By this means the amount of work and responsibility of each hand is properly proportioned; for where it is otherwise, a stroke is apt to go wrong. Sometimes it is necessary that the right hand shall be the controlling factor and sometimes the left, according to the nature of the stroke. This is instanced as an illustrative fact of the technical difficulties which surround golf and make it the game which it is.

In making a stroke of almost any kind, the amount of muscle effort that is used, together with the mental concentration, are far more than the outsider realizes. Suppose that the player is making his drive from the tee, which, as the reader probably knows, is a tiny eminence made of sand. The object of the drive is to send the ball in the direction of the nearest hole and in order to do this the player must not only put

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a good deal of force in the blow, but he must also see to it that he so hits the ball that it flies in a straight line. In order to do this, the club must describe a swing downwards and onwards, so as to strike the ball from the tee, and then, without ceasing its forward motion, continue on and away to the left. There must be no break in this motion. The point is, that this long, clean, slashing stroke, with muscle and mind behind it, constitutes a form of athletic movement of the best and, as a consequence, assists in the making of vitality. What applies to the drive, applies almost equally to other strokes, each of which calls for a vigorous movement.

Aside from the great constitutional benefits of the game due to the walking and outdoor air, these various movements of the arms in swinging the clubs afford splendid exercise for the muscles of the chest and shoulders, and also, to a lesser degree for the back and sides. There is no game that can be more highly recommended, and especially for those who have passed the age at which such violent exercises as boxing, wrestling, sprinting and football are attractive.

HANDBALL.—Handball is one of the fastest of all games, when played with energy, and offers such a combination of exercise that it is valuable for every part of the body. In its activity and benefits it may be compared to basket ball, though the general scheme of play is entirely different. It requires the use of both arms at different times, great activity of the legs, and vigorous use of the back muscles when stooping for the low balls. It is a game that may be played either indoors or outdoors, though most frequently and most advantageously outdoors. Wherever a brick wall or any other smooth wall may be found, with level ground in front, a handball court may be improvised.

The bare hand is used to strike the ball, but instead of striking it over a net, as in tennis, it is batted against the wall, bounding back with great speed. Players on the two sides must strike it alternately, keeping it going, and to miss is to yield a point to the other side. It must be struck on the fly or on the first bounce.

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Lay a book on the table. Open it in the middle till the cover you have in your right hand is at right angles to the other cover—there you have a model of a front wall and floor of a handball court. A line across the floor a third of the way between the wall and the back line is all the marking there is to the court. This is the "ace-" or service-line. In size a court may vary anywhere from ten by fifteen to fifteen by twenty-three feet.

The theory of the game is that the player's whole attention is devoted to placing the ball in such a way that his adversary cannot so return it, and so loses the point. The ball must be continually kept in motion, and in no instance may it be caught, or struck with both hands at one stroke.

For practical illustration, let us say that A and B are about to begin a game. They toss a coin for serve and A wins. In handball only the server can score points; he continues to serve until he is put out, *i. e.,* fails to return a ball properly. A, the server, stands back of the "ace-" or service-line, anywhere he pleases, drops the ball with one hand and strikes it against the wall. He has two tries to make it fall into the court between the service-line and the back-line. If he fails in both attempts he ceases to be the server and changes places with his opponent.

Handball Champion Michael Egan recovering a low ball. Showing proper position of hand.

If he does make a proper serve and the other man returns the ball to the wall in such way that the server fails to get it

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back, he is "put out" and has to give up the serve to the other man. In that case no one will have scored a point—for only the server can score. The man who scores twenty-one points first wins the game.

The whole object, then, is to become the server and keep the serve. And naturally the serve in handball, as in tennis, is a very great advantage. There are men, not particularly skillful in the other departments of the game, who have acquired great skill in delivering a serve so difficult to handle that they can win from men who really know much more about the game as a whole than they do. And herein consists one of the attractive features of the game and one which makes it so well adapted to men of all ages—the fact that head work is worth almost any amount of strength and agility with judgment lacking.

As in tennis, there may be anywhere from five to fifteen plays in a rally before the point is finally decided. Back and forth the players go, first one driving the ball high up on the wall to force his adversary back in the court, then perhaps shooting it low on the wall in an attempt to make a "kill." Continuously the eyes of both players follow the ball, and, with an intuitive sense where A is going to drive it, B manages to make his return and keep the rally going until he himself can make a try for a "kill." That is the give and take of the game; skill matched against skill a dozen times, perhaps, in the deciding of one point—at the play's end the satisfaction of one of the players in having sent back the ball in such a way that his antagonist couldn't handle it.

The "doubles game" is much less strenuous, and as it gives four people a chance to use the court instead of two, is more generally played. Handball doubles are played exactly like tennis doubles. A and B play against C and D. The former are the servers, the latter receive. A goes in and serves; if he is put out, B gets a serve. If B is put out, too, the sides change places and C and D each get a serve.

In a properly played game of handball doubles, A and B are supposed to divide the court with an imaginary line and

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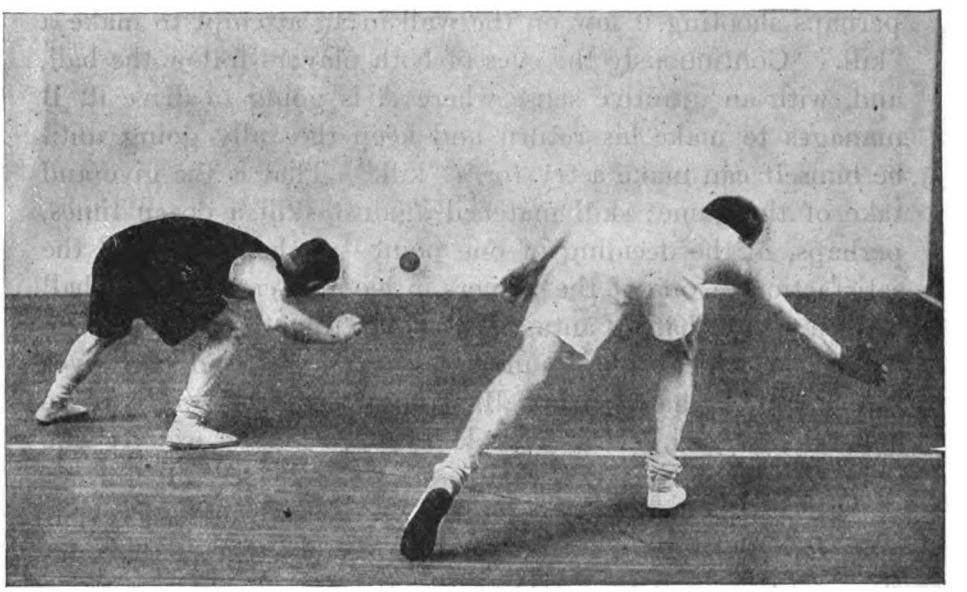
each *covers his own half.* Utter confusion of the game follows the attempt of one partner to encroach on the other's territory. Once in a while, when, perhaps, A has been forced into the back court, it may save the point for B to rush across and take a return that his partner seems too far back to handle. But nine times in ten unless a "kill" can be made, the result will be confusion and eventual loss of the point. If players could be made to realize this one thing, the standard of all the handball doubles played would be improved.

There are certain general principles to be observed by beginners which will raise the efficiency of one's games in a striking degree. In the very first place, cultivate a "loose-handed" way of hitting the ball—the arm should never be rigid and should snap the ball rather like a willow withe than strike it stiffly, as with a baseball bat. The stroke of some of the best players is almost as though they caught and threw the ball each time. It is almost impossible to have the arm too much relaxed. Keep the hand open, the wrist swinging free. Hit the ball with the upper



Photograph Paul Thompson, New York.

An exciting moment during the game—the player on the right has just made a difficult return, and the one at the left is planning to "kill the ball" into the left-hand corner.

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part of the palm, just where the fingers begin. In delicate shots use the fingers freely. It is wonderful what accuracy their careful manipulation will give.

So much for the way of hitting the ball; now as to the question of your position. And right here is where handball differs essentially from most other games. In golf or in tennis, for instance, unless you adopt the *right way* of hitting the ball you can never make much progress. In handball it is different. There simply is no right way or wrong way. The only rule to follow is to find out which style suits you best and then to develop that. If you have started playing overhand or running back and taking everything underhand, and it comes natural to you, stick to that.

Too much attention can hardly be given to the use of the left hand. In doubles where you only have to cover half the court you can scrape along pretty well with your right only, but in singles it is indispensable that your left hand should be good enough not only for defensive work but to earn points with. Use your left hand continually in practice games when you are just knocking the ball around the court. The ability to place the ball with the left will undermine the strength of your opponent's game to a greater extent than you might imagine.

An excellent outdoor court may be arranged by using an even, unwindowed wall of a barn or other building, and making a level floor of smooth lumber, or as a last resort, of closely packed and well-rolled clay, although, of course, wet weather will play havoc with the court last mentioned. Unquestionably side walls will improve any court by preventing the ball from going out of bounds. Given a hard, even surface of wall and floor of court, you need do no more than mark the service-line at the proper point of one-third of the distance from the wall and the back-line of court. Thus, if your court is twenty-one feet deep, the line will be seven feet from wall. An indoor court may be arranged even more easily than an outdoor court by following these plans.

The regulation handball measures one and seven-eighths

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inches and weighs one and five-eighths ounces, but a ball much lighter in weight and even a trifle larger in size may be used. In fact, many claim that the lighter ball involves playing a more strenuous and active game than does a ball of greater weight.

Hand Wrestling. This is a very interesting form of exercise, and one which affords a far greater amount of vigorous resistance than would appear in merely looking at it for the first time. Between two strong and well built contestants it becomes a truly strenuous pastime, although it must be said that success depends almost as much upon skill as upon strength.

The two competitors simply grasp hands, as in a handshake, but well poised upon their feet, and each with the right foot placed just outside of the right foot of the other. Before commencing the bout, the hands should be midway between, or just over the position of the feet. When ready, each tries to dislodge the other from his position, by pushing, pully or jerking sideways. To move either foot, or to place a hand, knee or any other part of the body upon the floor, will constitute a fall. Sometimes, when opponent is pushing hard, by suddenly releasing resistance one may contrive that his own momentum shall throw him off his balance, and the same in pulling.

There is one important point to be considered in hand wrestling, namely, that one should engage in left handed bouts just as frequently as in right handed, in order that both sides of the body may be developed equally. A bout is continued until either one or the other loses his balance, moves his feet, or touches either the floor or his opponent with any other part of his body. The illustrations herewith present some suggestions. Hand wrestling is a pleasant recreation that can be indulged in anywhere, from the parlor to the lawn, and is suited to competition between those of opposite sex. It frequently happens that a woman with a little practice and skill can overcome the superior weight and strength of a less skilled but powerful masculine adversary.

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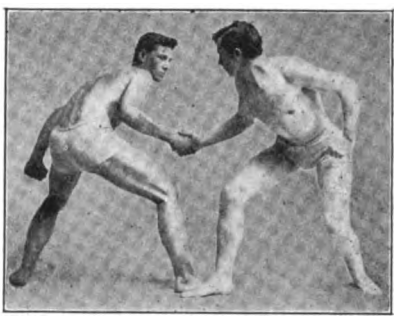
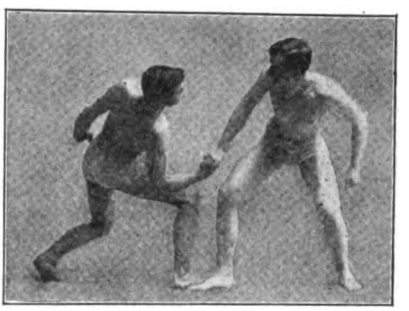
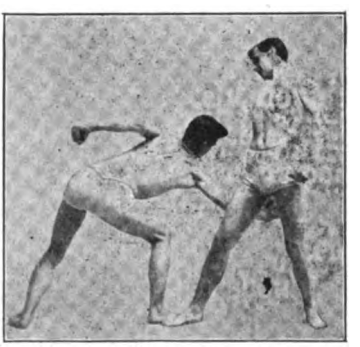


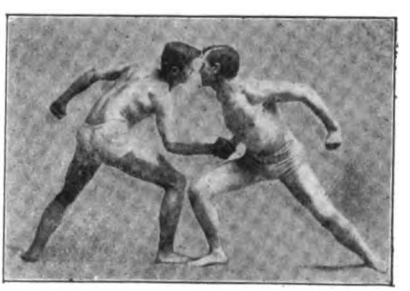
No. 1.—Position at beginning of hand wrestling bout, feet placed against each other, and hands directly over the feet, so that neither has the advantage in starting. From this position each may pull, push or jerk to either side, as he may desire.



No. 2.—Illustrating a quick pull to the near side, which in many cases will throw opponent off balance. One must be careful, however, lest he lose his own balance.



No. 3.—After opponent has pulled hard, straight back, to the position illustrated, a quick jerk to the far side will frequently unbalance him. In this photograph he is about to step backward. It is well to keep pretty well down and braced on both feet. The erect position is a disadvantage.



No. 4.—Both contestants pushing hard against each other, a condition of hand wrestling which permits of the use of one's full strength. Sometimes one can simply push the other off his feet. The same applies to straight pulling.

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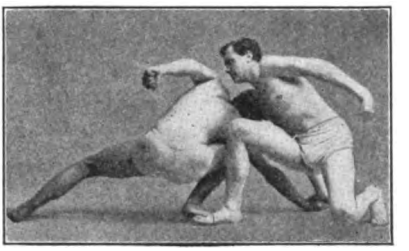
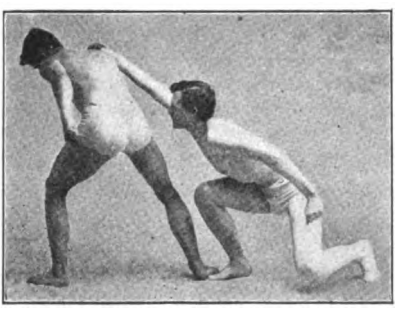


No. 5.—A possibility which follows No. 4. While pushing hard against opponent, suddenly cease all resistance and give him a smart pull. His own force will help to precipitate him.

No. 6.—A clever trick, not unlike the Flying Mare in ordinary wrestling. With a sudden pull upon the arm of your opponent, partially turn your back to him, though without moving your own feet, getting his arm over your right shoulder and fairly lifting him off his farther foot, in the manner illustrated.



No. 7.—Showing a method of resisting the trick shown in No. 6. At the first sign of his intention, and before he is able to execute his plan, drop well down in the crouching position shown, resisting with all your weight, and he will probably be unable to move you. A quick jerk to the farther side, thereupon, will probably dislodge him.

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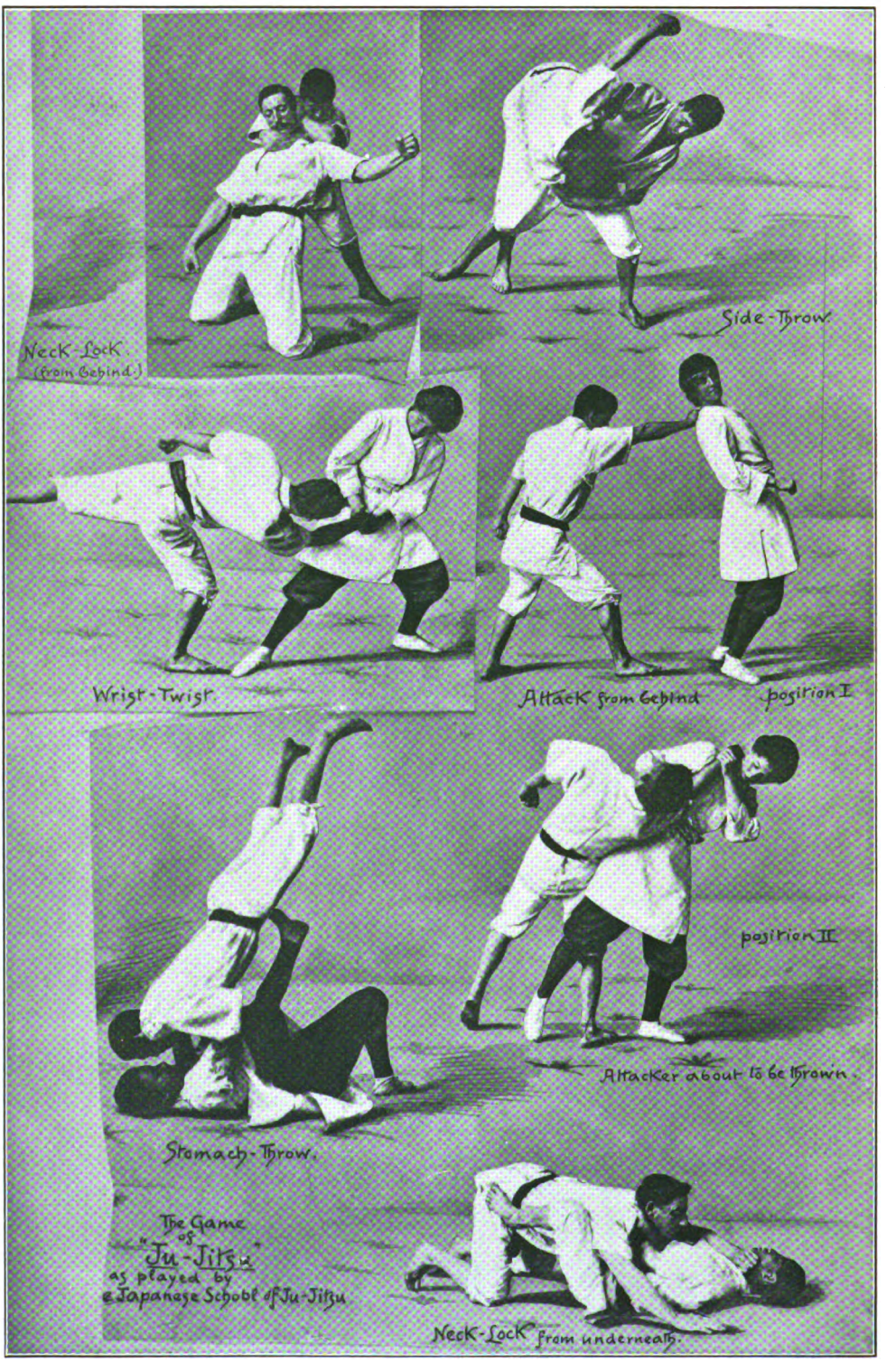

Various holds in Jiu Jitsu.

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Jiu Jitsu. This is the name of a system of self-defense in which the Japanese have become very expert. It is not, properly speaking, an exercise for the building of health and strength, but so much has been said about it in recent years that it is mentioned here. It is true that there is a certain amount of good exercise involved in its practice, and that one must be physically competent and alert to make use of it, but its fundamental principle is that of physical injury rather than of benefit. It is more or less of an art, a bone-breaking, tendon-twisting, ligament-lacerating art, designed to apply one's strength to parts of his antagonist which are weakest and least capable of resistance, also aiming deftly to turn his own strength against himself. There are all sorts of wrist twisting, joint dislocating and fancy methods of throwing an attacking adversary, though it may be said that most competent wrestlers know many such tricks, and really have nothing to fear from a Jiu Jitsu artist.

HAMMER THROWING.—See *Weight Throwing.*

HAND WRESTLING.—See *Wrestling.*

HARES AND HOUNDS.—See *Running.*

HOCKEY.—*Ice Hockey* is naturally confined to localities that have cold weather, and where skating can be enjoyed. It can be played on pond, lake, or river, or indoors on artificial ice —in fact, in any place where ice skates can be used. A team is composed of seven men, who are equipped with skates, and with long crooked sticks like "shinney" sticks. These are, however, broader at the end than the sticks used in the more simple parent game.

Each side chooses a goal, which is made up of netting, held by uprights, and the idea is to send a rubber disc called a "pluck" into one of these goals. The game is played in two halves of from fifteen to thirty minutes, and the team scoring the most at the end of the game is adjudged the winner of the contest. The men are on the go continually, and except for occasional pauses are playing at all times.

To become a first-class hockey player it is necessary to be a first-class skater, but this comes in time, and is acquired

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with practice. By the beginner, hockey should be taken as a form of exercise, and one must not try to be an expert in a short time. Playing for amusement is always the best policy.

Skating outdoors and playing hockey brings a ruddy glow to the skin, and even if not practiced for more than twenty or thirty minutes a day will bring results that will surprise even the most pessimistic.

Shinney or Field Hockey. This is virtually the game of hockey played upon land instead of upon the ice, the original form of the game. A bent stick is used not unlike the hockey stick, though the game has never been developed to the same extent as the great game on the ice. It is of a more informal sort, usually played by boys, and not uncommonly in the streets. It is still played considerably by schoolboys throughout the middle west of the United States. There is no special rule as to the number of players, for any number can pair off and play it. A small hard rubber ball is the object of play, though sometimes a small block of wood will answer the purpose. It is a lively, scuffling, racing game, as

Photograph by Paul Thompson.

A strenuous moment in a game of ice hockey.

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one might expect, though not so fast or scientific as hockey on the ice.

HORSEBACK RIDING.—Horseback riding is a splendid pastime not only for taking one out in the open air, but for the sake of the muscular exercise which it involves. Men of the saddle are nearly always vigorous physically as the result of this one form of exercise, except, as in the case of some of the cowboys of the West, when the indulgence in alcoholic beverages and other deleterious habits offset the good accomplished by their riding. Arabs, Cossacks, Indians and famous riders in all parts of the world are invariably men of magnificent physique.

It is true that every one is not in a position to adopt this form of exercise, but it is so beneficial that one should not neglect the opportunity. Any horse that is suited to the saddle should be used in that way as much as possible, rather than merely be driven around in a buggy. Even the walk of a good horse, when you are astride, is better than sitting in a carriage. "Single-footing" is a very pleasant exercise if one has the right kind of an animal, but a good, comfortable gallop is the very best of all. It cannot fail to strengthen the legs, the back and the abdominal muscles. To ride well, one should learn to allow his body to conform properly to the motion of the horse, rather than trying to resist it. In the gallop, instead of leaning awkwardly forward and being jolted a few inches off the seat with every stride, one should sit back in an erect position, overcoming the jolting motion by the flexibility of the body, and in this way avoiding any jar as well as sticking to the saddle. In this way the impetus will be felt to be forward rather than upward. The sense of tremendous animal vigor which one experiences upon the back of a spirited horse is both gratifying and inspiring.

Equestrian Polo is a very thrilling and valuable game, played on horseback, and with the object of sending the ball through the opponents' goal. Clubs are used, something in the form of a long mallet. Aside from the essential exercise involved in playing the game, the horsemanship re-

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quired is of a very high order, and the mere riding through a game of polo upon a pony active enough to be of service in this game, will provide exercise of the most vigorous and satisfactory kind. The game is really limited to those of considerable means, however, and therefore can never become very popular among the masses. There are plenty of other satisfactory games that do not carry with them the same expense. A good polo pony is a rather high priced animal to start with, and the grounds and other requirements of the game are not always to be had.

HUNTING.—Hunting is a very popular sport in many quarters and unquestionably has great value as a builder of health. It involves an unlimited amount of tramping in the open air, through the woods, over hills, sometimes on mountain sides, and the natural exercise of the walking and climbing is accentuated by the fact that one has something to carry, always the gun, usually some provisions for lunch, and sometimes the game. It is not a violent or vigorous exercise, but is especially good for constitutional benefits because it takes one out-of-doors for all day, in most cases, and sometimes for weeks at a time.

There are many who could not consider hunting as a recreation because of its cruelty and inhumanity, but while this is to be deplored, there is no denying the fact that it is of a nature to build health and vitality. In this connection, however, it might be well to offer a personal suggestion to those who disapprove of hunting on ethical grounds, namely, that hunting with a camera is equally good exercise and in most cases more attractive sport than hunting to kill. A good snapshot camera will cost less than a good gun, and the incidental expenses are no greater. One can always find pleasure in an outing with the camera, and if no game is available, then one can always find beautiful scenes which are worthy of bringing home through the instantaneous impression upon a film.

HURDLING.—Hurdling is a combination of running and jumping [which see] which makes a spectacular contest. The aim of the hurdler should be to get over the hurdles as smoothly

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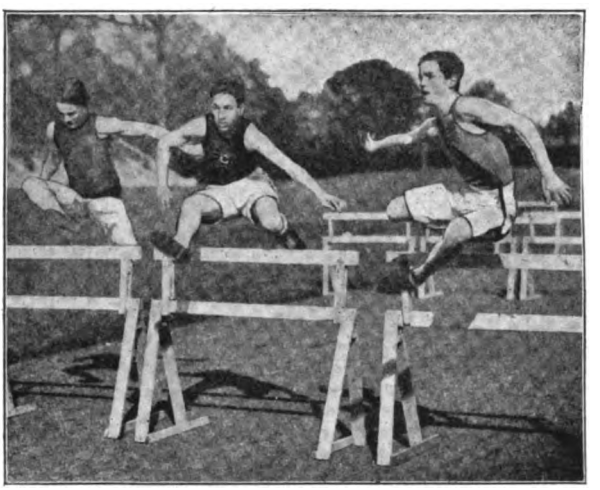
as possible, and without any more interruption of his running stride than necessary. The form of jump employed, therefore, should be as much like a big running step as possible, and the ideal form herein described approximates this essential.

It should be said that the first and all important quality for good hurdling is speed, and hurdlers are therefore always fairly good runners, though there must be a combination of running and jumping ability. But since speed is the great essential, the athlete who is training for a hurdle race should devote most of his attention to sprinting, so that he may develop speed. About twice each week he should practice on the hurdles.

The two most popular and most frequently contested hurdle races are the 120-yard and the 220-yard hurdles, often called the "high hurdles" and the "low hurdles," from the fact that in the 120-yard event the hurdles, ten in number, are three feet and six inches high, while in the 220-yard event they are two and a half feet high, also ten in number. In the latter case they are placed exactly twenty yards apart, with twenty yards to run from the start to the first one and twenty yards from the last one to the finish line. In the high hurdles, they are placed ten yards apart, with fifteen yards to run from the start to the first hurdle and from the last hurdle to the finish. They should be sufficiently light in construction so that if one does not quite get over them he will knock them down, rather than tripping himself for a bad fall.



A spirited and well contested hurdle race. The boy in the center shows the best form, the forward leg extended straight over, and the other leg trailing.

In the high hurdles, it is neces-

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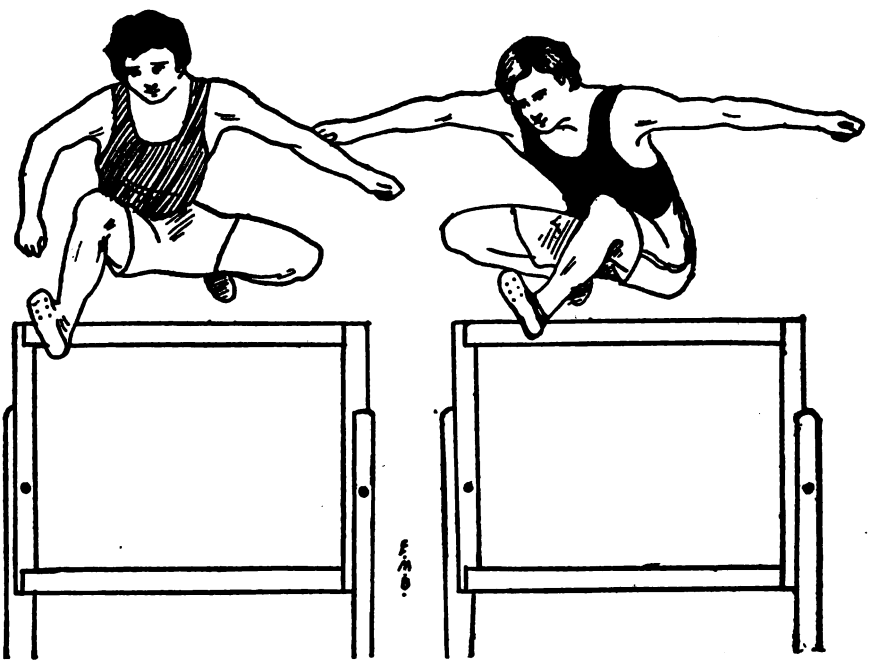
sary to run with an even stride, always numbering the same number of steps between the hurdles, either four or six, but preferably four, if one's stride is powerful enough and long enough, so that the leap will be made in each case from the same foot. In other words, the thing must be systematized. Young school boys will necessarily run six steps between the hurdles, and unless they can do this they are not big enough for hurdles of this height. Speed depends partly upon economy in jumping, and one should not waste time or strength in jumping an inch higher than actually necessary to clear the hurdles. Practice will enable one to master this phase of it.

As I have suggested, the leap should not be so much like an ordinary high jump as like a big step over the hurdle, one which will as little as possible interfere with your running action. Upon alighting on the forward foot you should be in a position to continue your running as though you had not



In leaping the hurdle the free or front leg should be extended straight forward over the bar, the other leg, from which the leap is made, trailing behind, the hurdler trying to jump no higher than absolutely necessary to get over. He lands on the forward foot and continues running as though his running action had not been interrupted by the leap. In short, it should be as much like stepping over as possible.

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made the leap. The old style of hurdling was to curl the forward knee sideways and inward, trailing the rear leg, but the new plan now used altogether is much better. It is to raise and extend the forward leg straight over, as though stepping over, trailing the rear leg from which the leap has been made. It will help in many cases to hitch the arms upward at the same time, with the action of sailing over the hurdle.

If one has speed and can master hurdling, it is a good branch of track athletics to take up, for there are not many who become proficient in it and there is less competition than in the sprints and the other runs. There are sometimes hurdle races for a quarter mile and other distances, but the two named above are the standard events.

ICE-BOATING.—For those who love the open air, and especially the bracing touch of winter, there is scarcely anything more exhilarating than ice-boating. To travel, or rather to fly—for that's about the feeling—at the rate of fifty or sixty miles an hour with the near-zero gale that your motion has brought into being stinging your face; to feel sometimes your deck rise to an angle of 45 or 60 degrees as a squall hits you on the quarter while you buzz along on one runner—to keep your eyes open meanwhile for air-holes and rotten ice and speeding rivals—all this is an experience for the novice, and a delight for the strenuous. It is great sport and picturesque at that. There are few sights more striking than a fleet of racing ice-boats.

Allied to the ice-boat, but built to overcome conditions that would make that craft useless, is the scooter. This is a combination sloop and ice-boat that is found on the Great Lakes and the Great South Bay of Long Island. Originally designed for the use of winter fishermen and duck hunters, its sporting possibilities were later realized and nowadays scooter races are a recognized sport in the localities in question.

The craft is equally at home on ice or water. If, when sailing, it encounters a stretch of the former, it simply lifts itself thereon by means of the curved runners with which it

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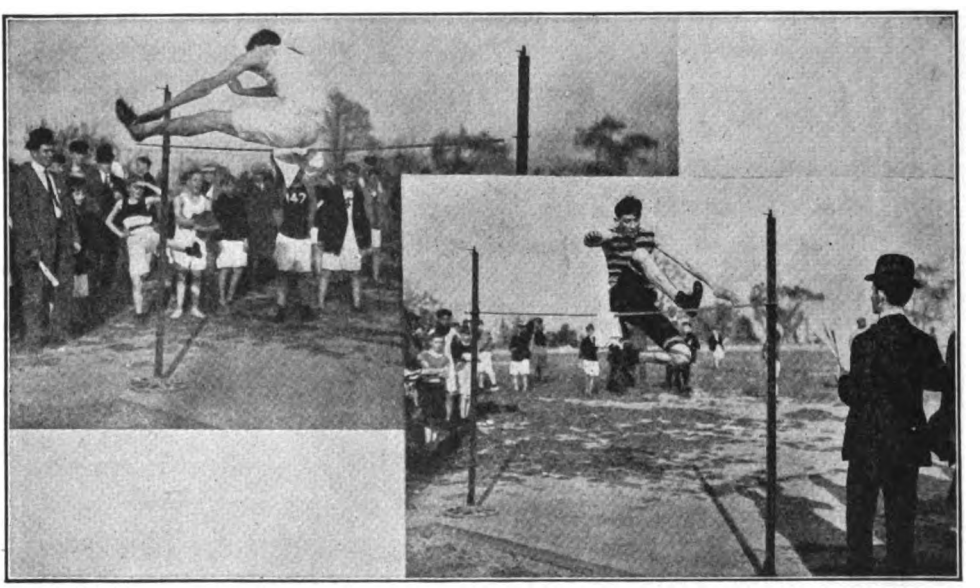
is equipped and skates or "scoots" along until it meets with water again, when it slides off into that element and becomes a sloop until ice appears ahead, when it repeats the process.

It is not to be thought that the open air is all that one gets in ice-boating, for there is often a deal of exercise in manning the craft. Often, when the wind tends to tip her to one side, it is necessary to hang far out on the other side to maintain balance. And sometimes it is necessary to be very active to keep her under control.

JUMPING.—There are two varieties of jumping commonly practiced in competition, the high jump and the jump for distance, called the "broad jump." These are both made running and standing, but the standing jumps are not used much in competition, being much less satisfactory and enjoyable to both spectator and performer.

The running broad jump requires speed most of all, and the successful broad jumper is always a fairly good sprinter. With a given lift into the air, the distance that one will move before coming down will depend absolutely upon his horizontal speed, as a matter of physics. And for this reason the broad



The high jump. The upper exhibit shows splendid form for the sideways style, but the lower photograph illustrates one of the awkward styles often followed by beginners.

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jumper in training should devote most of his attention to sprinting, practicing the jump not more than once or twice each week. Besides, broad jumping is a bit hard on the knees, and they should not be put upon this strain every day.

The jump is made from a take-off, a piece of timber planted crosswise and level with the running path, and the dirt cut away from the farther side. The dirt should be dug up loosely with a spade so as to be soft for landing. The first thing to do is to measure one's running paces, placing a handkerchief or other mark at a distance of eight or ten running strides from the take-off, so that you may be absolutely sure of reaching the take-off with the preferred foot each time. Experiment will determine this, and after a preliminary run to the handkerchief or other mark, a sprint is made from that point, according to the previously measured strides.

Having reached the greatest possible speed at the take-off, it is only necessary to get the upward lift in the jump, getting up as high as possible. Upon jumping you should raise your knees high, even to the chest, with the upper body and arms thrown well forward, and extending the legs again before alighting. This control of the body should be practiced a great deal in easy, moderate but rather high leaps, until the action is a matter of habit. You will then have the right form and will be ready to make real trials for distance.

The running high jump requires very little running, just a few easy steps sufficient to get a good spring and the horizontal direction to carry you over the bar when you reach the proper height. The essential thing in the high jump, aside from the necessary lift, is to get the legs up and out of the way when going over. The easiest and most popular form is a sideways jump, throwing one leg over first and following with the other. It requires practice. A very effective form is one in which the free leg (that from which the spring is not made) is thrown up forward over the bar, the body turning with the other side down and the other leg doubled up, so that the jumper alights with the body facing the bar. The aim is not to go over in an erect and perpendicular attitude, but to

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shoot over feet first, so to speak, so that the upper body may incline toward the horizontal. To jump a bar at five feet does not mean that the entire body has been elevated five feet, that is to say, that the center of gravity has been raised this distance, but perhaps that the center of gravity has been raised possibly three feet, and the position so shifted that dangling legs and other parts all get over. The most expert jumpers acquire a knack of getting practically the entire body in a perpendicular position going over the bar, jumping sometimes over six feet high, but the art of accomplishing this is so intricate that it would be difficult to explain or make it clear in print. [See also *Hurdling,* and *Ski-Sliding and Jumping.*]

Leap Frog. Leap frog is a good active game for boys, and naturally just as good for adults who are willing to forget their dignity for the sake of health. The simple and most common form of leap frog is the continuous running line, in which all take positions with backs bent over, hands on knees, while the last in the line vaults, straddle fashion, over each, finally taking his place at the front of the line, while the next one last in line proceeds in the same way, and so on indefinitely. A more exacting form of leap frog is one in which one man is down in a specified position, while the others take turns in trying to vault his bent back. A special take-off for the leap is provided, a leader setting the position to be occupied by the man who is down. The leader first vaults from the take-off, followed by the others, but he marks the landing place of his rear foot as the place for the man "down" to stand for the next series of vaults, naturally more difficult because of the longer leap. The first one who fails to get over properly, vaulting and placing one hand on the back, is "it," and must be "down" for the next series. As he is placed farther away from the take-off, the leader may specify, one step and a vault, or two steps and a vault, first doing it himself. The poorest jumper or vaulter is "down" most frequently in a game of this kind.

LACROSSE.—Lacrosse is a game which is said to have origi-

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nated with the Indians. It is now steadily increasing in popularity with American colleges. It is a great game for developing agility, quickness of eye and all-around vigor. It requires a large open field, and the ball must be played into a net-like goal.

Lacrosse is not a particularly hard game to play, but, as in tennis, the novice must be able to handle his stick well before he can learn much of the game. A stick used by an old player—a second-hand stick if it is in good condition—is better than a new one for a beginner. This is because, like a used tennis racquet, it has been well broken in by use and is not so stiff. In handling the stick, the beginner should always keep the ball close to the broad end of the stick, about a foot from the end, whether throwing or catching the ball, and well up against the frame. Should it be caught in any other position, immediately shift it to the proper position for a throw. This is for the short throw or "tip." When a longer throw is made the ball is shifted lower in the net. Left-handed men can play as well as ordinary right-handed players, by simply reversing the side from which they throw.

Beginners should first try passing the ball from the stick up against a fence or the side of a building. Practice makes perfect, and, as in learning anything else, one has to keep continually at the game to master it. In throwing from the left side, the butt should be grasped with the right hand, with the left well up to the juncture of the net with the frame. Do not place the hands close together, as this gives less control over the stick. Move the arms freely and draw the stick well over the left shoulder, at the same time turning the body to bring the stick well forward while the ball passes out of the stick from the corner next to the frame. The stick should be given a light jerk upward at the same time, as this gives speed to the ball and projects it more accurately. As the ball leaves the net, draw the butt in slightly toward the body. The body must move with the stick, as this gives greater speed to the ball and insures more accurate throwing. By taking a step forward with the "off" leg, there will be less strain on the back and shoulder muscles.

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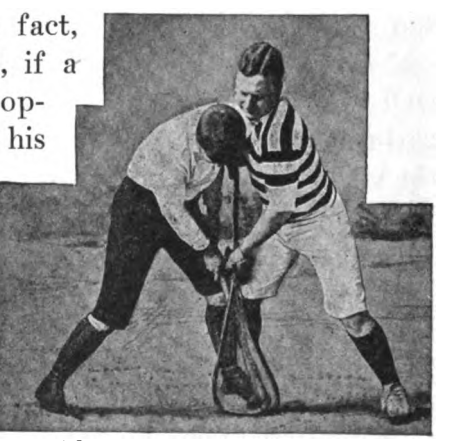
The next thing is to learn how to get the ball from the ground as quickly as possible. Placing the ball about forty-five feet ahead, still holding the stick with the two hands, but lowered instead of raised, the player approaches at a sort of dog trot, bends the knees and scoops up the ball "on the wing." With a beginner the ball will run out, or he may pass over it too quickly. But he will have to keep practicing, because when he once gets the ball he will have to throw quickly, and to do this must have it in the correct position for a swift throw. If he reaches for the ball too soon when approaching it, the ball will bound out, or he will push it away from the stick. A quick bend, scooping it up with a cradling motion, does the trick and then the player is ready for a pass. He should also keep the stick away from a line with his body or he may be taken with a sharp poke that will hurt. Experienced players of course know how to make the approach at speed, so that picking up the ball and passing it are done so quickly that they seem like a single movement. Not only must he attempt to pick up and pass the ball, but he has an opponent who is trying to do the same thing, and the resulting collision of sticks and sometimes bodies is rather a heavy impact at times.

A fundamental rule, and one that obtains in all games where balls are used, is that hammered into the ears of every football player—"Keep your eye on the ball." A player should always keep in motion after he has once caught the ball—in fact, when playing toward the ball, if a player waits for the ball his opponent can come up and block his play, and if he steps backward the opponent has a chance to interrupt it before it reaches the expectant one. One must keep moving and step toward the ball, passing straight and hard, governing the speed by the distance between players.



"Ground scuffle" in lacrosse.

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Twelve men comprise a lacrosse team. The position assumed by the player must be such that his left side is always turned toward the goal he is attacking. The positions are: inside home; outside home; first attack; second attack; third attack; center; third defense; second defense; first defense; coverpoint; point; goal-keeper.

The inside home man of the opposing team lines up against the point man, and so on down, as in Rugby football, in a straight line from center to in-home, with the defense placing itself according to the attack. The ball is started from center or "faced-off." The two centers place their sticks back to back on the ground with the ball between them. In beginning each center must draw his stick straight toward himself and the ball goes to the side getting it first on this move. Then he passes to his next man and it goes from one to another, according to the system of play until the ball is lost to the opposite side or is landed for a goal on the opponent's side.

Shooting a goal is as important as any other part of the practice. It is not sufficient to be able to land it in the six-foot square. The shot should be as accurate as possible, because interference often gives the player little chance to get an easy goal. He must take a desperate chance and so be able to land it by a narrow margin in a small space. He must be able to shoot the ball in close to the goal post or sides of the goal. Here is where wall or fence practice comes in again, for a player learns to catch the ball on a rebound and shoot it in again, as he would in a game if he missed the goal and the ball rebounded. The ball comes back so quickly from the wall that he learns to catch it quickly and get in another shot before the goal-keeper in play could recover.

Leap Frog.—See *Jumping*.

Motoring.—Although the automobile may seem to be a lazy man's method of getting about, as compared with such active exercises as walking and running or even cycling, yet the automobile should be given much credit as one of the prominent factors of recent years in encouraging a love for the outdoor life. Those who take very little exercise, and who other-

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wise might be confined to unwholesome recreations indoors, at least get the benefit of delightful outings in these motor cars. And for the man who sits at the wheel of his own machine there is a certain amount of exercise for the arms as well.

Many business men accompanied by their families now take an airing after the close of the working day, when formerly they would have spent the same time smoking a cigar in a lounging chair at home, probably with little or no ventilation of the room. It is true that every one cannot afford to own an automobile, but for a large class of people motoring is a delightful recreation, and one conducive to their better health.

POLE VAULTING.—Pole vaulting is an exercise which requires a powerful development of the upper body, though it may be said that it requires as much art as it does strength. So expert have some athletes become, in this branch of sport, that the present record is nearly thirteen feet. The beginner should practice on a bar not more than six or seven feet high.

There is really only one correct style, and it requires that one place his hands not too far apart upon the pole, as will be the tendency of the beginner. That is to say, while he will necessarily have hands far enough apart to carry the pole comfortably while making his run to the take-off, he should not have them too far apart while making the vault itself. It is best to make two marks, one some fifty feet and the other some one hundred feet from the take-off, so that the run may be properly gauged. One does not need the same speed as in broad jumping, but sufficient to carry him up and over, wherefore a good run is necessary, and the higher the vault, the greater the speed.

Before starting, the vaulter measures the height of the bar with his pole, placing his right hand slightly above this point, and the left hand lower down. In making the run it is best to have the point which is to be placed in the ground a little higher than the head, so that suddenly dropping the point will help with the upward impetus of the other end. The

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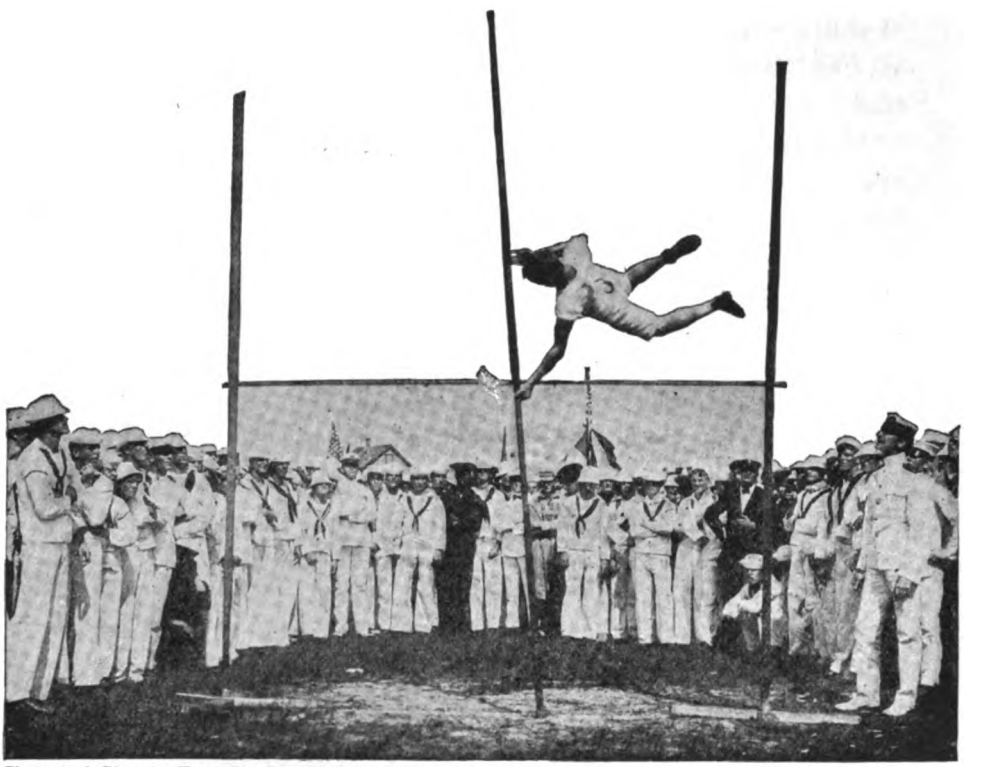
vaulter should leave the ground just as the pole enters it, for trying to insert the pole first will cause too much of a strain both on the man and the pole. The breaking of the pole may mean a frightful injury. The lower or left hand should be shifted upward as the pole is placed in the ground, the reason for this being that one can pull upward with far better effect when the hands are not too far apart. This pull is the important thing, so that upon approaching the bar the feet are swung up forward and raised higher than the head, the body shooting over feet foremost. The athlete lets go the bar as he goes over, throwing it back so that it does not hit the bar, also throwing his arms up so that they will not touch. The body turns during the vault so that it alights facing the bar. As soon as the right form is attained one should not practice at a moderate height, which does not require the decided up-



Photograph Pictorial News Co., New York

The pole vault.

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ward pull, but should keep to such elevations as will demand the best speed in running and best efforts in vaulting. In training one should devote himself chiefly to exercises for strengthening the arms, chest and shoulders, practicing the actual vaults only two or three times a week.

POLO, EQUESTRIAN.—See *Horseback Riding.*

POLO, WATER.—See *Swimming.*

QUOITS.—See *Weight Throwing.*

PUSH BALL.—Push ball is a game suitable to a large number of boys or young men, as for instance, groups of students at a great university. It has been used at the University of Pennsylvania as a substitute for the brutalities of the annual "class rush" between the freshmen and sophomores. It involves so much of the elements of pushing and crowding that it is calculated to develop some of the hardihood and other qualities required in the modified Rugby football played in America.

Push ball is not a scientific game, but it is strenuous enough and hilariously exciting from start to finish. The ball is almost a balloon, being six feet in diameter, a round rubber pneumatic bag covered with leather, not unlike a gigantic football. Being put into play in the center of the field (a regular football gridiron), the object of each side is to push it toward and over the opposite goal. The science of the game, if there is any, consists in raising the ball from the ground by the united efforts of several players, and rolling it over the heads of opposing players. In the scrimmages there is a great deal of pushing and squeezing, the type of primitive scuffle which is one of the most natural forms of play or exercise, and which is conducive to all-around development.

ROPE SKIPPING.—Rope skipping is such a splendid exercise for women, and so much practiced by school girls, that it is discussed in the chapter on *Physical Training for Women*, to which the reader is referred. This does not mean, however, that rope skipping is not a valuable and suitable exercise for men, because it is of equal attractiveness and benefit for both sexes. The over-sensitive and bashful young man need not

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fear that he is encroaching upon a "girl's game" when taking up rope skipping, for nearly all professional boxers do a great deal of rope skipping as an essential part of their training for endurance, speed and readiness of foot. And surely there is nothing effeminate about the professional pugilist. I would earnestly recommend rope skipping for every one, therefore.

JIU JITSU.—See *Wrestling*.

ROLLER SKATING.—Roller skating is a most attractive form of exercise, though not of so much pronounced physical benefit as skating on the smooth and glassy ice of winter. For the most part, however, the exercise is practically the same, and the question of benefit depends largely upon the circumstances and surroundings. The great objection to roller skating in the past is similar to the chief objection to dancing, namely, that it has nearly always been carried on indoors, usually in rinks that were both crowded and poorly ventilated. Roller skating, furthermore, is conducive to the raising of great quantities of dust, not visible or in clouds, perhaps, but extensive nevertheless. When practiced in such rinks, therefore, it is not to be recommended.

Out-of-doors, however, it is a most valuable sport. When available at open-air pavilions at seaside resorts or similar places, it may be commended. For children who have good smooth pavements at their disposal the roller skate is a great blessing. Indeed, on the streets of New York City, the practice of roller skating is the one universal and almost continuous pastime. Year after year, without any cessation of interest, the roller skate has persisted upon the New York pavements, and in many quarters of the great metropolis represents almost the only diversion or exercise of the children. Children run errands and go back and forth to school on their skates.

It is quite a possibility that with perfect roads through the country, the equivalent of city pavements, the roller skate might become a national institution both for convenience in getting about and for exercise, just as it is a permanent institution among the children of New York City. Adults as

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well as children may avail themselves of the advantages of roller skating out-of-doors.

ROWING.—It would be difficult to select an exercise for the summer season that is more pleasant or more beneficial than rowing. It will not only develop important groups of muscles, but it will very materially add to one's general physical vigor. One cannot perform vigorous exercise of this sort without indulging in deep breathing. To advise those who row to breathe deeply is hardly necessary, for the long sweep of the oars, the vigorous efforts demanded of the arms and back, make it absolutely essential for one to draw in full deep inspirations, which naturally expand the chest to its fullest capacity. Rowing is a splendid exercise for either sex.

Rowing provides vigorous exercise for several important sets of muscles, including the hips and legs, the arms, and most of all, the back. It is because of its special value in developing a powerful back that I would most highly recommend it, for, as I have tried to make clear elsewhere, strength of the spinal column, and of all the muscles and ligaments that surround it, has more to do with the building of vital power and nervous energy than the muscular development of any other part. Rowing is a grand open-air sport for invigorating the nervous system.

Whenever possible it is well to use the sliding seat, not only for speed but for the most satisfactory exercise. All sculls, shells and racing craft are thus provided, and the satis-

A crew from the Hammersmith Girls' Sculling Club of London.

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faction of moving so rapidly through the water when using a vessel of this kind adds to the attractiveness of the sport.

RUGBY.—See *Football.*

RUNNING.—[See also *Hurdling.*]—Running is a most valuable exercise for the building of health and may be recommended for this reason to those who have no special interest in the competitive phase of athletics.

Those who delight in taking long walks may often introduce a run of either a short or long distance with added pleasure and benefit, the cross-country version of running being one of the most attractive of all exercises. Short fast runs, however, commonly known as "sprints," are very effective in building great muscular vigor and especially for the powerful development of the legs. In connection with track and field athletics, the competitive aspects of running demand attention because of the wide extent to which these games are practiced. At one time track and field meets were not held often outside of the large universities of the country, but now every high school and every grammar school has a so-called "track team" devoted to this branch of sport.

Sprinting requires a vigorous and symmetrical development of the entire body, and it will be noticed that all sprinters of championship class are very perfectly developed in all parts.

The type of "shell" built for speed and racing.

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There is no greater mistake than the old-fashioned idea that only strong legs are necessary, unless it is the other antiquated notion that long legs are an advantage. If one is not vigorously developed, he should take a course of special exercise for the purpose before attempting the sprints.

Good sprinting requires that there be no lost motion. One must get a grip on the entire body, so that his locomotion is steady and in perfect control, even in the most intense effort and the greatest speed.

The novice should not go plunging, diving, stumbling forward, with head hanging downward. Nor should he go high-stepping along with head thrown far back, gazing into the celestial spaces above him. The various members of the body should not flop and fly about aimlessly, but should be kept steady, though without stiffness. The head should be held firmly. It may often help in steadying the body to thrust the chin forward a little bit out, but not up. You might try it, though if it doesn't seem to work in your case don't do it. Never do anything that seems unnatural, even if it may be advised by athletic experts. Do not bend too far forward on the one hand, nor try to hold the body too nearly erect or perpendicular, on the other, for fear of tipping backward. Throwing the chin a bit forward, as suggested, will tend to correct any such tendency and will help to bring about the moderate forward inclination of the entire body which is most effective. In this, do not

Proper position for starting. Body should be well forward as shown in photograph.

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bend the back, for this should be straight and free; the entire body should have this slight forward tendency. A run should be a falling forward from one step to another.

The cross-country runner has no need of heavy clothing in his winter sport.

It is true that the chief propulsive energy in sprinting is centered in the extensor muscles of the thighs and buttocks, but any real speed depends also upon the strength, elasticity and spring-like quality of the calves. One should train for this by special exercise, if necessary spending a few minutes on it morning and evening. Arthur Duffey had a little trick which he practiced a great deal, a sort of a little dance on his toes from one foot to the other, in which, on each alternate step, he sprang well into the air with the effort of the calf alone, keeping the legs very nearly straight. It is this *springy* quality, among other things, which distinguishes the sprinter from those who are not gifted with speed.

To avoid wasted motion and the tendency to throw the heels up too far behind, the novice should concentrate his thought upon bringing his knee forward and upward with snap and energy in each stride. Try this and see what it does for your stride and style. Don't try to throw your foot forward; just think of your knee, and the foot will take care of itself. Exaggerations of style are seldom good, but it will not hurt you to exaggerate this for a while in the beginning, if it will help you to get it.

As already said, the upper body should assist greatly in the action. In saying that it should be held steady and under control, it is not meant that it should be held stiffly. There should be strength and yet freedom in the action of the upper

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body. It is usually best not to double up the arms too much, but rather to keep them nearly straight, and to keep them *pretty well down.* In other words, they should not swing up above the level of the shoulders in front, at any time. The cork grips are usually of good service, for steadiness. The arms must work naturally, back and forward rather than from side to side, and will help materially, but one can use his upper body to the best advantage if he studies the action of the shoulders and makes use of them, along with the swing of the arms. The right shoulder should be brought forward a little, simultaneously with the left foot, and the left shoulder with the right foot, and though this action should be somewhat conservative in sprinting, yet it will give one increased power and speed. In short, you will throw each alternate shoulder forward with the swing of the same arm, letting the body fall forward, as it were, to the next step.

Perhaps you will find that you have a peculiar style of your own, at which you can do best, and in that case, if you are convinced after thorough trial, then it would be better to ignore any special instruction on style, although the hints given here will apply in nearly all cases. Remember always that your action must be free. Stiffness and laboriousness should be avoided. Ease is the test of good running, and when you reach the point at which you can run easily, you will probably run well.

The start of the sprint is a most vital matter, for no sprinter can afford to get under way three or four yards behind his competitors. Among those well matched in a race, to get away slowly means to lose.

The modern crouching start is fully two or three yards faster than any standing start can possibly be. In the crouching start, one enjoys the same advantage that the panther enjoys when ready to spring. The purpose is to get away like a shot, and this one can only do *when the power is applied behind his weight,* rather than chiefly *under,* as in the standing start. The purpose should be to simply dive forward the first few strides, then gradually rise to an erect attitude.

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The first starting position, therefore, is important. At the signal, "Get on your marks," you should be perfectly comfortable, with feet in their starting holes, hands on the marks, and resting on the right knee, providing you start with the left foot forward. In getting set the average novice nearly straightens the right leg, raising his back too high, and making it impossible to get any power behind his effort. The right knee should be raised only three or four inches, so that the right shin is parallel with the ground. The feet should be placed neither too near nor too far apart, it being most frequently found best to have the left foot on a level with the right knee. The hands, of course, will be placed upon the starting line. It is well if you can have your first foot only four to six inches behind the hands.

The rear leg is to be used for the push-off, and it should be completely relaxed for the purpose. Often the weight of the novice is distributed upon both legs, but the rear leg should not support any of the weight of the body. Most coaches teach that the weight should rest entirely upon the front leg, if not even partly upon the hands. But the very best plan, and the one which largely offers the secret of truly successful starting, is to throw the weight so far forward when "getting

Start of a one-hundred-yards dash.

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set" that *the body rests almost entirely upon the hands.* You will find your head extending far over the line of your hands. From this position, if only you lift your hands, you will dive forward, fall forward, with great momentum. Add to this all your concentrated power in the starting spring, and you cannot help but get going fast right from the mark.

There is another most important point about getting set, namely, to avoid all stiffness and tenseness. If you get set with muscles rigid, you will find them all tied up when the starting signal comes, and it will be necessary to relax them again before you can really make the start. The arms will naturally have the effort of supporting the body, but otherwise every muscle and fiber should be absolutely relaxed while waiting for the crack of the pistol. This relaxation is imperative.

The start should be made with all possible power and energy, but do not make one big over-reaching leap at the start, followed by short steps. Simply run steadily from the start, putting your best efforts into each step.

If you have the proper fighting spirit, when you are losing a race, you will pull yourself together twenty-five yards from the finish and make the fight of your life to get there first, in spite of everything. Such an effort often wins. In your training you should occasionally practice this, running 150 yards at nearly top speed, and then making a whirlwind finish of twenty-five or fifty yards.

In sprinting it is especially important not to overtrain, and it is very easy to do so. Even a little excess in practice, or a little loss of sleep, will be sufficient to take the edge off one's speed. One should train with vigor and concentration, but only a little each day, and many enthusiasts will be surprised to find out how little work will really be best for them. It is true that all-around athletic work is best for health, development and fun in general, but if one really wishes to excel as a sprinter he should not attempt to train for other athletic branches at the same time. No one can train

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for the hundred and also for the mile and be in the best form for either.

For the first couple of weeks it is well to run at moderate speed but to cover distances above that for which one is training. After that, one can settle down to real work. The following program is suggested, but may be varied, remembering that a small nervous and wiry man needs less work, and a heavy, stocky man more. For Monday, six or eight starts, sprinting twenty-five yards, and then slowing down easily. *Never try to stop up short,* but always slow down gradually, so as to avoid strain. After these starts, run sixty yards at top speed, and finally jog a very easy quarter mile. Never try to sprint when cold or stiff; always warm up thoroughly by jogging or dancing up and down on the toes.

For Tuesday, three or four starts, twenty-five yards each, and then 150 yards at top speed, followed by a little jogging. For Wednesday, six or eight starts, at twenty to forty yards, then 300 yards at three-quarter speed, or just under full sprinting speed. Thursday, same as Monday. Friday, six or eight starts, and then 100 yards trial at full speed. Saturday, same as Wednesday. Each alternate week the long trial sprint for Friday may be made 220 yards instead of 100. This may seem very little work, but in the average case it would be unwise to exceed this limit.

Photograph Pictorial News Co., N. Y.

Gustav Ljungstrom, a record-time Marathon runner noteworthy for his adherence to physical culture methods of training. Note forward inclination of body.

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Sunday one should rest, and signs of great lassitude at any time should indicate complete rest for two or three days, with lots of sleep. The more long walks and general exercise one can take, *during seasons of the year when not actively sprinting or training,* the better.

Pacing is a necessity. If your team-mate is too slow for you, give him a few yards start. Get used to running against the wind. It may be windy when you race and fighting the wind will give you strength. A rub-down both before and after the daily training, but especially after, will be of great advantage. If you have no one to do this service, you can even rub and massage your own legs with some success.

Alfred Shrubb, for years the world's greatest distance runner, showing ideal stride for distance work. Training in severe weather. Note the swing of the shoulders.

Distance and cross-country running are even more valuable than sprinting from the standpoint of health and vitality building. A few moments of violent effort can never be as valuable from a physiological standpoint as a more moderate and long-continued exercise.

It is not in the large bulk of muscle, but in the heart and lungs, in the building of stamina and strength in the very vitals of the body, that distance running works its benefits. And for this reason the cross-country game is a form of exercise which every young man should make it a point to take up at some time or other. He cannot accomplish quite the same results in any other way. The professional boxer knows it well enough, and never neglects "road work."

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A certain degree of moderation and self-restraint is one of the first essentials for success in running for health. Enthusiasm should be kept under control. Running is such energetic exercise that one may go "stale" almost before he knows it. For this reason it is usually best for the average youth, and especially the beginner, to do cross-country work not more than three times a week. He will improve his running much more rapidly, and will develop much more energy than by running every day. Furthermore, he should follow what should be one of the first of all rules in exercise and athletics for physical benefit, and that is *never* to carry his efforts beyond the point at which he can really enjoy them.

In the beginning he should not set a certain distance for himself in advance, and then make it a point to run that distance by sheer determination, no matter how painful it may be, or how badly exhausted the effort will leave him. It is true that this is splendid mental and moral discipline, that it develops character and strength of will, and, furthermore, that it makes one a good sportsman, but it is a mistake from the standpoint of exercise and physical benefit. Vitality is too precious to be squandered in any such way. It is so much better to commence with a moderate distance and then run a little farther each time, according to the improvement in endurance. By this plan one will be able to do five or ten miles without trouble in the course of a few weeks, and without once having undergone that utter exhaustion and distress which really consumes more of the runner's reserve vital strength than he can afford to spare.

The novice often makes the mistake of adopting extremes in style. This should be avoided. The most comfortable stride, the movement with which one can get over the ground with the least effort, is the best, even if, as in some cases, this may be flat-footed running. Never under any circumstances throw the head back, thereby assuming the prancing movement that wastes your energy and loses inches at every stride. Nor should the head hang far forward. It should be held steady, inclining slightly forward, the body likewise inclining very

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slightly forward from the hips, but with back straight. Each step, then, should be an easy falling forward to the next stride. Having made sure of this, the more natural swing and rhythm you get into your gait, the better. To get this rhythm, and also to get that increased power in running which comes from using the action of the entire body instead of merely the exertion of the legs, it is a good thing to get the swing of the shoulders into it as well as the inevitable swing of the arms. Or, to be more explicit, let your right shoulder swing around forward in an easy, natural way, at the same time that your left foot goes forward, and *vice versa*. Do not make the action extreme, however.

One should not strive too hard for records the first year. In training, it is not wise to run the full distance for which you are training, at your best speed, but rather to follow a plan somewhat like that for sprinting. Both endurance and a certain speed are necessary for a one-mile run, for instance, the lung power being developed gradually by easy runs for a distance greater than a mile, while speed and strength are developed by running fast quarter and half miles on alternat-

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Intercollegiate cross-country runners running in close formation at early stage of run.

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ing days. In this way you will gradually acquire the speed and the endurance for the mile without too much strain early in the period of training. The reader is referred to *Training,* discussed in the introduction to this chapter.

Those who are busily engaged in daytime can easily take their practice of evenings. But a few minutes are needed to run a mile or two, and the only thing that the novice must be careful about is not to allow his eagerness for progress to lead him into doing too much. Short stretches at an easy gait had best be taken at first, and one can increase them gradually, without, however, increasing the speed. No attempt at fast work should be made until the development warrants it. But above all, let no one, under any conditions, run until played out. It is the worst kind of training. At the earliest sign of exhaustion one should stop at once. Overwork never helped anyone in athletics, and it has harmed many. The secret of success lies in ascertaining one's limitations and not trying to go beyond them. Light work will develop more sanely and quite as rapidly.

For these evening practices there is no necessity of donning running togs. An old suit of clothes, a jersey, a cap and a pair of sneakers (rubber-soled shoes) will fill the bill nicely. Those who live in the country or in small communities will find ample facilities for training in the nearby roads and the city dwellers generally have parks at their disposal where pure, fresh air and good paths are to be had. The sight of men trotting around or through the parks of our largest cities is now a familiar one and hardly causes comment, even when they wear abbreviated costumes.

When a cross-country pack is formed, it devolves upon the leader to find out the relative ability of the men in his care and to arrange his plans accordingly. Where he discovers a wide range of speed and endurance he must remedy the difference by dividing the candidates into two or more squads, and when the time comes for the meet starting the slowest first, giving each squad sufficient handicap over the others to make them all finish as near together as possible. Also, in

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those runs indulged in for pleasure, with no competition in sight, he should pick the least speedy in each squad to set the pace and oblige the others to stay behind him. If this is neglected the fear is ever present of some one over-exerting himself to keep up with the leaders and suffering a breakdown.

The choosing of convenient and attractive courses is also a duty of the leader, but does not entail any great difficulty. An afternoon's walk taken beforehand in likely localities will enable one to map out two or three, and it is advisable to seek some inn or farmhouse as the starting point, that the men may have comfortable dressing-quarters.

And speaking about clothes, it is an all important matter, in cross-country running, to be lightly and properly clad. One must be free of movement, not hindered by heavy or close-fitting garments and comfortable as to footwear. Binding clothes will tire one in no time, heavy ones will lead to profuse sweating that is most dangerous when one is exposed to the cold breezes of winter, and ill-fitting shoes will maim the feet.

The necessary accoutrement is within the means of all. Regular spiked running shoes are of course the best, but some of the best distance men use nothing else than ordinary gymnasium "sneakers," which can be bought at a very low figure in any sporting goods store, and they are suitable for the purpose. A running shirt and light jersey should be worn on the upper body and a pair of loose knee trunks complete the outfit. The lower legs should be bare. Upon them falls the brunt of the work, and after one has gone a short distance and active circulation is started, any impression of chilliness felt at first going into the air soon passes away. The arms, however, exercise very little and should be kept covered, or they are apt to get very cold.

To the man in good physical condition and properly trained, a cross-country run at a moderate pace will prove a pleasant holiday outing. There is nothing more exhilarating, on a bright, crisp day in mid-winter, than to don running togs and start out for a good gallop through picturesque country. The keen, bracing air sends the blood rushing buoyantly

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through the veins until one is bubbling over with energy and could shout for the very joy of living. It is remarkable how little the cold is felt. The body is all in a glow and one trots gladly along, drinking in great draughts of the clean life-giving ozone.

And what a wonderful tonic are these runs for the man who is confined all week between four walls and suffers from any of the hundred and one complaints to which a sedentary indoor life condemns.

Hares and Hounds. One of the strongest points that can be made in favor of "Hares and Hounds" is that it is within reach of everyone. There are in England thousands of merely mediocre runners organized into small clubs, who follow this pastime with no other thought than recreation. They love an outdoor life and they find in the weekly runs a pleasant means of enjoying themselves and of keeping in good physical condition.

The game is one of few requirements. There are no expensive costumes and paraphernalia to be bought; no troubles to be incurred in forming and developing teams; no time to be lost in seeking available grounds. The men do a little easy training by themselves, between times. They have no feeling of restraint or obligation.

One need not be a fast runner to take up and enjoy hares and hounds. Anyone with sufficient energy and enterprise to do a little preparatory work can acquire in a short period of training sufficient endurance to jog trot a few miles without inconvenience, and, of course, at first the distance to go and the pace to be held must be determined by the qualifications of each individual. Beginners will be surprised to find how quickly one improves with practice and how little effort is required if the pace is moderate.

The game of hare and hounds, as the name indicates, is a cross-country chase, of two runners representing the hares, by the rest of the men constituting the hunting pack of hounds.

The hares are sent out with a lead of a few minutes over the hounds and each carries, slung over his shoulder, a light

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linen bag filled with paper cut into very small scraps. The hares choose their own course, meandering around at will and at every few steps throwing out a handful of paper scraps. Thus they lay a visible trail which the hounds take up and follow when the signal is given them to start. And it may be remarked that paper of all colors should be used for the scraps that the trail may be seen over any kind of ground.

Where wooded stretches of country are available, the leader will do well to give them the preference, both because they offer more pleasant surroundings and because when the hares are out of sight it adds zest to the chase. Still, as the trail must be followed in all cases, whether the hares are in view or not, fields and open country can be used just as well.

When the hares have traveled their allotted distance they await the coming of the pack and note the order of finishes if it is a competitive run; otherwise the hounds arrive in close formation and tracks are made for home without delay. In pleasure jaunts the finishing point had best be made near the dressing-quarters, to avoid the extra walk, but where prizes are involved this is not advisable, as it might tempt the unscrupulous to cut corners and those who play fair would suffer by it.

Marathon running is a test of strength and endurance, rather than a beneficial means of developing these qualities. Distance running for health should not exceed five or ten miles, and while a well-seasoned athlete may run a Marathon race, a distance of twenty-six miles and 385 yards, without any injury to himself, yet such a strain is not to be recommended for the average man, nor even the average athlete, as a means of improving his health. It is a grand race, and a magnificent exhibition of stamina, but since the purpose of athletics is supposed to be pleasure and benefit, one will realize these desires much better by adhering to reasonable distances.

Tag and Other Running Games. It is scarcely necessary to more than mention here the various running games popular among boys and girls, the most familiar of which are

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Tag, Prisoner's Base, Follow My Leader, Pump-pump-pull-away, and others similar. It may be said that these sports are among the most valuable of all childhood games, affording just such activity as is best suited to the development of young and growing bodies. Because of the persistence of the pure play spirit in these games, rather than of the keen element of competition which sometimes forces one too far in certain forms of athletic sport, they are to be especially recommended. They will get one into that perfect physical condition which is necessary in order to enjoy and to benefit from other competitive games. While they are usually accounted as children's games, however, I wish to emphasize the fact that they are equally well suited to the needs of grown up children, and I would earnestly commend their practice at picnics, outings and all other convenient opportunities.

SHINNY.—See *Hockey.*

SHOT, PUTTING THE.—See *Weight Throwing.*

Photograph by Paul Thompson.

Girls find prime sport upon the ice.

SKATING.—[See also *Ice-Hockey* and *Roller-Skating.*]—If there is one exercise which never fails to make the blood tingle, and which invariably brings a flush to the face of even the anemic performer in skating.

Those who desire a fairly mild form of exercise, one which will arouse the circulation and quicken the action of the heart and lungs, though without making too great a demand upon their sometimes limited muscular

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Skating appeals to both sexes and all ages.

powers, will find in skating a pastime exactly suited to their needs. On the other hand, those who prefer an exceedingly strenuous sport, of a nature to give full scope to their maturely developed strength, will also be able to find what they are looking for in the more vigorous play of the thin steel blades upon the ice. For it is in just this respect that skating commends itself to all sorts and conditions of men and of boys, of women and girls. It can be made as easy or as energetic as the whim or the physique of the individual may dictate, and in either case will yield a pleasure all unlike that afforded by any other means. Smoothly and gracefully gliding over long stretches of mirror-like, frost-hardened water, with that long rhythmic swing, must be almost the next thing to flying, as far as sensations go. And the exertion for this may be of a mild or moderate character, whereas in skating for speed, the possibilities for severe and even violent endeavor, if one chooses, are unlimited. Besides, there are games that may be played on the ice, which may be made as strenuous as the players themselves desire. And there are trick and fancy skating, for the development of grace. For these reasons, and because of its excellent physiological benefits, skating answers all of the requirements of an ideal exercise.

The fact that it is an essentially out-of-door pastime is another consideration greatly in its favor, inasmuch as all open-air activities are infinitely to be preferred to those carried on

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within the confines of walls and windows. For along with the importance of exercise in creating a demand for an increased supply of oxygen and promoting deep respiration, there goes the necessity for supplying pure air for such deep breathing. It is for this reason that skating is the kind of an exercise that cures a cold, relieves a headache and gives one the old-fashioned appetite that insures a robust digestion. The cold winter air adds to the sport a bracing, invigorating influence which is most valuable.

In its influence upon the heart and lungs, as well as in its general constitutional effect, skating is superb. It calls into play and strengthens not alone the muscles of the legs, but to a large extent those of the sides, back and torso generally. In short, it involves the large and important muscles which are concerned with locomotion, either in walking or running. It is apparent that even a moderate use of these large muscles will call for an increased supply of blood and of oxygen, to an extent beyond that occasioned by a far more intense contraction of some of the smaller and less important muscles. Accordingly, even in leisurely skating, the heart and lungs are aroused to the most healthful activity, while the increased circulation and the stimulation of the functional svstem result in great constitutional benefit.

The alternate strokes upon the ice of the right and left legs

Photograph by Pictorial News Co., N. Y.

Scene on Saturday afternoon at Van Cortlandt Park, New York City.

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provide for the alternate relaxation of the muscles of each side, a great advantage, this provision for intermittent or frequent relaxation being one of the essentials of an ideal exercise.

Skating is so readily learned that it is scarcely necessary to attempt by the written word to show how it is to be done, though we would suggest briefly for the sake of beginners that they cannot expect to skate well as long as they depend upon their legs alone. They should employ the muscles of the upper body, these acting in harmony with the legs, for a great part of the mastery of skating lies in the "swing," the graceful shifting of the balance from one leg to the other. If you find your progress slow, and your efforts hard work, you will know that you are not doing it right, for skating is anything but laborious, and you will only find yourself on the right track towards the mastery of the sport when you learn to do it with ease.

SKI SLIDING AND JUMPING.—It is to Norway that we are indebted for the ski, a form of sliding and jumping snow-shoe which affords some of the best and most thrilling sport of our northern winters. It is true that it requires a good provision of snow, but this is assured for a great part of the winter in Canada and the northern United States. The ski is much used in Minnesota, Wisconsin and Michigan because of the large numbers of Scandinavians settled in those States, but the sport has also been taken up extensively by native Americans.

A ski-jumper making a long and successful leap.

The ski is made of a board six to eight feet long, of the width of the foot, and with the point bent up a few inches like the runner of a sleigh. It is attached to the foot almost in the center by a couple of simple straps. For coasting the ski is

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more thrilling than the sled, because one stands up and maintains his balance even while going down hillsides which are nearly as steep as a cliff. The runners or skis are more readily kept in their necessarily parallel position than might be supposed, though it takes practice to become expert. Falls are numerous, but there is always a bed of snow which almost makes falling attractive.

But the big sporting interest of the ski lies in the jump. The small boy coasting knows what it is to go over a "bump," and it is just this, on a large scale that the ski-runner enjoys, carefully building banks off which to leap at full speed, like jumping off a precipice. This "take-off" is located not far from the foot of the slide so that it is reached at full momentum, and usually has a slight upward incline upon its approach, thus tending to shoot the jumper up in the air. Ski tournaments are held annually in the States of the middle West, at which the first-class jumpers in striving for records make startling leaps varying from one hundred to almost one hundred and fifty feet.

SNOWSHOEING.—The man must indeed be lacking in warm red blood who does not feel the call of the great open air when winter spreads its beautiful white mantle over the earth and keen breezes sweep down from the north.

But the country is frequently impassable to the pedestrian by ordinary means, when snow lies thick on the ground. Mother Necessity, however, came to the rescue in the dim past by suggesting to the inhabitants of cold climates an ingenious racket-like device with which even the deepest drifts could be negotiated with safety and ease, and thus the snowshoe was born.

For those who may not be acquainted with this useful invention of the Indians it may be well to say at the start that the snowshoe is a type of footgear consisting of a wooden frame of elliptical form, more or less rounded in front and running back into a point at the heel. Two or three battens mortised into this frame stretch across it, and the entire inner surface is filled with a network of hide, leaving only a

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small opening forward of the center to give play to the toe of the foot in walking. Resting upon this webbed support the foot cannot sink very deep even where the snow is lightest and the wearer is enabled to cover the ground with speed and comfort.

In selecting snowshoes there should be taken into consideration the amount of work they will be submitted to and the kind of territory in which they are to be used. Different types are required for different localities.

Those about to visit the far north, where the dry and extreme cold keeps the snow loose and flaky, should choose a large and finely knitted shoe that it may have plenty of supporting surface, without obliging one to lift at every step the clumps of snow that attach and cling to a heavy weave. On the other hand, in more southerly regions, where the dampness of the air causes the wet snow to pack and often to crust hard, a smaller shoe can be used, but heavier filling is advisable.

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Long walks on snowshoes are much favored by the young people of Canada.

Of course the conformation of the country to be visited must also influence the choice. One intending to hunt in the woods, for instance, will have to

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select a different model from the man who expects to find only open and flat ground, and a shoe totally different from both must be picked for hilly or mountainous country. A snowshoe having a long toe or a far trailing heel is not only dangerous but quite unfit for traveling up and down hill.

In mountain climbing a short, compact shoe is necessary and the bear-paw type gives excellent service

In taking up snowshoeing it is most unwise to venture out on a trip of any kind before having had plenty of practice near home. To walk on snowshoes looks easy enough, as do most difficult feats—when performed by an expert. As a matter of fact considerable skill is needed to navigate properly on them and the action is so totally unlike that of ordinary walking that many a pitfall is open to the over-confident.

Particular attention should be given to walking with feet straight in front and wide apart, and to lifting the knees well in pushing the shoes forward. The width of the rackets, requiring a space of anywhere from twelve to sixteen or eighteen inches between the feet to prevent interfering, makes the going awkward and uncertain until one has become used to it. The man who fails to allow the necessary play will likely be treated to some nasty falls. Likewise, if the knee is not raised enough the toe will catch in the snow and throw one forward to a heavy cropper. The novice is very liable to stumble this way, because in observing experts the idea is formed that the motion is a gliding one, this idea being given by the trailing heel of the snowshoe and the heavy side-to-side lurch of the body as the snowshoer rests his weight first on one, then on the other shoe. But the motion is far from a gliding one. Rather is it to be compared with the action of a high-stepping horse.

The heel rises from the snowshoe at every step and the toe bends over the toe-hole in the shoe, allowing the racket to swing as on a swivel. And the novice needs to be cautioned against allowing the foot to protrude too far over the toe-hole. Carelessness in this respect has caused serious trouble even to old timers.

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However, snowshoes made for the market cannot always be relied upon. Not that this statement should be taken as a general condemnation of trade shoes, for there are firms whose integrity is beyond question and who use only expert workmanship and the best material. One does at times meet with shoes of inferior quality, however, and it is just as well to caution the unwary. Particularly should those be careful in selecting their snowshoes who are about to trust themselves in far away, unfrequented places, to these ships of the northern wastes. One is apt to find among store-made shoes defective frames that will break or wear-out and fillings of beef hide that will stretch and sag dangerously after a wetting. A hopelessly broken shoe may come to be a matter of life and death, under certain conditions, and it is a sensible plan to minimize the chances of mishap by taking the trouble to obtain a first-class pair of shoes hand made by one who builds only a limited number and gives each pair utmost care in every detail.

SOCCER.—See *Football.*

SWIMMING.—Swimming is one of the most attractive of all summer sports because it combines the delights of bathing with the pleasures and benefits of a most satisfactory and perfect form of exercise. Practically all parts of the body are employed in the various swimming strokes, and not only this, but the use of the various members of the body is such that it requires the full and complete use of the muscles which has been pointed out elsewhere as an essential of ideal exercise. Swimming involves the full sweep of the limbs and also vigorous activity upon the part of the muscles of the torso. It is an exercise well calculated to develop symmetry and a uniform strength throughout all parts of the body.

It is in the power of anyone to master unaided, and in a very short time, the principles of natation sufficiently to meet ordinary requirements, but it would be a poor kindness to the prospective swimmer not to add that a high degree of proficiency—according to present day standards—cannot be attained without the aid of competent in-

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Photograph 1.

Photographs 3 and 4 illustrate method of performing leg and arm movements combined, while in standing position. As the arms are swept outward and backward from first position, the leg is extended outward and downward. Both legs may also be used with arm stroke.

Photograph 2.

Photograph 3.

Photographs 1 and 2 illustrate the first and final positions of the breast stroke in swimming. This stroke may be practiced while in a standing position, as here illustrated, without making use of leg stroke. After arm movement has been mastered, it may be practiced in conjunction with leg stroke, as shown in Photographs 3 and 4.

Photograph 4.

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struction, or at least the constant example of expert talent. This candid statement is not made with any intention of discouraging the beginner, but for the purpose of impressing on those having the facilities to place themselves in the hands of good teachers, the wisdom of doing so without loss of time. It is by far the shortest and most satisfactory road to success.

Experience has proved beyond a doubt, that the most modern of the so-called speed strokes—the trudgeon and the crawl—are not only the best for all-around swimming, but also for developing harmoniously and symmetrically every set of muscles in the body. And why shouldn't they? They are the result of long years of studying the application of scientific principles to the art of obtaining the greatest amount of speed and endurance out of the forces at our disposal, and they have solved pretty thoroughly the problem of comfort and efficiency.

These strokes are not natural ones, however, and they are rather complicated, so that it is almost out of the question to acquire them properly without the help of a coach, and in undertaking to unfold a system by which the uninitiated can learn unassisted and quickly how to handle themselves in the water the prudence of advocating the more simple and easily mastered breast stroke becomes evident.

In the writer's opinion—and I hold this opinion in conjunction with many of the best instructors in the country—the quickest way to learn how to swim is to acquire perfect control of the correct movements of the stroke on dry land before entering the water at all, and to prepare one's self also by mental suggestion. The movements essential in swimming can be practiced on land before venturing into the water. It is an unquestionable, and universally recognized fact, that we can school ourselves into doing things almost automatically. We see cases of it on all sides, in everyday life. And there is little doubt that by picturing to one's self the actual going through of the swimming movemovements in the water, while practicing them on land, one can train the mind to suggest them to the body when the time

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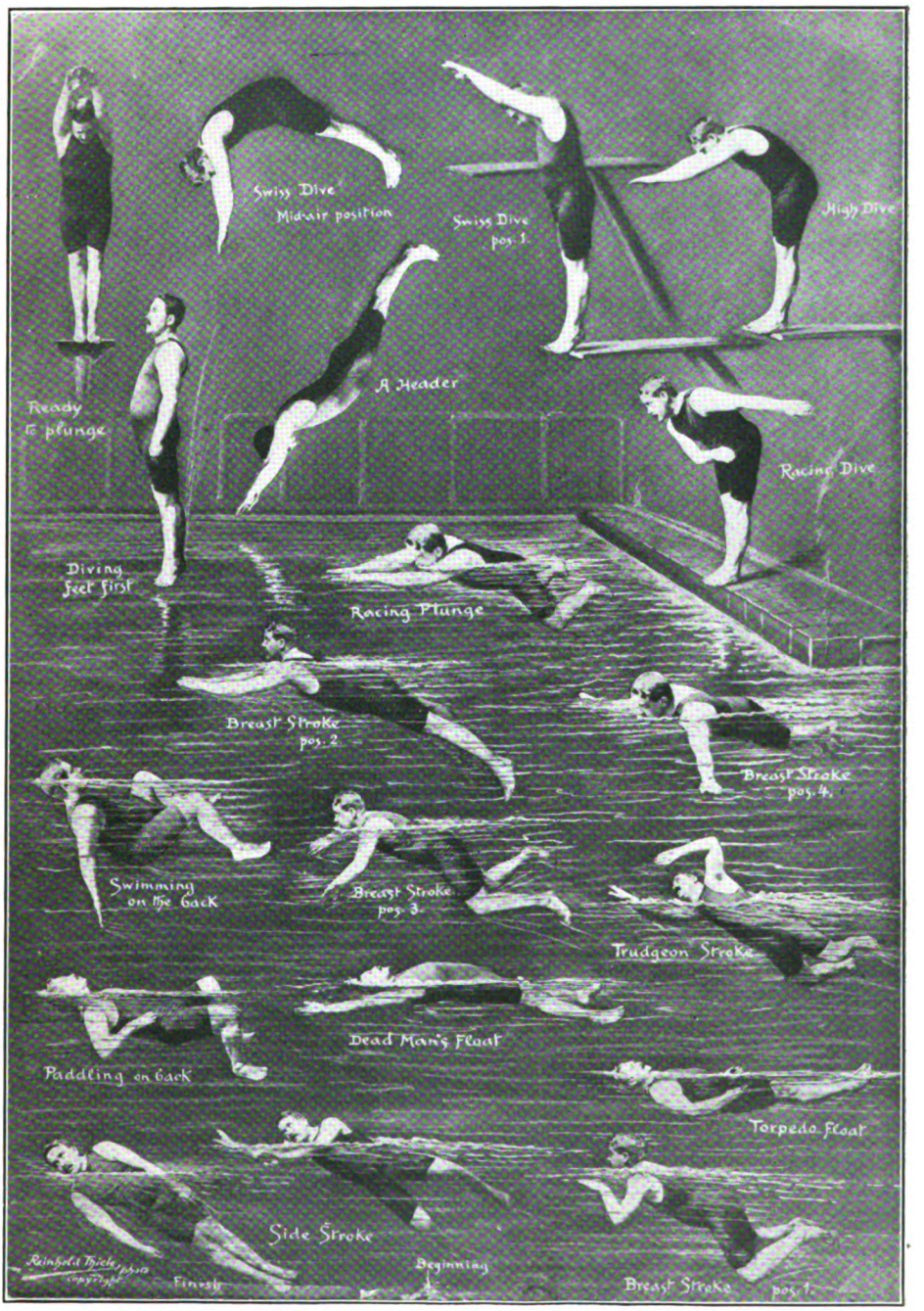

Styles of diving and various swimming strokes.

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comes. The muscles will then respond, and as performing the movements even approximately cannot fail to sustain one, the first period of development will thus be cleared at a leap, or at least greatly shortened, and confidence—the most important factor in learning how to swim—will be acquired in a much shorter time.

One of the best features of the land exercises is that they enable one to indulge in preparatory practice almost anywhere; in a gymnasium, in the open air, even in the privacy of one's bedroom. And they also allow the calm and collected study of perfect form, frequently made impossible in the water, by that unaccountable dread of the "treacherous element," that so many of us experience and that seems to paralyze our thinking qualities.

There are three distinct phases to the breast stroke: arm movements, leg drive and respiration. It is advisable to at first practice them separately on land, while in a standing position, at first, and to master each completely before passing on to the next, not attempting to run them in together until all three have become thoroughly familiar.

While the proper way to practice these individual parts would be to lie flat, face down, on some available support like a narrow couch or bed, a padded chair, a canvas stool, etc., and so get used to the position that the body must assume later in the water, this system has the disadvantage of being decidedly uncomfortable and fatiguing. It is therefore preferable to stand up while acquiring the dissected parts, and only to do horizontal work when ready to try the complete stroke.

In practicing the arm action one stands erect with hands held at the height of the chest, palms down and fingers and thumb close together, pointing in front (see Photograph 1, of standing exercise). Push hands forward with a rather slow, continuous motion, until fully outstretched, as in Photograph 1. Turn hands back to back, and with a determined, forceful sweep make them describe a semi-circle, parallel to the ground, until extended at your sides at right angles to the

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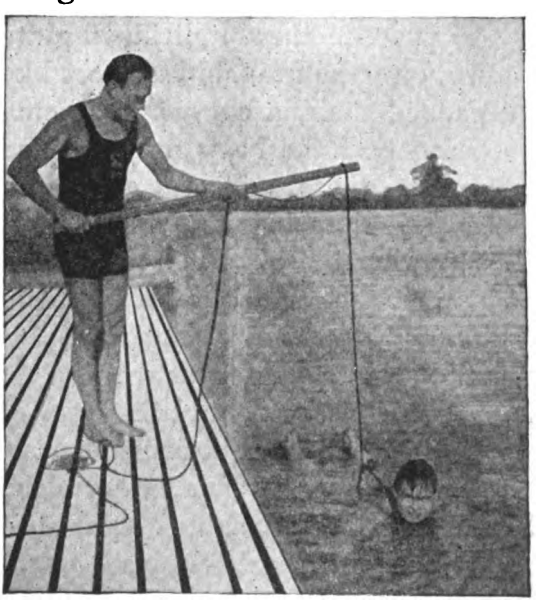
body, Photograph No. 2. Lower elbows and gradually turning the hands palm down return them to starting position. Continue these movements until they come naturally, having care to push the hands forward quite slowly (for in going to the full reach they are opposing the water and the slower they go the least resistance they will offer), and to bring them back with some force, as the more power you give them the greater forward impetus they will impart to the body.

The leg drive of the breast stroke is known as the "frog kick," and its name is quite descriptive. Without changing your erect position, Photograph No. 1 (toes pointing forward, legs and feet close together), alternate with the right and left the following movements: Lift leg from the ground by moving knee up and out, keeping foot close to other leg until the heel is at the height of the other knee, Photograph No. 3; then push foot out sideways until leg is straight. Bring down sharply to starting position. In practicing on a support, both legs may be used at the same time, but the action is identical.

Before describing the method of breathing used in swimming—it is timed to suit the different strokes—one feels the advisability of laying particular stress on the absolute necessity of inhaling and exhaling correctly if ease and form are to be obtained. Both the comfort of the swimmer and the smoothness of his stroke depend so much on proper breathing that proficiency cannot possibly be attained with a defective system.



Manner of sustaining the prospective swimmer when the beginner has the advantage of an assistant.

Air should be taken in through the mouth as

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the arms are pulling (taking their stroke from the full reach to the finish of their orbit), because the application of their power lifts the shoulders high on the water and brings the mouth well above the surface. Breath should be exhaled through the nostrils while the arms go forward from the chest to the full reach. Both intake and output must be easy and gradual, not anxious, or hurried. In filling the lungs take the entire time at your disposal and the same in emptying, that there may be no time when you are uncomfortable for lack of air or through having too much.

Of course the principal aim in practicing breathing should be its timing. Just try to keep before you the fact that when the arms are pulling, the mouth is above water, while when they are recovering (going forward), it is under, so that to breathe on the recovery is to inhale water instead of air, which causes coughing, choking, and possible asphyxiation. An easy way in which people can remember when to inhale and when to exhale is for them to imagine themselves blowing their hands away from them and then inhaling as the arms open. In practicing breathing on shore in standing position the head should be tilted back slightly, as it is so carried in the water.

When the time comes for running the component parts of the stroke together, it becomes necessary to take the position advocated above, stretched out face down upon some support, with arms and legs free that they may be used without inconvenience. Remember to hold the body straight, with head a little raised, arms out to full reach before you parallel to each other and to the floor, hands flat, palms down; legs straight and close together, feet pointing down as when standing on tiptoe.

Lead out with the arms. Turn hands back to back and proceed to describe the semi-circle that you have been practicing. The only difference lies in the slightly higher position of the arms, but this in no way alters the movements. Begin to inhale as soon as the hands start to turn and continue with slow, steady intake until the arms are ready to start forward.

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The legs are not moved at all until the elbows have been bent and the hands are close to the chest; then they are brought up without haste; as the hands are pushed away from the body. you begin to exhale with the same quiet, even blow, and at the same time straighten the legs; when the hands have attained the full reach you stop exhaling and snap the legs briskly together.

A number of old-fashioned instructors still teach the use of arms and legs together, but their method is totally and fundamentally wrong. And this is why: In opening and bringing up the legs an immediate check is placed on the forward impulse and there is actually a drawing back of the body, just as there is in shooting the hands forward. In using the arms and legs together it so happens that the leg recovery offsets the benefit derived from the arms, and the arm recovery kills the impetus given by the kick. By completing the arm stroke while the legs are trailing and not offering any resistance to the water, so much speed is imparted to the body that the preparation for the kick cannot altogether stop it, and the check has hardly become effective when the leg drive starts the body forward again and the position is then such (flat, with arms and legs straight and offering the least possible resistance to the water) that the form of inertia keeps one going for some time. This sliding without motion after the power has been applied constitutes the "run" which one often hears talked about by speed swimmers.

Now, the reader may say that he or she does not care to go fast and that the old way seems easiest. Bad view to take of it, for it is just as simple to learn correctly as incorrectly, and speed makes all the difference in the world in swimming, particularly to the beginner. The fact should never be lost sight of that in the position one assumes for swimming the breast stroke the body follows the principles embodied in the hydroplane boat. Speed has the tendency to lift it above the surface and the faster it moves the less becomes the submerged portion. Therefore speed must be considered an important factor in sustaining the swimmer.

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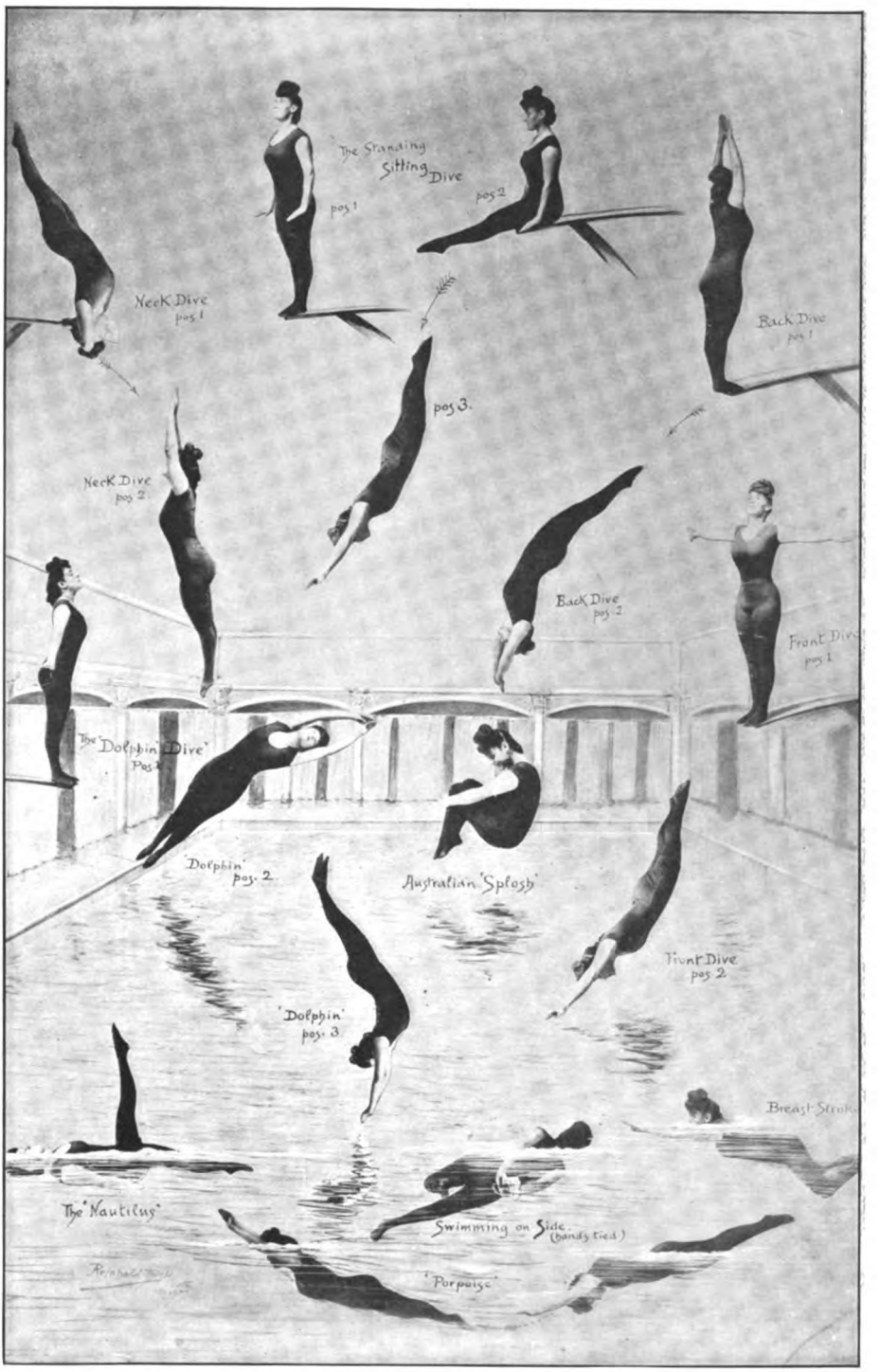

Some of Annette Kellerman's feats of diving and swimming, showing the splendid development she has acquired through proper exercise.

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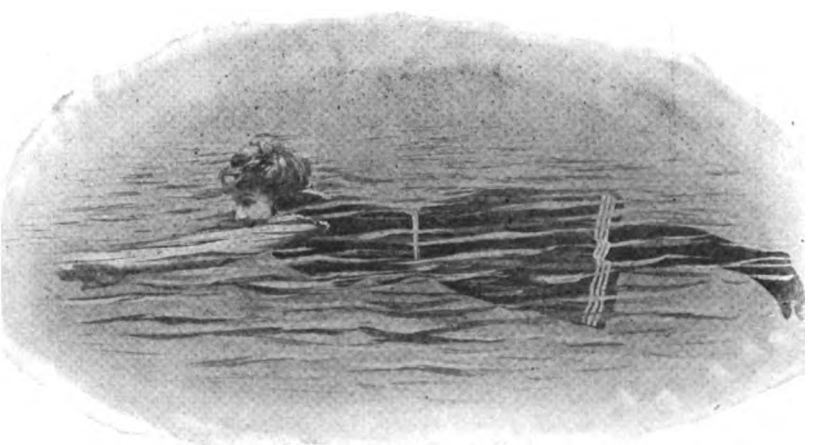
When the time comes for you to enter the water, a point to be decided is whether someone can be found to aid you in your first attempts, or whether you must make them alone. Your helpmate need not know a thing about swimming; all you want him for is to support you.

If you have to go it alone, choose if possible a place where the water is shallow, but not too shallow—say, up to your chest. This, that you may be able to swim without your feet touching bottom, yet have the feeling of security that an assured footing gives one. If you can find an assistant, get used at once to deep water.

The use of sustaining appliances can sometimes be recommended, for in some cases, particularly if one be of a nervous disposition, or inclined to fear the water, they help to inspire confidence and, of course, they are indispensable if one has to learn alone and only deep water is available.

Of the various floating devices now in existence the air-inflated ones are most satisfactory both because they can be adjusted so as not to interfere in the least with one's movements, and because the air can be gradually let out, so that one passes in almost unconscious stages from an overabundance of support to none at all. The word overabundance is here used intentionally to emphasize the fact that no artificial support of any kind is needed to keep one afloat.



Beginning of breast stroke.

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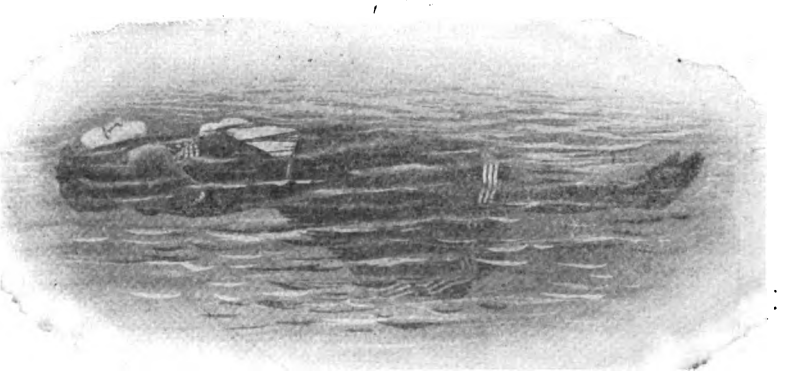
The body floats naturally, whether supine or face down, and if the nostrils and mouth were to be sealed it could not possibly sink, for the lungs act as an air chamber and make its weight lighter than the amount of water it displaces. People would never drown could they manage to keep the lungs free of water. The trouble lies in their not knowing enough to hold their mouths above water. In their frantic efforts to save themselves they inhale water instead of air, the lungs fill, and the buoyant center being destroyed the body sinks.

The aid of both floating devices and a companion is moral as much as physical, yet none the less necessary.

When you have someone to assist you make a belt for yourself, (a strip of canvas, a leather belt, or even a bit of rope will do,) which you must wear around the body, a few inches above the waist line; to this you attach a piece of light cord, the other end of which is made fast to a thin pole. Your assistant holds this pole, and as you let yourself into the water he applies sufficient power to sustain you on the surface, head well above water. You then proceed to go through the movements you have been practicing on land, slowly and deliberately, while he measures his support according to your wants. Of course you have chosen for your lessons either a dock, float, or other place, where your human life belt can walk up and down with you as you swim. He gradually re-



Position for floating.

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laxes his lift until you swim unaided, which, if you have prepared properly, should be very soon indeed.

Keep in mind at this stage of the game, that to hasten the movements will not only exhaust you, but will also make it impossible for you to go through them correctly.

In learning alone in shallow water allow yourself to drop slowly from a standing to a swimming position and try to lie comfortably with feet a little below the surface and mouth submerged. The water line should come between the mouth and the nose. The muscles should be relaxed and no part of the body rigid or strained.

One of the most prevalent faults among beginners is to believe that correctness of form lies in stiffness of muscle. This is particularly wrong in the case of swimmers, because relaxed muscles will adjust themselves almost naturally to the proper position. There is no need, for instance, to crane the neck in order to keep the mouth above water, it only tires without helping, and it destroys the balance of the body. The arms will lift you while they apply their power and you can then breathe freely without raising the head at all.

Having assumed the proper position, go slowly through the movements until you feel yourself sinking, then just put down your feet, stand up and try again. But don't hurry, let me repeat it again that you may remember it. Take only three or four strokes, at first; take only one if you find yourself unable to do more without sinking, but make that one a correct and a deliberate one. You can afterward increase one by one if you can do no better.

Never tire yourself, in the beginning; stop and rest as soon as you begin to feel fatigued. You will improve more readily. And realize from the start that when you are able to go through thirty or forty slow strokes, without resting, you know how to swim. After that it is merely a case of practice and development.

In regard to both the healthfulness and the danger of swimming, a distinction must be made between the exercise itself, and the action of the water. A comparatively long

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immersion, especially in cold water, may prove harmful, where the exercise alone would not have been excessive. In cold or cool weather the warming-up will occur much more promptly if a rubber cap is worn. Adjusted with a strong rubber band; this keeps the hair dry, and in no way interferes with freedom of movement. A tight-fitting swimming suit of warm material will be found to preserve the bodily heat better than a pair of trunks. The advice to leave the water before a feeling of cold is experienced, is as trite as that to the effect of leaving the table while still hungry, and is about as likely to be followed. Certainly, however, common sense should tell us to leave the water *after* the chilly feeling comes on, and not to wait till a fit of shivering proclaims a still greater distress of the body. Beginners are more likely to suffer in this respect than are advanced swimmers, since they are obliged to take frequent rests while in the water, whereas the experienced swimmer can keep moving.

Tank swimming may to the uninitiated appear as a milder form of the sport, but in reality it is not so. The small body of water becomes more quickly and more irregularly agitated than a larger open-air surface, and the increased liability of running into someone does not conduce to ease of movement. The "turns" that can be made at the end of a tank seem at first to give a slight rest to the swimmer, but when continued they are really a more vigorous exercise than swimming itself. To the beginner the turn is a valuable illustration of how the swimming kick should be made, for if there is one point above all others in which the learner fails, it lies in not presenting the soles of the feet and the palms of the hands squarely to the water. The football kick is the one which should *not* be used.

Water Polo. Water polo is an adaptation of the game of polo to the water, being a sport much enjoyed by those who are expert in both swimming and diving. One who cannot swim rapidly and continuously will naturally be unfitted for it. It is played with an inflated ball, and may be said to be as much like basket ball adapted to the water, as like polo,

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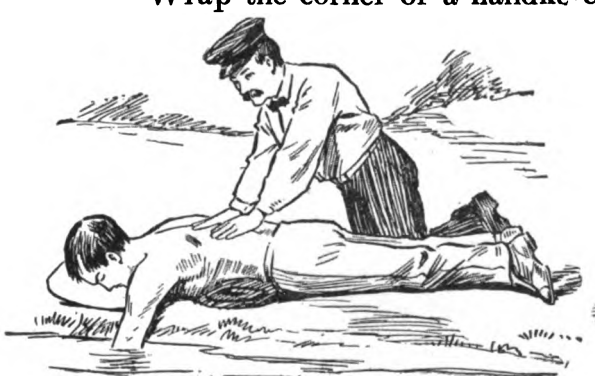
except that the basket ball goals are not used. The opposing teams endeavor by hitting and throwing the ball to force it through their opponent's goal as in other games, and it frequently happens that diving is necessary to elude an opponent, or sometimes, to push another under the water to interfere with his prospective play. Strenuous and vigorous in the extreme is this water game, and admirable for purposes of physical development, inasmuch as the different forms of swimming employ all of the muscles of the body. Water polo is to swimming what hockey is to skating on the ice.

What to do for the Drowned. The following useful and practical directions for reviving the partly drowned have been issued in the form of a placard by the Michigan State Department of Health. The drawings which illustrate the instructions are reproduced from originals made by the Journal of the American Medical Association.

Rule 1.—Lose no time in recovering the body from the water. Always try to restore life; for while ten minutes under water is usually the limit, still persons have been resuscitated after being under water for thirty or forty minutes. Do not lose time by taking body to a place of shelter—*operate immediately.*

Rule 2.—Quickly lay the person prone, face downward, with stomach resting on a barrel or roll of clothing, so the head will be lower than rest of the body and water will run out from the throat and lungs. Wipe dry mouth and nostrils. Wrap the corner of a handkerchief about the forefinger and



First position.

Second position.

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clear the mouth of all mucous and slimy substance back as far as the top of the throat. Rip open the clothing on chest and back and keep face exposed to air. Separate jaws and keep them apart with a cork, stone or knot in a handkerchief. (See First Position.)

RULE 3.—Remove the roll of clothing from underneath the stomach of the patient. Kneel by the side of or across patient. Place your hands over the lowest ribs. Lean forward and put your weight straight over the lowest ribs. *Exert this pressure for three seconds.* To count three seconds, say: "One thousand and one, one thousand and two, one thousand and three." (See Second Position.)

Rule 4.—Do not remove the hands from the ribs; but *release the pressure from the ribs for two seconds,* by squatting backward. To count two seconds, say: "One thousand and one, one thousand and two." (See Third Position.)

RULE 5.—Again exert pressure straight over the lowest ribs for three seconds, and as described in Rule 3; then again release pressure for two seconds, as described in Rule 4. Alternate thus (three seconds pressure and two seconds release) about twelve times a minute, until breathing is restored. This method of resuscitation at once expels water and produces the identical results of normal breathing.

This method is what is known as the Schafer method of Artificial Respiration, and has been adopted by the Royal Life Saving Society.

Rule 6.—If another person is at hand to assist, let him do everything possible to keep the body warm, by sheltering it from the wind, rubbing hands and soles of feet, making hot applications. Camphor or ammonia may be applied to nostrils to excite breathing. Warm the head nearly as fast as other parts of the body.

Third position.

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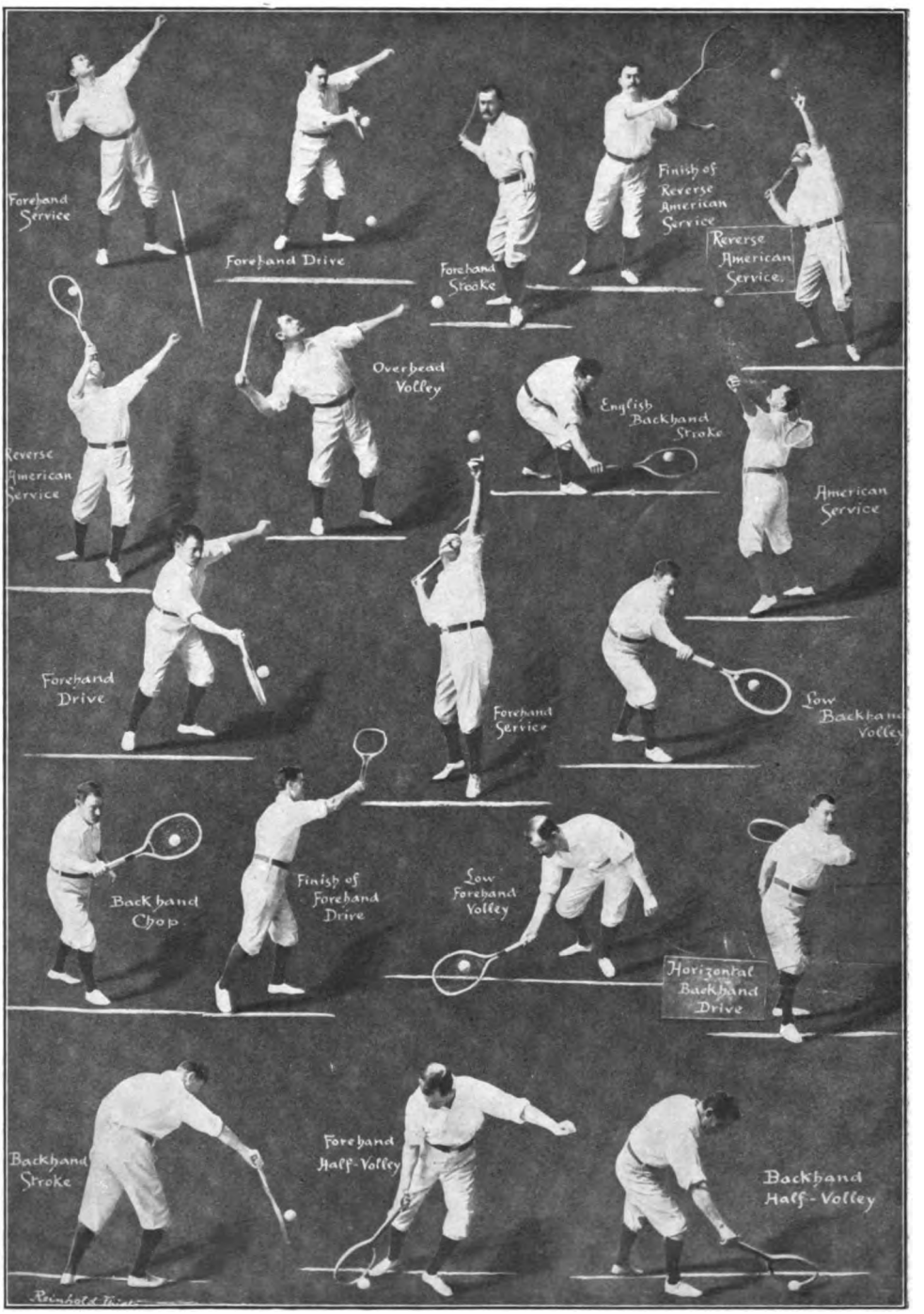

An illustrated lesson in tennis-playing, showing methods of handling the ball in various positions.

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Rule 7.—After breathing is restored, remove the patient to a warm bed where there is free circulation of fresh air. Administer in *small doses* stimulants, (hot coffee, ginger tea, hot sling,) being careful not to let the patient choke or strangle. There is danger that the patient may suffer congestion of the lungs and have great difficulty in breathing. When this occurs, a large mustard plaster should be placed over the lungs.

To keep from drowning, it is advisable, but not necessary, to know how to swim. One finger placed upon a piece of board, an oar, a paddle, will easily keep the head above water. Breathe, and keep a cool head, and you will be able to keep your head above water until help comes.

The above instructions may be modified or improved by substituting hot wet packs for the mustard plaster, and hot water, hot lemonade or hot diluted grapejuice.

TAG.—See *Running*.

TENNIS.—Lawn tennis is an ideal outdoor game for both sexes. It has the advantage of being of such a nature that the players can make it as fast and active as they may choose. It develops speed, a clear eye, accuracy, suppleness and grace, together with a normal and vigorous degree of strength in all parts of the body. If anyone unacquainted with tennis fancies that it is a ladies' game, he need only practice it long enough to acquire the skill necessary for a fast game, and he will find it as strenuous as he desires.

Tennis is played on a court 78 feet in length and 27 feet in width (for singles), and 36 feet in width (for doubles). Singles means playing with one person on each side, whereas a game of doubles includes four persons, a team of two partners on each side. A light, elastic ball two and a half inches in diameter, and a racket made of a sort of oval wooden frame, about eight inches wide and twelve inches long, with the open space strung with a network of catgut, and with a handle of about fifteen inches in length, constitute the implements. The ball is played over a net stretched across the center of the court and answering the purpose of a fence. The ball must

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be played over the net and within clearly marked limits of the court, failure in this meaning points for the other side.

Never hold the handle loosely, and always grasp it at the extreme end. No other bad habit interferes with successful playing more than holding the handle in a loose, unsteady manner. Grasp it firmly, otherwise your efforts will be useless. Playing against a blank wall furnishes excellent practice when an actual contest is impracticable.

To baffle one's opponent calls for much shrewdness and skill, and a good player most thoroughly enjoys the game, when pitted against an opponent of equal or greater skill. A game easily won is not so intensely interesting, and one may weary of the lifeless play, but when it is necessary to constantly watch the ball and to always be on the alert, then game after game can be played with the interest continually increasing. When competing against a skilled player one develops speed most rapidly.

Much endurance is gained through the playing of tennis. So much running about is necessary, so rapid and constant are the movements, and so sustained the mental efforts involved that tennis becomes an exhausting game. The heart action incurred by the exercise is necessarily vigorous, and the increased muscular activity calls for more rapid respiration.

The fact that tennis is primarily an outdoor game is a great advantage in itself. This not only enables the players themselves to secure an abundance of oxygen, but any spectators are also benefited by the fresh air and ideal surroundings.

A free and easy costume should be worn on the tennis court. Ordinary footgear should be replaced by tennis shoes, and no hat, no high collar, no cuffs and none of the similar accessories to the conventional attire should be worn. The true lover of the great outdoors expects and wants to show the result of an active, energetic life. A good healthy color is much preferred by the modern woman to the delicate, white, chalky appearance of her more "gentle" sister. The free and

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easy costume of the tennis court is a grateful relief from conventionality to the sensible woman.

TOBOGGANING.—*See Coasting.*

TRACK AND FIELD ATHLETICS.—This is the designation given to a certain class of sports practiced on the running track and usually also upon the field enclosed by the circular running track commonly provided on athletic grounds. Under the head of "Track and Field Athletics" are included running races, for short and long distances, hurdle races, jumping for both height and distance, pole vaulting and several forms of weight throwing, including thereby a variety of exercises calling for speed, endurance and great strength. These various forms of competitive exercises are here taken up separately. In connection with these the reader is also referred to *Training* in the introduction of the chapter.

TUG-OF-WAR.—Tug-of-war is a grand game for those who are strong and in a physical condition to exert themselves to the limit of their strength. For those who are frail or imperfectly developed, it is too vigorous and violent. Yet, if they can stand a moderate measure of the strain of a tug-of-war, this strenuous exercise will go far to making them as tough as leather and as hard as a powerful, athletic man may be. In its very nature it means that every man on each team shall exert himself to the utmost limit of his strength, and that for intervals sufficiently long to try him out thoroughly. For those interested, I might suggest that special training for lung power and endurance will be of special value. With superior endurance, one team will always defeat another of equal weight and similar strength that lacks the enduring power. The first half-minute will not reveal the difference in physical condition, but after that the benefits of proper diet and sustaining lung power will assert themselves.

The heavier the rope used, the better. To judge a contest it is well to tie a white handkerchief in a knot upon the middle of the rope, this being exactly over a certain mark. When both sides are ready, a signal is given and the tug is on. When

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the knotted handkerchief shall have been pulled a special distance agreed upon, one, two or three feet, to either side of the mark, the bout is won. The bouts may be timed, so that they may be awarded to the team having the advantage at its expiration. One or two minutes is usually enough for a bout, and a contest usually consists of three bouts, the best two out of three winning. Usually there are six men to a team, but for purposes of exercise or practice there need not be more than two or three to a side. If played indoors on boards, cleats of wood should be provided crosswise, to brace the feet against. Even outdoors, the tug-of-war may best be contested on a course of planks provided with such cleats.

VAULTING.—See *Jumping* and *Pole Vaulting*.

WEIGHT THROWING.—Weight throwing offers a form of exercise very different from the other track and field sports, and one which is very valuable for the development of rugged strength.

Putting the shot is much like throwing a cannon ball, though the "put" is not an overhand throw, but a straight push out from the shoulder. Sixteen pounds is the standard weight, though high-school boys often use a twelve-pound shot, and still younger boys sometimes an eight pounder. The shot is "put" from a seven foot circle. If one steps outside of this, it is a foul and the effort does not count.

The purpose of the athlete should be to acquire such form that his legs and body may help him to express all possible power in putting the shot. It is not done with the arm alone, as it may look to be. In putting the shot with the right hand, the athlete should bend far back and down to the right side, then, drawing the left leg back and instantly throwing it forward again, a little hop is executed which brings the athlete to the other side of the circle, in the same position of the upper body, but with both knees bent, especially the right. Now, continuing the impetus gained through this hop, the put is made with all possible force, from the legs up, not only thrusting the shot out with the arm, but raising and bringing the right shoulder around with it so that as it leaves the hand the

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body has turned half way around, and the left and right feet having changed positions. To get this hitch it is well to practice this little jump, turning half around so that the right foot alights where the left foot has been, also thrusting out the right arm. All methods of developing strength are of value in training for the shot-put.

Throwing the discus is a revival of the ancient and classic sport of the Greeks. The discus is a four-pound disc, made of wood, brass and steel, eight inches in diameter, a half inch thick at the edges and two inches thick in the center. It is like two plates placed together, convex sides outward, and in throwing the object is to make it sail through the air as far as possible. It is thrown with a full sweep of the arm. The fingers are spread out over it, the last joints of fingers and thumb hooking over the edge, and it is held palm down, retaining its position in the hand through centrifugal force during the swing on the throw. The athlete starts by bringing the arm down and far back, preparatory to throwing it in the direction toward which his back is turned, thereby giving it a sweep of 270 degrees or three-quarters of a circle. It may be thrown in this way, and without a turn, as was the custom of the Greeks, but discus throwers of the present time make a complete turn around of the body to give greater impetus. After learning to throw it as well as may be without this turn, the athlete can then profit by adding this feature. To make this turn, the athlete starts out as though to throw it, but when the arm gets well around he executes a complete turn of the body, feet alighting facing the same direction, and with the arm following around with increasing momentum.

It is a splendid exercise for the chest muscles, but for the best results should be practiced with both left and right hand.

Throwing the hammer is probably the most interesting of the weight throwing events, but care should be taken that spectators are not too close. The standard weight is 16 pounds, though a 12-pound hammer is used by school boys and those not heavy enough for the heavier size. A flexible steel wire handle is used, with a double loop for the grip so that one

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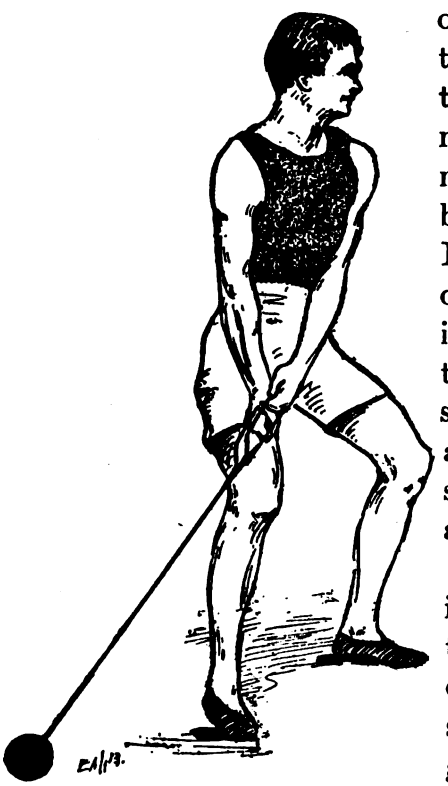
may take hold with both hands, the length, over all, being four feet. Like the shot and discus, it is thrown from a seven-foot circle. Thrower stands with his back to the direction in which it is intended to throw it.

The simple throw, without turns, should be mastered first. With hammer on ground to the right, swing it around in front to the left, back over the head and around, swinging it around the head with increasing momentum three times, toward the ground in front, and his back of the head, finally, with a smart backward pull, letting it fly straight backward. After getting this form perfect, learn to throw with one turn. First swing as before, twice around the head, and as the hammer swings back behind you for the third time, turn around once quickly, facing the same direction as before, and conforming to the momentum of the hammer. If it is done right, the pull of the hammer will help you to make the turn; you should then give a pull upon the hammer in turn, increasing its momentum, and with a final backward tug, let it go flying. Having mastered the secret of the one turn, and working in harmony with the momentum of the hammer, you can soon acquire two or three turns and enjoy the satisfaction of seeing the weight fly far up and away.



Throwing hammer—Position at the start of the throw, hammer to the right.

Throwing the 56-lb. weight is similar in execution to the throwing of the hammer, except that it is done with a very short handle and requires great strength rather than the combination of strength and

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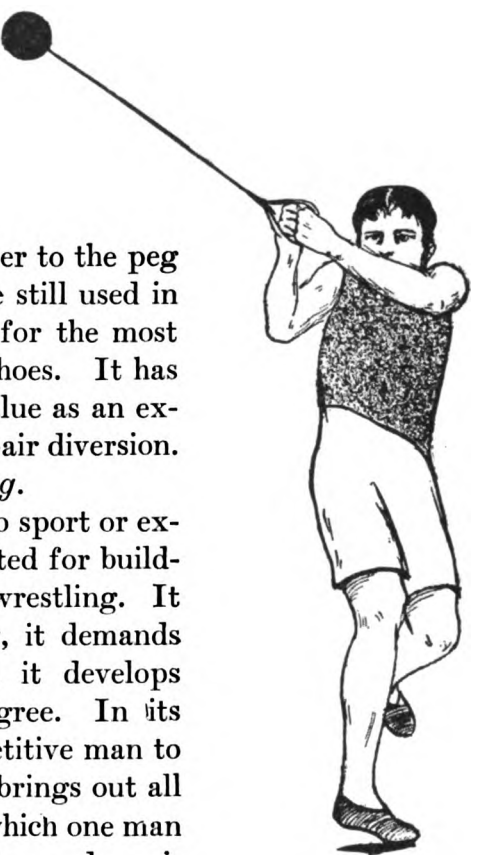
speed necessary for throwing the hammer. It is suited to heavyweights only, but the same exercise, with a thirty-five pound weight, would be admirable for building strength in the case of lighter men. Starting from the right side, the weight is swung just once around the head and then just one turn is made, whereupon the ponderous missle is hurled backward. Throwing the 56-pound weight for height is sometimes included in athletic games, but it is not much practiced.

Quoits. Quoits is a modest old game for outdoor play, but one which still holds a peculiar interest to all those who have played it enough to get acquainted. The original form of the game employed rings, to be thrown from one stake to another, points depending upon throwing the ring over the peg or upon getting one's rings closer to the peg than opponent's. Rings are still used in the game, in this way, but for the most part it is played with horseshoes. It has no specical or remarkable value as an exercise, but is a pleasant open-air diversion.



Immediately after the turn, showing advantageous position for a hard pull before the next turn or the throw.

WHEELING.—See *Cycling*.

WRESTLING.—There is no sport or exercise in the world better suited for building vigorous manhood than wrestling. It calls for speed and activity, it demands the utmost endurance and it develops strength in the highest degree. In its very nature, that of a competitive man to man struggle, it necessarily brings out all of the physical qualities by which one man might expect to subdue another under primeval conditions. In a way, it takes one out of the stilted, artificial, civilized life of to-day, back to the original natural conditions

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of life in which primitive man grew strong through grappling bodily with his foes. Wrestling is the play form of the world-old hand to hand struggle which in the beginning usually meant life or death, instead of merely forcing an antagonist helplessly upon his back.

There are several forms of wrestling more or less practiced at the present time, but of all these the "Catch-as-catch-can" style, known also as the Lancashire style, is the best and most universally employed. Elsewhere the reader will find a description, with illustration, of so-called "hand wrestling," but though it is a splendid exercise, it is not a true form of wrestling. The Catch-as-catch-can style, which we are illustrating here, permits of the greatest variety of holds, including practically every part of the body, and requires that two shoulders touch the mat at the same time to constitute a fall. The Græco-Roman style is similar in most respects to the Catch-as-catch-can, except that wrestlers are not allowed to take hold below the waist line. It is naturally popular with those who find themselves best suited to this style.

The Cornwall and Devonshire style, often spoken of as "Cornish wrestling," requires the wearing of a loose jacket by which contestants can catch hold of each other. No holds below the waist are allowed, and a collar hold is a favorite. A fall requires "three points down," meaning that two shoulders and one hip, or two hips and one shoulder must touch the ground simultaneously. The men wrestle on their feet, and it is necessary to throw antagonist on his back before feet, arms or any other part of the body of either touches the ground.

Throwing the discus. The first position, ready for a powerful sweep of the arm.

In the Cumberland and Westmoreland style, the wrestlers stand chest to chest, chins on each other's shoulders, and grasping the body, each with left

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arm above the other's right. When ready, the bout begins, and requires merely that one be thrown off his feet, even on one knee, or that his hold be broken loose.

The Collar and Elbow style was at one time quite popular. Its name indicates the form of hold required, and the requirements for a fall are practically the same as in Cornish wrestling. So-called Sidehold Wrestling does not amount to much, for it is limited to the hold indicated in its name. It is a kind of school-boy style, giving the advantage for a hip-lock or cross-buttock fall, to the one having the under hold. The hip-lock is useful in any form of wrestling, consisting of getting the hip in front of opponent as far as possible, bending forward, thus raising him off his feet, and then quickly throwing him on his back. The Cross Buttock is much the same except that it is done with opponent in a backward position, getting your hip under his hip or back instead of in front of his body. One cannot catch an experienced wrestler in this way, however.

In all these styles, foul tactics are barred. The referee has power to disqualify and award a bout against a wrestler who butts with his head, scratches, or otherwise seeks to hurt his opponent.

Though wrestling is a magnificent game for developing hardihood and strength, yet it is so strenuous that one should be in a fairly hard and vigorous condition before attempting it. It is not a sport for the weakling, for not only will he be unable to accomplish anything with his endeavors, but he will also be likely to strain himself. Therefore, unless one is fairly well seasoned in other forms of sport and exercise, it would be best to take two or three months of good, faithful training with special exercises, and perhaps a little distance running for endurance, in order to be fit for the mat.

It is unwise for the novice who knows nothing about the game to attempt to wrestle in earnest, that is to say, he should not strive hard to throw his antagonist, as in a match. He should first take up and study various holds and the means of breaking them, in order that he may make no mistakes or

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acquire bad habits of style. Each hold should be secured quickly time after time, without exerting too much, and practiced in this way until it is mastered. After thus mastering the important positions, the pupil will be ready for real wrestling. As in other things, practice is the essential to good form, and much will be learned in this practice. Special attention should be given to bridging, for there are many circumstances in which this is temporarily the only way of avoiding a fall. This will also strengthen the neck for resisting other holds.

The first thing to be done, as one faces his opponent, is to get him off his feet, putting him on his back at the same time if possible, but at least getting him under so as to permit of further aggressive efforts. Once on the mat one is either aggressor or on the defensive.

While on the defensive one should always be alert for opportunities to take the aggressive. Especially should he be ready to seize the arm of the man on top and roll over, thereby rolling him on his back. On the other hand, the aggressor must be careful to watch out for such tricks. It is well to keep the elbows close to the sides. While on the defensive, also, one should use his legs as a means of resisting many holds. Clever wrestlers depend upon their legs in this way a great deal, locking or hooking them in those of the aggressor. In all arm holds it is well to take hold as far down as possible, preferably at the wrist, for this gives a greater leverage. The mechanical principle of leverage is involved a great deal in wrestling, for much of the work consists in turning over on his back a more or less prostrate and stubbornly resisting man. Reaching under his body and taking hold of the "further arm" or the "further leg," therefore, are common holds. This principle of leverage for turning him over is also applied in the various "Nelson" holds.

When on the offensive, use the weight of your body as much as possible, for this will not only help to give you power in many instances, but it will help to tire out your adversary all the more quickly. When working over his shoulders simply

(*Continued on page 988*)

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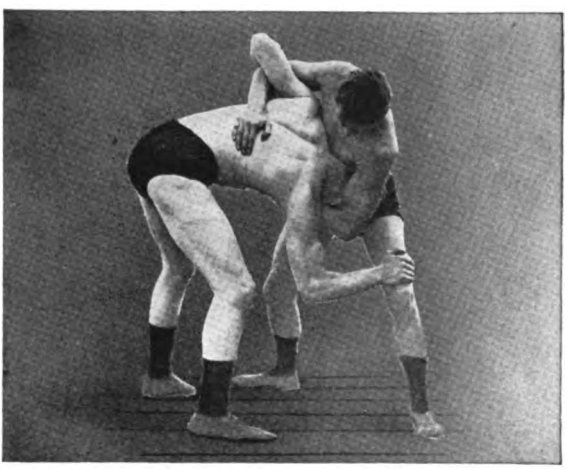
Illustration of Half-Nelson and Body Hold. Getting behind one's opponent may often be accomplished, when he reaches for a head hold, by seizing the back of his elbow and pushing him half around, whereupon you may step quickly behind him and secure a waist lock from behind. From the waist hold slip the right arm up to the half-nelson shown. Now fall backwards, retaining the hold, and when near the mat slip out from under, also securing a "scissors hold" with the legs to pin his hips down by fastening his body across the waist between both legs and locking or hooking your ankles about those of your opponent.



Bar Hold and Forward Chancery. A bar hold consists of getting a leverage with the arm, passing under opponent's arm and over his back. It is much used for turning a man over when down upon the mat. A Chancery hold is a grip on the head, in this case from a forward position. Step back quickly with left foot and jerk opponent to the floor, then forcing him over on his back. This may be resisted by the other man stepping forward and getting a crotch hold with the free arm, at the same time slipping the left arm upward to aggressor's neck, then lifting him up off his feet and throwing him.

A Good Illustration of the Half-Nelson. This consists of passing the arm under the other's arm, upward and across the back of his neck, forming an effective lever for turning him over. In this case it is combined with a further arm hold, which will help in forcing him over. It may be conveniently combined with a similar further leg hold or any other hold. First push down opponent's head with other hand to help get the half-nelson hold.

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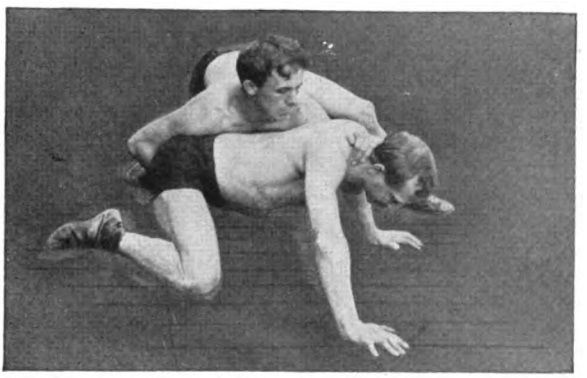
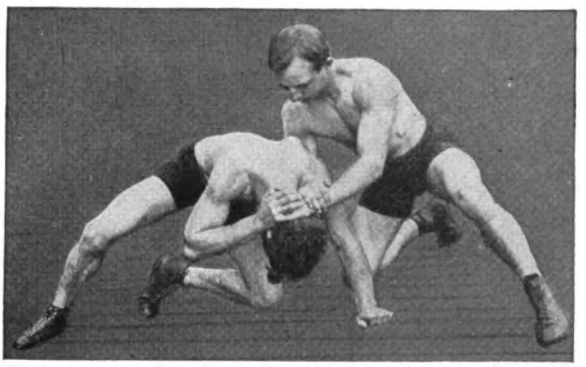
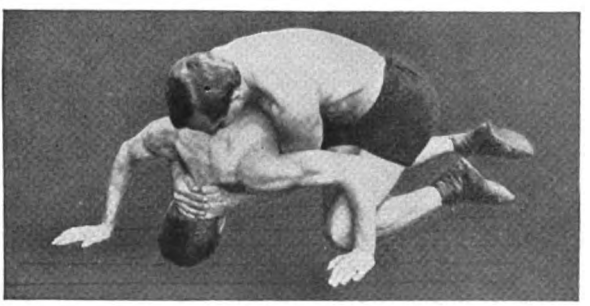


A Combination of the Half-Nelson and Crotch Hold. A crotch hold is very effective in many cases for lifting the lower part of opponent's body off the floor, either for throwing him over or helping to roll him over with the aid of some neck or arm hold. The crotch hold should be practiced in combination with all possible other holds.



The Quarter-Nelson. This has the same principle as the half-nelson, except that it employs both arms, the left hand being placed on the back of opponent's neck, and the right arm, passing under his arm-pit, so that the right hand may grip the left wrist or forearm. Braced in this way, the two arms form an effective lever. To resist this, pull head down and far away to the right, pushing aggressor's hand off neck with the right hand, at the same time bringing left knee and leg forward in such a way that you will sit down with back to aggressor.



The Full-Nelson, consisting of a combination of near half-nelson, and "further half-nelson," locking fingers back of opponent's neck. It gives a powerful leverage, but is not much used among clever wrestlers because it gives too many opportunities for countering and rolling to the man underneath. The further half-nelson is a good hold in itself, being a half-nelson applied under opponent's further arm. A three-quarter-nelson consists of a half-nelson reinforced by the other hand under the body, instead of passing the arm over the body and under the armpit as in the full-nelson.

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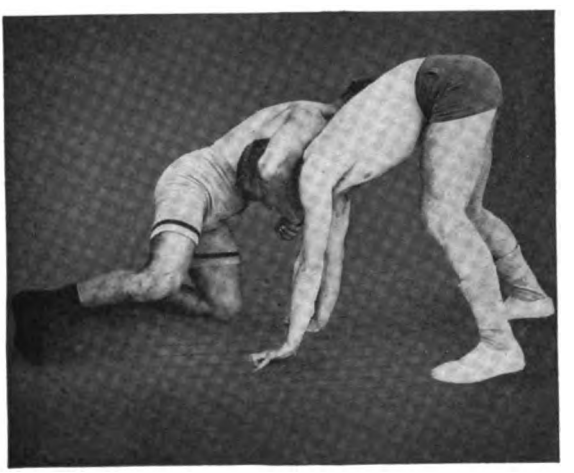
NUMBER 1.

This position generally results from an attempt on the part of the aggressor to get a hold on his opponent's legs. In this photograph, the figure to the right is the aggressor.

NUMBER 2.

The purpose of each man is to get behind his antagonist. The aggressor pushes forward, crowding under his opponent, and bringing his head out over the side on which he has grasped his adversary's leg. The man on defensive must now relinquish his chancery hold on head of aggressor, or be exposed to half-nelson and crotch.



NUMBER 3.

If the man on defensive extends his legs back and prevents the aggressor from raising his head over his side, the aggressor plays safe by straightening up his legs with feet wide apart. In this position, he backs out of the scrimmage.

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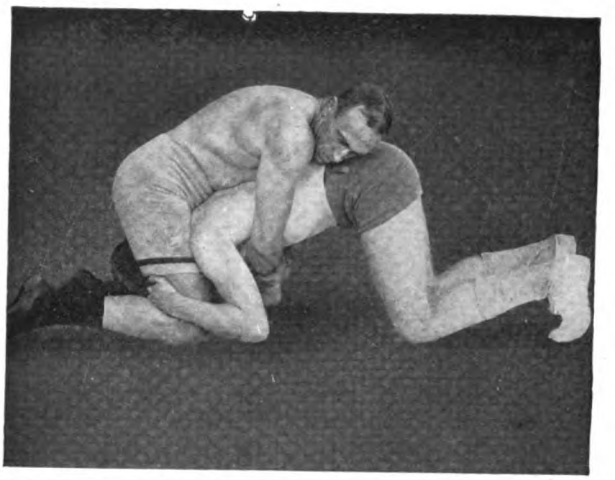
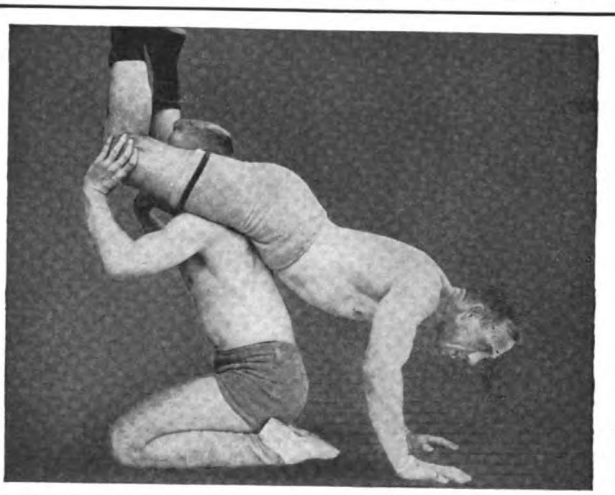


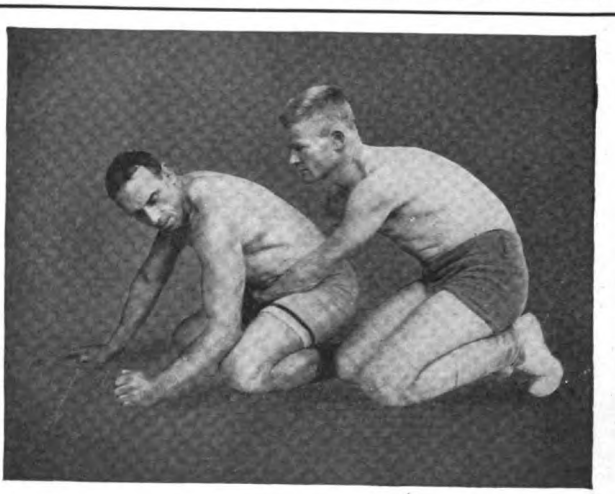
NUMBER 4.

Failing in his attempt to secure a leg hold by the customary method of grasping one of his opponent's legs, the aggressor may reach forward and secure hold on both legs of opponent.



NUMBER 5.

Aggressor next sits back on his heels and puts all his strength to the task of lifting his opponent's legs upward, throwing the man on defensive clear over on his back. To do this, he must first break opponent's body-hold.



NUMBER 6.

As man on defensive scrambles on hands and knees, aggressor turns quickly and seizes him around waist with body-hold.

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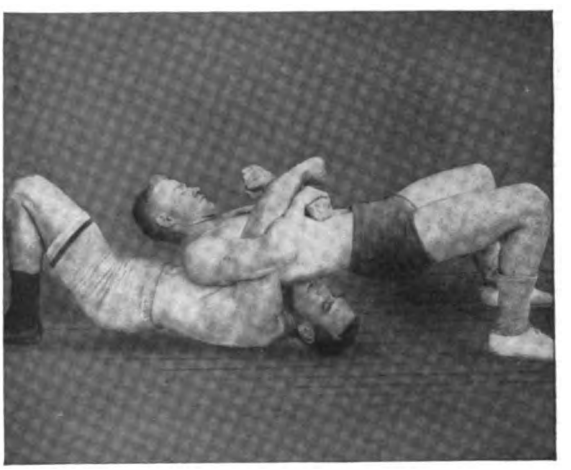
NUMBER 7.

By grasping his opponent's elbows and pressing them together, the man underneath may attempt to break the body-hold shown in photograph 4.



NUMBER 8.

After obtaining a firm hold on opponent's elbows the man beneath in preceding photograph may sit back on his heels and lift mightily, throwing his opponent clear over his head to his back on floor as here shown.

NUMBER 9.

While in position shown in photograph 3, if the man on defensive can get his knee between aggressor's feet as here shown, he may press forward in sitting position and obtain toe-hold on aggressor in this manner.

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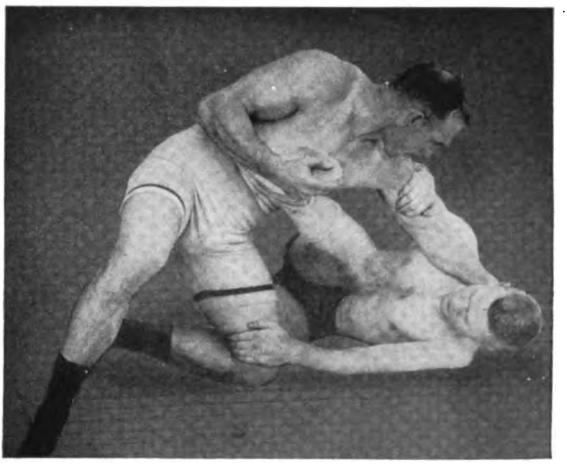
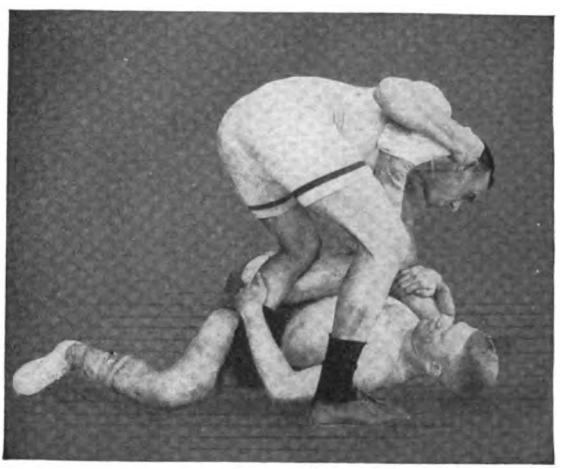


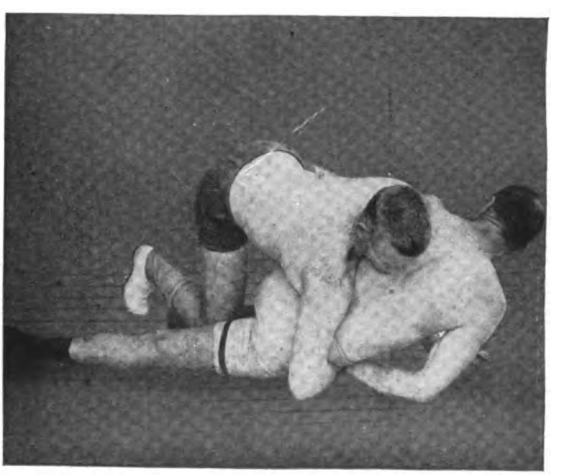
NUMBER 10.

The defender may then carry out this move as an attack, rising and bringing aggressor's foot with him.



NUMBER 11.

Proceeding further with move, a half-nelson is obtained on aggressor with near arm, thus forcing him into trouble, as shown in this photograph.



NUMBER 12.

From position shown in photograph 6, man on defensive may pinion aggressor's wrist firmly to side, then straighten leg on same side, and roll over as here shown.

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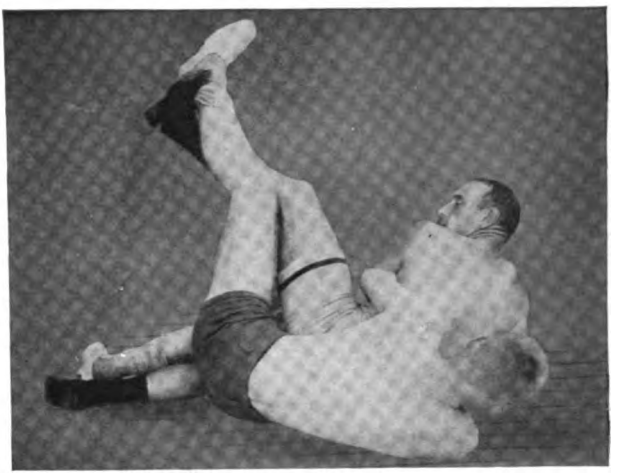
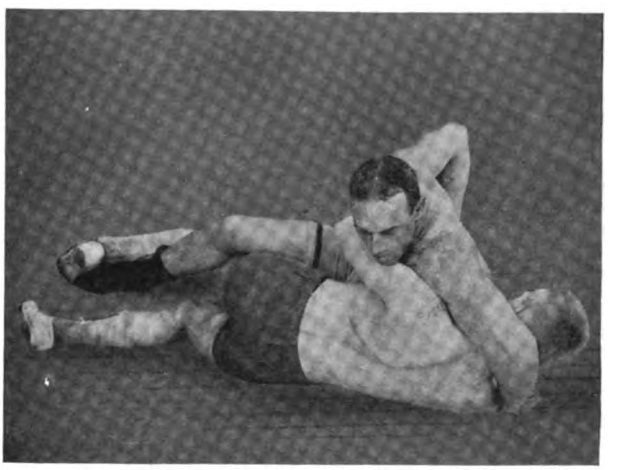


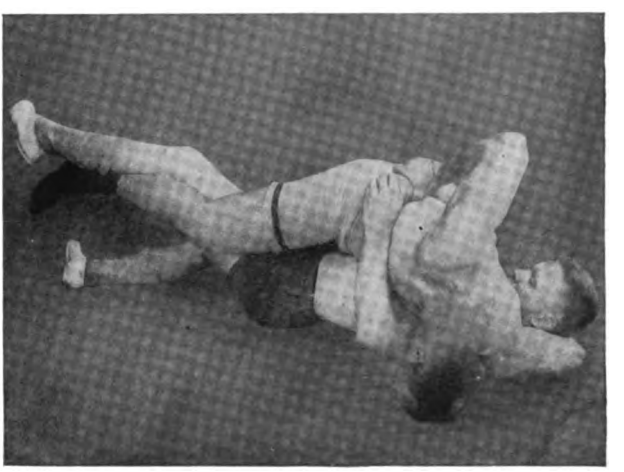
NUMBER 13.

Continuing the roll shown in No. 12, the aggressor is turned over and his opponent's foot is hooked over his leg, while his arm is still held tightly.



NUMBER 14.

Further progress of roll is here illustrated, the man on top having meanwhile turned about to face his opponent, and prevent him from bridging by stretching effect of chancery and leg locks.



NUMBER 15.

This photograph shows final stage of roll and illustrates how the man beneath is forced to keep his head up and thus prevented from bridging by the use of his opponent's shoulder.

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(*Continued from page 980*)

rest all of your weight upon him. The aggressive work is the harder, anyway, and if you can make him support your weight it will make it more interesting for him and help to even up the efforts on both sides.

After learning the first principles, as it were, one should devote himself to a study of the strategy of the game, for in wrestlers of nearly equal strength it is usually head work that wins. Feinting is as valuable as in boxing, or as in the operations of two opposing armies in the field. The purpose should be to conceal the real intention, to mislead as to the real hold desired, and then to get it indirectly. It is seldom that one can win a fall by the first hold attempted anyway, but one hold should serve as a means of getting another better. Learn to slip rapidly from one hold to another in order to keep your opponent bewildered, and once you have the right hold, work very quickly. Try to overwhelm him with your energy and speed before he knows what you are trying to do. Quick work is what counts in a great many cases, and a combination of speed and strength is necessary to make a really good wrestler.

The student of wrestling should make it a point to work out combinations of the simple holds, such as the combination of half nelson and crotch holds in one of the illustrations. Infinite variation may be secured by these combinations. It should be noted that the instructions given here are not expected or intended to make experts in wrestling, but the game is such a perfect exercise and of so much benefit in building both health and strength that every young man should try to find time to do some of it. Anyone may learn enough from these pages to be able to get the benefit of the exercise to be found in wrestling, and perhaps to make a fairly good wrestler from a competitive standpoint as well. I would especially recommend taking up the game in the amateur way. Professional wrestling has its place as a means of stimulating interest, but it is better to regard it merely as sport and exercise.

Some holds are avoided here because they are dangerous or unsportsmanlike, the strangle hold and hammer lock,

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especially. The latter consists in doubling opponent's arm up behind his back and then twisting his wrist until he yields. The Flying Mare, though legitimate, may be dangerous. It consists in catching hold of adversary's arm when standing, turning back to him, getting shoulder under his armpit and then bending quickly far forward, throwing him over your head. It is sometimes an effective defense when threatened from behind.

The first six illustrations presented here show standard holds. For the balance of the photographs and for the following very interesting and useful suggestions on wrestling, I am indebted to Mr. Albert Treloar. He was the winner, some years ago, of the great International $1,000 Prize Contest for the World's Most Perfect Man, held at the first Physical Culture Exhibition at Madison Square Garden, New York City, and was formerly a Harvard 'Varsity Oarsman. In recent years he has been Physical Director of the Los Angeles Athletic Club. His article follows:

AMATEUR WRESTLING.

By Albert Treloar.

Amateur wrestling in America differs from professional wrestling in several ways. First of all it bars the hammer lock, strangle and full nelson holds. But the A. A. U. authorities have made the most sweeping changes and have made the whole generalship and purpose of the amateur game different from the professional, making the rolling fall valid. In professional wrestling there is of course but one ultimate object, the pinning of the shoulders of one's antagonist to the mat. The decision to the more aggressive of two wrestlers after a limited bout virtually makes the final purpose of amateur wrestling to get on top of one's opponent and stay there, for nine out of ten referees will award the decision to the man on top. So the crafty amateur who is out to win medals will study first the many chips and tricks and strategies that lead to the uppermost position, while the methods of actually gaining the fall will be considered of less importance.

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The first purpose in amateur wrestling is to get behind your opponent and stay behind. In wrestling parlance the word "behind" means also "on top," when on the mat except in certain positions in which one man may be above his opponent's head end for a moment but not yet established in the uppermost position.

It is of course impossible in the space of this article to detail all the ways of getting behind. There is one position, however, which is almost certain to occur many times in every wrestling bout. This position, shown in Photograph 1, generally results from an attempt on the part of the aggressor to get a hold on his opponent's legs. From the fact that this position is so easily brought about and does actually occur so frequently in amateur bouts, a thorough understanding of all the possibilities of the position, both from the standpoint of attack and of defense, will be of immense value. Keeping in mind that neither man has any idea of scoring an immediate fall and that the purpose of each is to get behind his antagonist, let us see the next move of the aggressor. Pushing forward, crowding further under and improving his hold on the leg, he next brings his head out and up on the same side of his opponent as the leg he is grasping. Then pushing his opponent sideways and downward with his head the aggressor climbs around to the position behind. (Photograph 2.)

His opponent must then relinquish chancery hold, or be exposed to half nelson and crotch. Again, supposing that in the position of Photograph 1, the opponent, at that moment on top but not behind, extends his legs back and prevents the aggressor from raising his head to the side. The opponent now by holding down the aggressor's head, has a good chance to scramble around to a position truly behind and on top of the aggressor, establishing himself there with both arms around the hips. The aggressor, however, seeing that his attempt to get behind by means of a leg attack has failed, plays safe, that is, he straightens up his legs with feet spread wide apart, making his back end high and front end low. In this position he backs slowly out of the scrimmage untangling the

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opponent's chancery and other holds till he is free as at the start of the match. This move is illustrated in Photograph 3.

The aggressor has thus made a try for the legs, failed, and come out again without loss. A thorough master of all the possibilities of the position shown in Photograph 1 can try again and again for the legs with little fear of his opponent's coming behind him in the scrimmage. By no means all of the extremely interesting and scientific developments of the position of Photograph 1 can be described in this limited space. In fact, a complete discussion of this very important and frequently occurring situation would take several times the total space allotted to this article.

There are, however, two other phases of this scrimmage which may often be worked through by amateurs. Suppose that the aggressor, the man for the time being underneath in Photograph 1, instead of having one of his opponent's legs, has both with an outside grasp. The regular way to grab the legs is with your right hand reaching for the inside of your opponent's right leg or your left hand for his left leg. But in a scrimmage all rules are broken and the wrestler takes what he can get. From his outside grasp of both legs the aggressor may change to one leg, raise his head out to the side and execute the manœuvre described before, or, retaining his outside grasp of both legs, he may pull his opponent to him, thrusting his head clear through as in Photograph 4. Aggressor now sits back on his heels and lifts mightily with neck and shoulders, throwing his opponent clear over his back. Photograph 5 shows the throw and aggressor's change of hands to raise opponent's knees clear, thus guarding against a possible scissors on head. Opponent falls free on hands and knees and aggressor turns and scrambles with his utmost speed to grasp opponent round the body as in Photograph 6.

In Photograph 4 the body hold, which opponent has on the aggressor, is a very dangerous thing for opponent. If aggressor has difficulty in executing the throw shown in Photograph 5, he may hug opponent's arms to his sides as in Photo-

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graph 7, then sit back on his heels and roll opponent into serious trouble or into an actual fall as in Photograph 8.

Neither the throw shown in Photograph 5 nor the roll illustrated in Photographs 7 and 8 could ever be worked on a highly skilled wrestler, for a cautious man would never be in positions exposing himself to such tricks, but my pupils have worked them successfully time and again on amateur antagonists supposed to have a good deal of class.

Once safely established behind, as in Photograph 6, the aggressor is ready to start a number of highly scientific and carefully studied out plans of attack. But in the meantime he must look well to his position. Even the waist hold by which aggressor holds opponent down (Photograph 6) exposes aggressor to several assorted types of side rolls. Some wrestlers become so expert at these that they let their antagonists take the uppermost position in Photograph 6 and then almost in the twinkling of an eye reverse the position by means of a side roll. It is usually poor generalship, however, to go voluntarily underneath in the hope of working a roll. Again the opponent may exhaust the aggressor's strength by repeatedly scrambling to his feet, which necessitates the aggressor bringing him to the mat again. Of the many highly elaborated ways of attack from the upper position of Photograph 6, it is impossible to speak here. Up to the attainment of his position on top, the aggressor has thought only of getting behind his opponent. Now he tries for a fall.

From Photograph 6 a clever opponent may escape from the underneath position in several different ways. If aggressor moves forward for some attack around opponent's head end, opponent may back up, turn head toward aggressor, and play safe out of the scrimmage as in Photograph 3. Again, if he can get his knee between aggressor's feet, he may sit toward aggressor, bringing the foot out in front of him, as in Photograph 9. The move may then be carried out as an attack, opponent rises and brings aggressor's foot with him, takes half nelson with near hand and forces aggressor into trouble as in Photographs 10 and 11. If this manœuvre

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cannot be completely worked through, opponent will at least have come out on top.

From position of Photograph 6, opponent (the man underneath) may seize aggressor's wrist, press it firmly into his groin, then straighten leg on same side and pinion aggressor's forearm between the mat and opponent's hip bone, then rolling over, opponent lifts aggressor's back end with his foot, next opponent's free arm takes chancery on aggressor's head, opponent's free leg hooks over aggressor's leg, opponent still holds aggressor's wrist, winding himself up in aggressor's arm. Aggressor's bridge is then broken by the stretching effect of opponent's chancery and leg locks, in fact aggressor is stretched out flat on his back. The progress of this roll is shown in Photographs 12, 13, 14 and 15. Often this roll is only partly successful but opponent rolls himself right out from under aggressor and up on top. Photograph 13 shows how opponent keeps his head end pretty well up by supporting himself on his elbow.

The physical strength and toughness derived from wrestling make it one of the most valuable of exercises. But the character development resulting from its practice is of even greater value. The qualities of courage, pertinacity, and alertness, the ability to endure punishment, to attack vigorously without anger, to win without exultation, and to lose like a true sportsman, these the young wrestler must strive to attain.

YACHTING.—For those so situated that they can enjoy the delights of yachting, this is one of the valuable sports for taking one out into the open air. It is true that the exercise involved in the handling of the boat is not extensive, but the atmospheric conditions are ideal for promoting health and vigor. A good breeze is always favorable, not only to the requirements of deep respiration, but also to the activity of the skin. It is invigorating and stimulating, just as any air bath, because a stiff wind usually blows through ordinary clothing. Furthermore, on the broad stretches of the water one is free from the dust which sometimes follows the motorist, even in the country.

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CHAPTER V.

PHYSICAL TRAINING FOR WOMEN.

ALL that has been said throughout this entire work in regard to the value and importance of bodily strength and all-around physical vigor, applies as much to women as to men. Indeed, one may say that physical strength and rugged health are, if anything, even more important in the case of the so-called weaker sex, because of the heavier burdens which women have to bear in the natural course of life. It is true that these burdens are not always in evidence in the case of those supposedly fortunate but truly unfortunate women who live the pampered, parasitic existence of idle and luxurious wealth. But for the average housewife and mother, whose labors are not limited by special working hours, as in the case of the father of the family, these burdens are such as to demand the most perfect physical condition. But more than this, since woman bears the children, the very life and energy of the race depends upon her and her health. From a vital

Photo by Pictorial News Co.

Group of Danish girl gymnasts at the London Olympic Games, 1908, showing an attractive gymnastic costume of short divided skirt.

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and biologic standpoint, therefore, we can least of all afford to neglect the question of the health and physical development of women.

The day has gone by when it was considered that frailty, either in a physical sense or in its reference to character, was the essential quality of womanhood. We know now that the designation of the "weaker sex," as applied to women, was an unpardonable libel against the sex which there is good reason to believe is the more vital and enduring of the two. We know now that the apparent and superficial muscular weakness of woman has been the result of artificial conditions which have been forced upon her, and that the old conception of her was a result of the general misunderstanding of this fact. We know now that when placed in a natural environment, with the possibility of full development, woman is no less strong and enduring than man, a fact which has been amply proved by the physical stamina of women in various savage tribes where conditions have favored something like equality of development.

We know that in spite of the physical handicaps which women have endured in the past, and the burdens which they have carried, probably a larger number of them have lived to extreme age than of men, indicating their innate vitality and power of endurance. And from a biologic standpoint we should really expect this to be the case. Scientifically speaking, the female was the only sex in the beginning, and for a long time the only sex, Nature apparently intending that it should be the predominating sex at all times. The male spider is insignificant in comparison with the female, both in strength and size. It is so with many other insects. Among most species of fish the female is the larger and better developed. The female eagle is more powerful than the male. Among most animals, it has been the tendency of the males to fight for the possession of the female that has gradually developed in them a superior muscular strength. In the human race, artificial conditions and the perverted ideals of womanhood which have endured for a long time have been responsible for the

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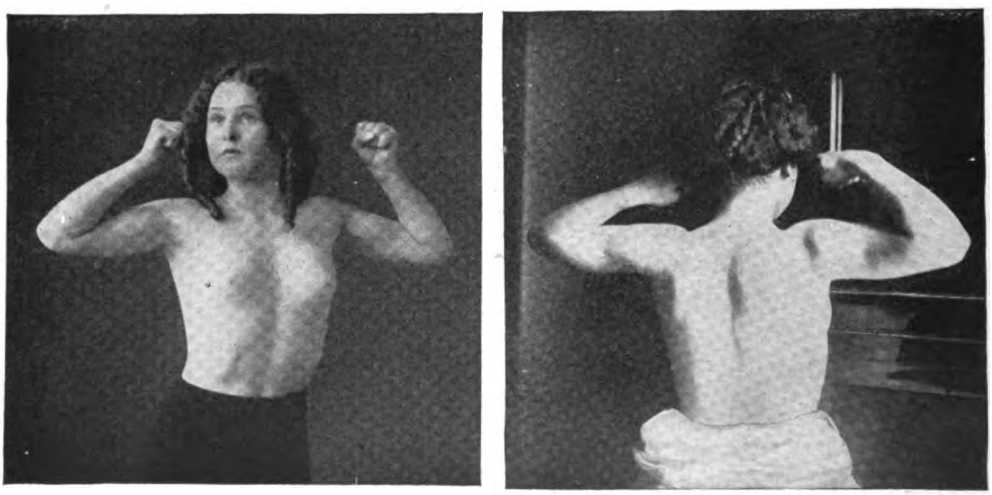
superficial feminine weakness of the past. Even in spite of this, and without the advantage of the physical training which women have taken up in recent years, many women have at various times demonstrated their physical fitness to cope with men in their own specialties. If it is true that Irishmen make splendid policemen, then it is also certain that in some cases their wives would prove even more efficient in that line of work, at least when their pristine vitality is as yet unspoiled by American habits and perversions.

But the athletic girl is fast becoming the ideal, and the world generally is gaining a more wholesome conception of the meaning of perfect womanhood. Both men and women are learning that the subtle charm of womanhood is the result of the superb physical magnetism of robust health, and that without this vitality, this physical basis of true womanhood, no woman can be more than half of her real self. Furthermore, women are coming to realize that exquisite personal beauty is almost entirely a matter of health and development. Beauty is the expression of a vigorous and harmonious condition of the entire body, of internal cleanliness and wholesomeness, all of which are absolutely inconsistent with a condition of weakness or the physical inactivity which is responsible for



Front and back views of a ten-year-old girl, illustrating the grace and symmetry of the female form, even when a muscular development has been attained.

Photographs of Miss Margaret Claire Edwards, of California.

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such weakness. Pure blood and a good circulation are impossible under conditions of muscular stagnation, involving also a lack of tone and the sluggish action of the functional organs. The beauty lines of any part of the body depend upon the muscular efficiency of that part. If muscularly strong and competent, the lines will be those of grace and symmetry. If weak, awkward and incapable, the lines will be those of ugliness. It is the muscular formations underneath the skin which give character and contour to any part, the decided muscular structure merely being smoothed off by a superficial deposit of fat. A body formed chiefly of fat, and lacking in the substructure of muscle, is flaccid, shapeless and altogether ugly, and cannot possibly be otherwise.

This chapter is intended to take up matters of special interest in the physical training and development of women, with some special exercises of peculiar value to the sex. However all that has been said elsewhere in regard to exercise and its essentials applies to women as well as to men. The class drills and calisthenic exercises offered in another place are recommended for the uses of women as much as for men, and will prove adequate for all purposes of general development. The various subjects treated here

Photograph, Paul Thompson, New York.
It is an error to suppose that girls are debarred from participating in field sports.

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are taken up in alphabetical order so far as this is practicable.

CARRIAGE, GRACE AND POISE.—The importance of an erect carriage and of good bodily poise cannot be overestimated, and especially so in the case of women, among whom the consequences of poor carriage and the concomitant prolapsus of internal organs are much more serious than in the case of a man. The human body is built along such lines that it is properly efficient and at its best only when it is erect. Any deviations from the correct attitude inevitably lead to derangements or disorders detrimental to the entire body.

It may be said that the first essential for securing an erect carriage is a high degree of vitality and vigor of the entire body, and of the back especially. It is the muscles of the back which are directly and immediately concerned in maintaining a normal position of the spinal column, and for this reason I would especially urge upon all women readers to adopt special exercises for strengthening the back. I urge this not only for the sake of the special development of the back muscles which is important enough, but also because of the influence of exercises for the back and of

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A schoolgirl taking the high jump at an athletic meet of her class.

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strength in this region in invigorating the spinal cord and energizing the entire nervous system of the body. And as I have just said, it is this vitality, this constitutional vigor, expressing itself through the muscles, through the functioning of the various organs of the body and in every other way, which is the first essential of a good carriage.

It is sufficient to look at any one who has a surplus of vital energy, who carries about with her the suggestion of reserve power in abundance, and who is magnetic and commanding in personality because of this physical energy and vitality, to note the effect upon the carriage of the body. In her exuberant health you will see that she stands erect, that she holds her head up with an unconscious grace and strength, that her bosom is high and full, and that she treads the earth with a step so light that it would seem that she weighed nothing at all. Her queenly carriage is the expression of her vitality and of the joy of life which she feels in the possession of such splendid energy. And all of this is unconscious. But on the other hand, note carefully the languid attitude of the weak and sickly one, the natural attitude, without the support of corsets and braces which hold her stiffly and awkwardly almost erect. Her entire upper body is in a slump, with drooping, perhaps rounded shoulders, chest contracted, the naturally beautiful arch of the back almost straight, the abdomen protruding and all of the internal organs sagging

Eight sturdy young women whose broad backs and square shoulders clearly indicate the benefit they have secured from this splendid exercise.

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inches below their normal position. Her entire physical attitude is suggestive of her lack of vigor; is a concrete expression of her physical self. It is not sufficient in her case to suggest that she stand erect, and it is not even sufficient for her to take one or two special exercises for improving her carriage, though such exercise will accomplish much, but in order to enjoy a perfect carriage and that exquisite physical poise which means charm and grace, she must build health and strength of the body in every way. She must acquire that superb degree of vitality which in the case of the other woman expresses itself unconsciously in the grace and poise of an erect but easy carriage.

Showing what may be done with the uncorseted figure in connection with modern fashionable dress. The suggestion of "style" is the result of the grace, poise and proper development of the body.

From a physiological standpoint it is perhaps necessary to merely mention the deleterious effects of improper carriage upon the functioning of the various organs of the body. They are normally prepared to do their very best work only when in their natural positions, and the crowding and straining which they endure in a prolapsed condition interfere most seriously with their duties, as well as with the circulation of the blood through them. And to a very large extent the multifarious weaknesses and disorders peculiar to

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the female sex are due directly to the weakness and prolapsus which follow improper carriage, when the corset is not also a contributing cause or even a more prominent cause. In thousands of cases a vigorous and erect carriage would enable women to avoid these difficulties, provided also that they did not injure themselves with corsets.

The corset, indeed, must be blamed in many cases for the special weakness of the back which makes good carriage and poise impossible. Women who have a sense of "style," which really means grace of bearing rather than the fashion in garments, appreciate the beauty of the erect carriage, and in their endeavors to realize their ideal they foolishly depend upon their greatest enemy, the corset, to hold them erect. They succeed in keeping themselves erect, and yet they do not succeed in their desire, for their attitude is a stiff one; it is without life, without grace, without that suggestion of physical poise and vigor which gives an irresistible charm to the woman who is truly vital and magnetic. The corset does not and cannot take the place of good strong muscles and the sense of energy throughout the body, which makes for grace and poise. The bearing of the corseted woman has none of that elastic, resilient quality which in the case of the other woman expresses life. In the one case you see the outlines of a stiff, steel or whalebone box, an inanimate thing; in the other, a human body, lithe and alive, the most graceful and beautiful of all the creations of earth or sky.

A fashionable ideal, reproduced from the advertisement of a corset manufacturer who found this design so attractive to women as to enable him to sell his goods to them. Such constriction of the abdomen is very injurious. No human figure ever looked like this naturally.

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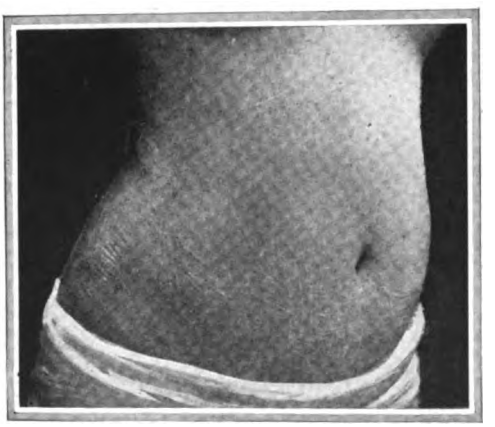
Just as a condition of weakness and ill-health results in a poor carriage, so does a negligent and careless attitude react upon the health to make it worse. And just as a condition of physical vigor expresses itself in an erect attitude, so does the latter tend to encourage and develop vigor, because of the advantage under which all of the functions and activities of the body proceed. There is less fatigue, with a conserving of the vitality which is otherwise needlessly wasted. Therefore, every woman should make a special study of the requirements of good carriage, and should keep to the erect form in sitting, standing and walking. It is really no harder to sit and stand properly than improperly, and if you think it is, then you have not the proper poise. As soon as you are accustomed to this, you will find it easier than the incorrect attitude, and you will be able to do much more work with less effort. Remember that there should be no strain in any part. Do not go about continuously trying to pull your shoulders too far back, and do not make the mistake of pulling the shoulders upward; they should be back, but *down,* and this will have the effect of raising the chest, also keeping the abdomen within proper bounds. It needs hardly be said that a vigorous condition of the muscles of the region of the stomach and pelvis will help materially in maintaining a normal attitude of the torso, but one should give special attention to the development of the back, shoulders and chest.



An illustration of the prolapsed condition of the abdomen, caused by corsets and constricting garments. Note the scars on the skin of the abdomen caused by corset-wearing.

High-heeled shoes have been referred to elsewhere, but I mention them again because of their special influence in disturbing the proper carriage of the body. Their tilting up influence throws the entire upper body out of plumb. The

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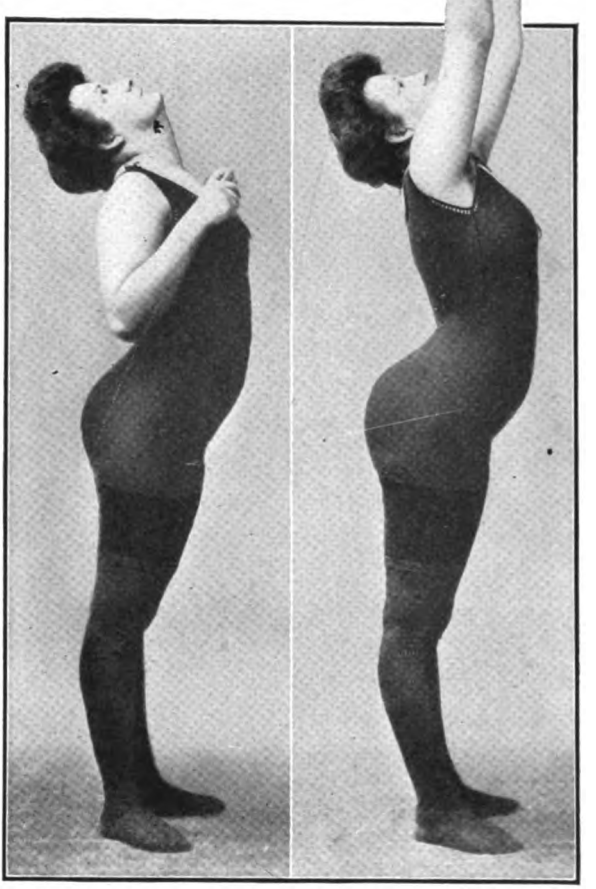
original construction of the feet by Nature cannot be improved upon, and the nearer we get to the flat heel of the moccasin, the better for good carriage.

All general exercises which develop the body and train the muscles are of indirect value in improving the carriage and in promoting grace. There is one very simple exercise which I am presenting here, however, which is of unusual value in restoring poise if one has become careless in her attitude. This exercise may be executed at any time of the day at which you may think of it and will leave you with a sense of vigor in your attitude. It raises all prolapsed parts of the body to their normal position and leaves them there. The essential thing is the stretching high above the head shown in the illustration, arching the back, elevating the chest, and drawing in stomach. Returning hands to sides, you will find that you will continue to stand in the



A simple but ideal exercise for securing and maintaining poise and good carriage. First stretch the arms high above the head as in the photograph to the right, stretching upward vigorously, till the back is arched and the chest high. Then, with elbows pulled back all the way down, draw hands down to the shoulders, head back, as in the photograph to the left. Now, retaining the general position of the body, return hands to sides, and you will find yourself standing perfectly, releasing any sense of strain. Note especially the proper curve of the back in this illustration.

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ideal attitude, expressive of poise and grace, and of vigor as well.

Sitting correctly is just as important as standing properly, and this exercise may be executed sitting down equally well, and with the greatest advantage. In each case the important thing is the upper body, or torso, and the general attitude of this should be the same in sitting as in standing. The exercise mentioned will enable one to get it, though it may be said that it will often help if one foot is drawn back under the chair and the other extended a bit forward on the floor. In this position of the feet you will be able to arise and to sit down without bending far forward.

It should be remembered that the spinal column is not straight like a broomstick, but that it has a decided arch inward at the small of the back. Much is said about a "straight back," but the expression has reference to a back that is not humped or rounded at the shoulders, and in strapping his papoose to a board it was the idea of the American Indian to avoid such tendencies. This arch of the back referred to aids in giving the spine its elastic or spring-like quality, and helps to take the jar of walking or jumping away from the brain. Indeed,

Trans-Atlantic Co.

A suitable protection against cold for outdoor games in winter. Note the heavy woolen cuffs for protecting the wrists.

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the spine has a double arch, another at the upper part, the entire line not unlike that of a letter "S" with a modified curve. Now, in either sitting or standing, if the lower part of the back is straight, the chest is necessarily thrown forward and depressed, while the abdomen is thrown forward and upward, the whole attitude being ugly and unhealthful. With the back arched inward, both chest and abdomen take their proper places, and the general lines are those of beauty. This position should not be exaggerated, but if one will think of the small of her back when sitting and see that it is properly arched in this way, she will find that her chest will take its proper position, and that the entire body will have an erect and graceful carriage, without the least strain of any part.

The clean cut lines of Annette Kellermann, a champion woman athlete, and holder of numerous world's swimming records. An example of perfect womanhood in real life.

DANCING.—Dancing is an ideal exercise for women, when practiced under wholesome conditions and in well ventilated rooms. This applies particularly to those forms of fancy dancing and folk dances which involve a certain amount of real action.

The ordinary dances of the ballroom cannot be so much commended becaues of the unsatisfactory conditions under which they are carried on. There was a time when dances of this kind were carried on at picnics in the open air, often upon very crude platforms or improvised floors, and under such circumstances nothing better

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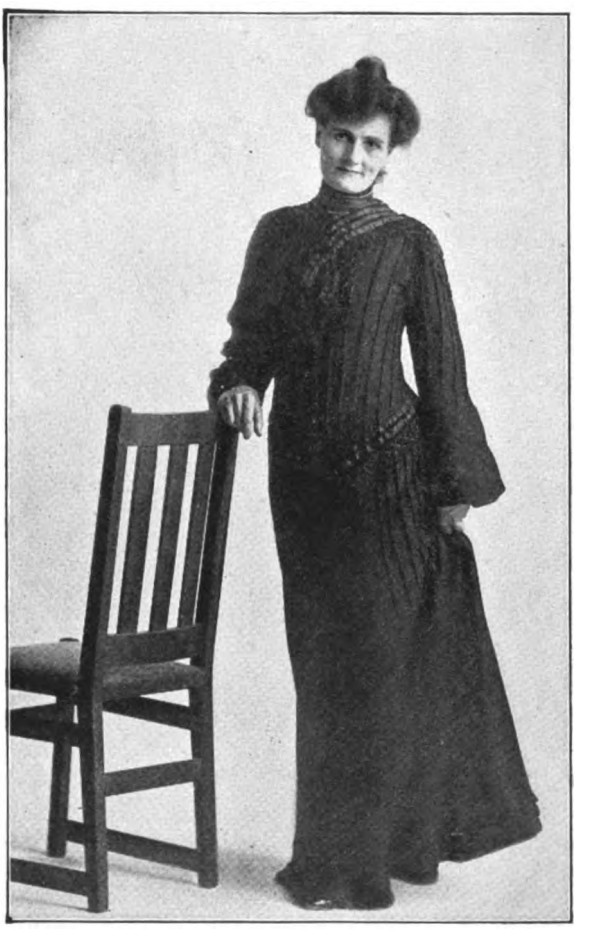
could be devised for healthful and strength-building pleasure. A revival of such customs would be a thing to be welcomed gladly. As an exercise, pure and simple, the ball-room type of dancing is very satisfactory and beneficial, even though not so well suited to purposes of development, and strength-building as fancy dancing. The waltz and two-step may be regarded as exercises valuable for their constitutional benefits rather than as being useful for developing the body as a whole. That is to say, they would be beneficial in this way under wholesome conditions.

As commonly practiced at the present time, however, these dances must be condemned for two important reasons—first, that they are practiced only in the late hours of the night, and, second, because they take place only in crowded rooms. There is usually some attempt at open windows in the ordinary ball-room, in response to the purely instinctive demand for air, but when a place is crowded with young people engaged in this exercise, and consuming many times more oxygen because they are



A dignified and beautiful Princess gown which is infinitely more sensible and becoming to a good figure than the conventional waist and skirt.

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engaged in exercise than they would in a state of rest, two or three open windows are far from sufficient to answer all demands. And sometimes they are not opened until late in the night, when the air has become too heated and foul for further endurance.

Unfortunately, the custom has arisen of going to dances late. It has actually come to be thought bad form and most unfashionable for a couple to arrive at the ball-room before half past nine or ten o'clock. At that rate, one simply cannot attend a dance without a serious loss of sleep, and the

The ideal bathing suit for women, minus the skirt, which is only a useless burden in the water.

A neat and comfortable design of gymnasium suit, combination blouse and bloomers.

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matter of losing sleep is a most vital one. All other attempts at building health and energy must count for naught if on fails to get his nightly recuperation in sleep. If things were so adjusted that the dance could begin at 7:00 or 7:30 in the evening, and terminate at ten o'clock, as common sense would suggest, and if then the dance could be held in open air pavilions or very thoroughly ventilated halls, the exercise would be truly beneficial.

Fancy dancing, however, is of the greatest value because of the many qualities of real exercise which it possesses, not only developing grace and control of every part of the body,

An excellent type of costume adapted for use without corsets. The taped lines in drawings show where measurements may be taken for use in dressmaking.

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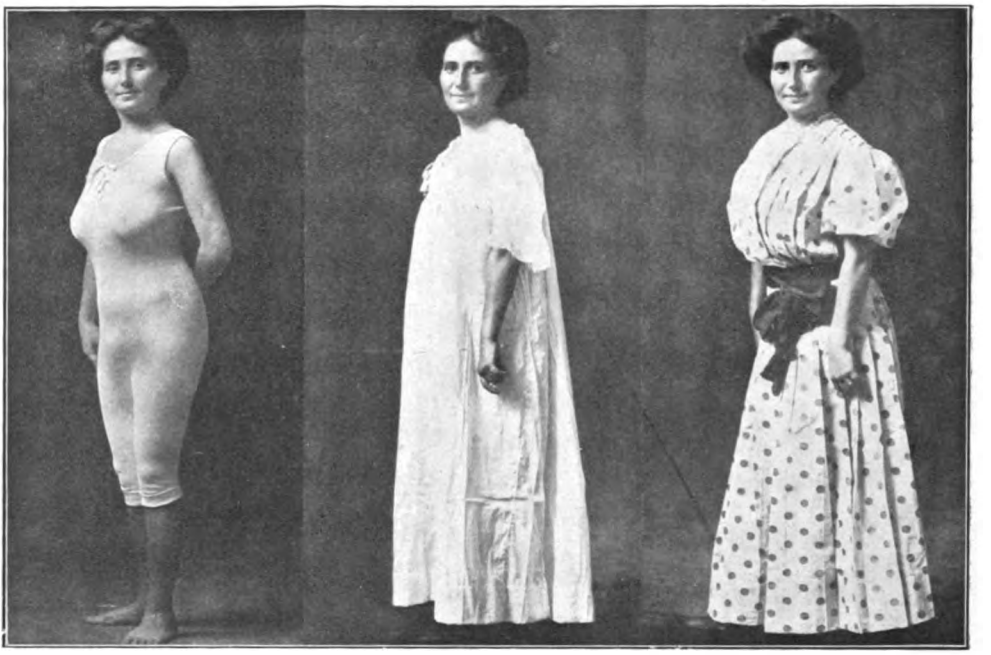

Illustrating one method of dressing—hygienic, withal neat and attractive—one-piece underwear, combination one-piece corset-waist and skirt, and one piece dress, with sash.

Rational healthful apparel for women from the underwear outward—one-piece underwear, one-piece corset-cover and underskirt, shirtwaist, yoke and skirt.

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but bringing about that complete extension and flexing of the various parts of the body which are essential in an ideal exercise. There is great activity not only for the legs, but for the torso and the arms as well, and young people who have the opportunity to take up and practice such forms of dancing for their own pleasure and benefit should be encouraged to do so.

In recent years there has been a widespread revival of the old-fashioned folk dances of various nations, and these are being taught in the schools of many of our large cities in connection with some attempt at the physical education of the children. This is a movement to be encouraged widely, and especially because these dances offer elements of exercise which are invaluable in the case of growing girls. Not only this, but they prove to be so attractive in their very natures, that the children never fail to enter into them in the most enthusiastic manner.

The principle of dancing is one which seems inherent in the race, for all savage peoples, all over the globe, practice dancing in some form or other, often in measures very crude, but nevertheless expressive of this impulse toward play and healthful activity. These dances, like many other sports, constitute a form of "play" for the "grown-ups." Then dance for health and beauty.

Dress for Women.—The requirements of healthful exercise, as well as the conditions of every-day life, demand some radical departures from many of the conventional styles of clothing. These necessities are to a certain extent recognized in connection with sports and outdoor pastimes, though the rational modifications of ordinary wear are not adopted except by a few intelligent and sensible women. It is the desire here to offer a few suggestions as to dress both for the special purposes of exercise and for attire in the street and home which will allow comfort and freedom for the body and at the same time conform reasonably to the conventions of the time.

It is needless to say that for purposes of exercise it is

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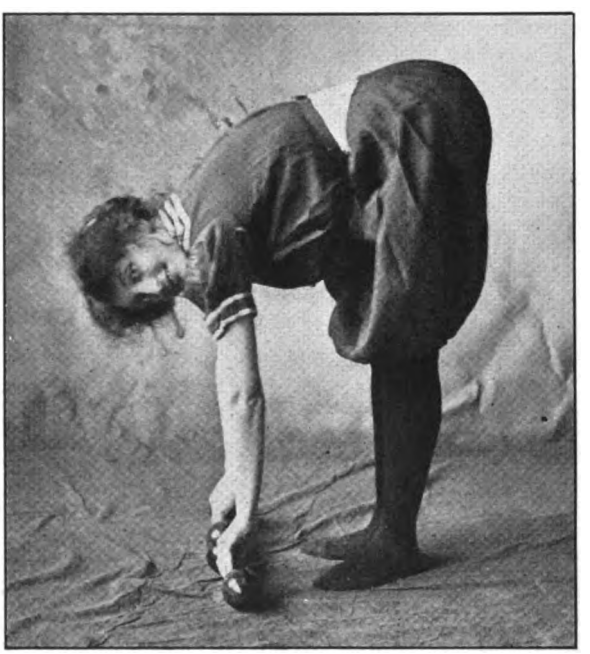
necessary to have clothing which permits of the most absolute freedom of movement in every part of the body, and for this reason neither the corset nor the long skirt can be tolerated. Even the divided skirt, which has been adopted to a great extent in the riding of the bicycle and on horseback, does not answer to all of these requirements, though an undoubted improvement upon the old-fashioned skirt. The form of the knickerbocker or bloomer, therefore, has come to be universally used in gymnasiums for young women.

At the Olympic Games held in London in 1908 there was a large group of girl gymnasts from Denmark, taking part in the games, and giving some exhibition gymnastic drills. Their costume was a most interesting one, inasmuch as it consisted of a blouse and a short, divided skirt, with bloomers worn underneath. This short skirt was fairly full, and reaching only to the knees was not open to the objections to the longer skirts used in cycling and on horseback. The costume proved to be a very becoming and attractive one, without interfering in the least with any movement of the body.



One awkward difficulty which is avoided in the one piece gymnasium suit. In spite of precautions, the stretching of the back sometimes produces this result.

Some recognition is also given to the requirements of the body in the construction of bathing suits for women, inasmuch as a short skirt is provided, with bloomers underneath. But so long as the bloomers are worn, the short skirt is wholly superfluous

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and only serves as a burden to the bather. The proper bathing suit for a woman, if she is not so secluded as to wear tights or trunks, is a very simple blouse and bloomers, or better yet, a combination of the two in one piece.

We are presenting herewith an illustration of a unique and very satisfactory combination suit for the gymnasium, constructed somewhat after the plan of a "Princess" garment, but with bloomers taking the place of the skirt. It requires very little goods, comparatively, and may be made without sleeves, low in the neck with straps over the shoulder in such a way that it may be worn with a simple guimpe. A loose girdle may be attached to the back and buttoned at the front, dropping down two or three inches, and conforming to all of the movements of the body. In short, there is absolutely no band or constriction of the waist, not even to the extent of that which ordinarily supports a pair of bloomers. In the ordinary blouse and bloomer costume there is always some danger of their coming apart at the waist line, as is shown in another illustration of a gymnastic girl bending over to the floor, but in the case of this excellent little garment the mind of the wearer can be absolutely free of any worry on this point. Any dressmaker should be able to design and

A unique and serviceable combination bloomer suit. May be worn with a guimpe, and with a loose girdle attached to the back, which may be buttoned in front. There can be absolutely no constriction of the waist in this suit and no "coming apart."

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make one after seeing the picture, making any variations desired to suit individual taste.

For outdoor sports and games the same necessities for freedom of action prevail, making the skirt a hinderance and a nuisance. The skirt is a most irrational form of attire any way, under all conditions, being unsanitary as well as interfering with one's movements. The ordinary long skirt sweeps up the dirt of the street, brings it into the home, and shakes it out again into the lungs of those in the house. It is an economic waste of material and an abomination in housework.

A sensible combination chemise and drawers.

A combination waist and petticoat, suited to uncorseted figure.

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In the privacy of her own home, a woman can wear a pair of bloomers while doing her housework as well as not, and save herself a great deal of energy because of the ease with which she can get about. The long skirt in the kitchen and while cleaning up the house is an utter abomination, just as it is in outdoor sports. The skirt is commonly worn on the tennis court, but it is not unlikely that in time bloomers will be substituted, or some other form of knickerbockers.

The so-called "trouser-skirt," supposed to be a modification of the "harem-skirt" may be a step in the right direction inasmuch as it is bifurcated, but it has the drawback that it persists in clinging as closely to all of the traditions of the skirt. It is just as long as the old-fashioned skirt, contains just about as much cloth, and sweeps the dust up in the same way. In these ways it is much like the skirt, but at the same time it is like a pair of long trousers with very wide legs It is neither a skirt nor a pair of trousers, truly speaking, but has the disadvantages of both, for the long trousers of

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The so-called "trouser-skirt," a step in the right direction, but ugly in line and possessing all of the objections that apply to the ordinary long skirt.

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men are neither beautiful nor satisfactory in other ways. The athlete discards the form of the trousers when he has active movements to make, either cutting them off above the knees for running, or substituting knickerbockers as in baseball or football, and sometimes, as in swimming, boxing and other games, adopting trunks or tights instead. On the whole, it is difficult for women to do any better than bloomers in the way of costume for exercise, though they should not be too full, either for grace of appearance or for service.

A beautiful corsetless gown, suitable for the home. The drapery effect is impossible in the two-piece dress with the waist line.

In the matter of conventional costume, there is much that may be done to permit a woman to dress in comfort and good taste, and without conflicting too radically with the fashions of the time.

Perhaps the very first step in this direction is to get rid of the waist line, for this is responsible for a great many of the evils of dress, including the corset. Artistically speaking, the waist line is a monstrosity. There is no such thing as the waist line in the anatomy of the human body. Where a girdle is desired, in some part of the garment, the proper place for it is directly underneath the bust, and this is where the art and beauty loving Greeks placed it, allowing

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for the free and beautiful flow of drapery below this point. For those who love the lines of drapery it should be evident that there is no opportunity for satisfaction in this regard in a skirt which is fitted snugly about the hips, and pulled in tightly around the waist. The Greek style, however, offers the possibility of the most beautiful of all gowns, so long as one must adhere to the plan of the skirt.

Along with this plan of the Greek girdle and its flowing drapery, the so-called "Princess" style of costume offers a most satisfactory and beautiful type of garment, and one which is to be recommended because of its conformity to the requirements of bodily health. It need hardly be said, however, that it is to be worn without a corset, for otherwise it cannot display the true charm and beauty of the figure. It is taken for granted that any one who attempts to wear such a garment, or to adopt rational styles in dress at all, has also taken the trouble to develop her body by suitable exercises, so that she not only will not need a corset but will look far better without one. She should also pay especial at-

Showing a common sense gown made on the Greek style, very suitable as a maternity gown.

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tention to the subject of carriage and bodily poise, which is discussed in another part of this chapter.

The woman who wears a corset, who has thereby weakened herself and has come to depend upon this device for support, is not advised to discard it all at once, unless she is still strong enough to do so. In many cases it will be better if she discard it for part of the day, taking exercises to strengthen her body in the meantime, and gradually going without it for a longer and longer time each day, until in the course of a month or two she does not need it at all. Her growing muscles will take its place as a means of "holding her up," and her waist line will take on something of the shape of a human form, a thing impossible to the corset wearer. Symmetry of this part of the body, like that of any other part, depends upon the muscular development and firmness of flesh which can be acquired and retained only through active exercises. The use of the corset prevents the use of these muscles, and they gradually atrophy, but as they waste away they are replaced by a mass of shapeless adipose tissue, tending to increase the prolapsed condition into which the internal organs drop, through weakness and poor carriage. This fatty tissue is more or less displaced, shoved up or otherwise removed when the corset is in its place, (corset manufacturers print instructions to "pull up the abdomen" when adjusting corsets!) but the flaccid shapeless flesh is there just the same, and when the corset is removed the waist line is even larger than it naturally would be in a well-developed and vigorous condition, thus ultimately defeating the very aim of the corset in producing a smaller waist. Many modern corsets are designed not so much to pinch the waist as to displace

A convenient waist for supporting petticoat and garters. The skirts are buttoned well down upon the hip to prevent that "bunchy" appearance at the waist. The lace bust form shown here is not necessary.

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the abdomen, striving as nearly as possible to do away entirely with this part of the body, but such a procedure is no less injurious than the other, and is almost sure to bring about serious disorders of the delicate pelvic organs of women.

In order to do away with the waist line in the external garments, and also to avoid any constriction of the body, all underclothing should be designed to hang from the shoulders. Garments of this kind are coming to be used more and more, and may be purchased ready made in large varieties and selections, under the name of union or combination garments. One may secure combination chemise and drawers, combination corset-cover and drawers and combination waist and petticoat. We are illustrating a few suggestions along this line which may be helpful.

Provided with a foundation of this kind, one may then proceed with external garments of a suitable nature, eliminating the waist band and the waist line entirely. But if one has a good figure, as she should have and can have in a short time by diligent application to the necessary exercises, it is also possible to follow the styles which call for separate waists and skirts, though for this purpose an underwaist which fits perfectly, but not tightly, should be devised and used, so that the skirt may be buttoned to a stout tape or band running around the bottom of it, a comfortable belt or sash covering this. Remember that the question of appearing well dressed, like the question of seeming to have a good figure, really depends more upon the carriage and development of the body than upon its external covering. Without a well-modeled body and a good carriage, nothing can make a woman look well, no matter how much money she may choose to spend upon her adornments, whereas if she has the necessary physical foundation, with the poise and carriage of a queen, she cannot help but look well even in simple, inexpensive garments. The woman herself is the all-important thing, and not her clothes.

EXERCISES FOR GENERAL PURPOSES.—Aside from the special exercises for women given in this chapter, I am offering on the following pages movements of a general nature for

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all-around development and constitutional benefit. They are such movements as one might find pleasure in taking just before going to bed, or for the purpose of arousing an active circulation in preparation for the morning bath. In many cases it is desired to take all of one's systematic exercises the first thing in the morning, including such movements as are necessary for overcoming specific defects, but when such is not the case it is usually well to take three or four minutes of light exercise for awaking the activities of the body in general, or for warming up for the bath.

No. 1. EXERCISE FOR GENERAL DEVELOPMENT.—Standing with feet together, hands at sides, spring to position illustrated, raising arms to horizontal at sides. Spring back to first position and repeat.

In this connection I also wish to call attention to the general calisthenic exercises, and other systematic movements presented in connection with *Class Drills,* in Chapter II. on *Exercises and How to Use Them.* These will all be useful for the same purpose and are adapted alike to the needs of both men and women. It may prove to be a good plan in most instances to vary the general exercises which one indulges in, shifting from one form of class drill to another, in order to maintain the interest through this variety, and also to get the very best results.

There was at one time a general fear among women that by taking of exercises they would acquire mascu-

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line outlines, but this fear was grounded in the complete ignorance of the facts of exercise and its results which was almost universal until recent years. If there should be still a few who entertain this fear of masculine tendencies growing out of the development of the muscular system, let me say positively that there can be no such result, for the muscles of a woman do not take on the same rugged form, even though just as powerful as those of a man. Furthermore, a woman always carries a little more adipose tissue, rounding and smoothing off all of the contours of the body.

Exercises for women, far from making them masculine, will only make them more womanly in outline and contour. It is the undeveloped female, emaciated and shapeless, who most resembles the undeveloped masculine form. Development and health bring out womanly qualities, thus giving her the graceful outlines which mark her sex. Instead of making her figure coarse or crude, exercise will give her an exquisite contour of every part, and no better proof of this need be found than in works of art which have come down to us from the ancient Greeks,

No. 2. Exercise for General Development.—Feet together, hands together, arms outstretched in front, swing or turn around first far to one side and then to the other, as in illustration. Continue back and forth until tired.

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modeled to perpetuate the types of athletic womanhood trained in the gymnasiums of that far-away and classic age. And to-day, it is the athletic girl, and only she, who serves as the ideal of the modern sculptor, for the non-athletic woman, weak and soft, is only a caricature of her sex, when not actually deformed by vicious devices of clothing.

A woman's muscles will never become corded and knotted, will never stick out like "billiard balls" from her forearms and

No. 3. For General Development.—Charge out far with the right foot, bringing hands over right shoulder. Return and repeat, after which charge with left foot and reverse the entire movement.

No. 4. For General Development.—Charge far back first with one foot and then with the other, bringing hands together in front of chest. Recover and alternate with each foot until slightly tired.

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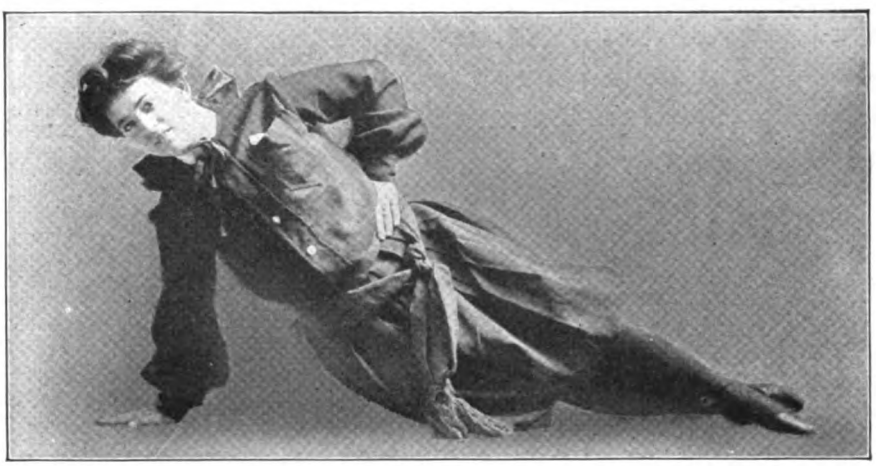
shoulders, as some critics of physical training for women have suggested, in their ignorance. On the contrary, exercise will develop elasticity and strength in muscles of a smoothly flowing formation giving that character and firmness to one's flesh without which grace and real beauty are impossible.

Light exercises are regarded as best for attaining this condition, exercises that while

No. 5. Exercise for General Development. —With feet fairly wide apart, bend down and touch the floor outside of the foot, first on one side and then on the other, continuing back and forth until slightly tired.



No. 6. For General Development.—Assuming position shown in photograph, raise the hips from the floor as far as possible, lower to floor and repeat, continuing until tired and then taking the same exercise on the other side.

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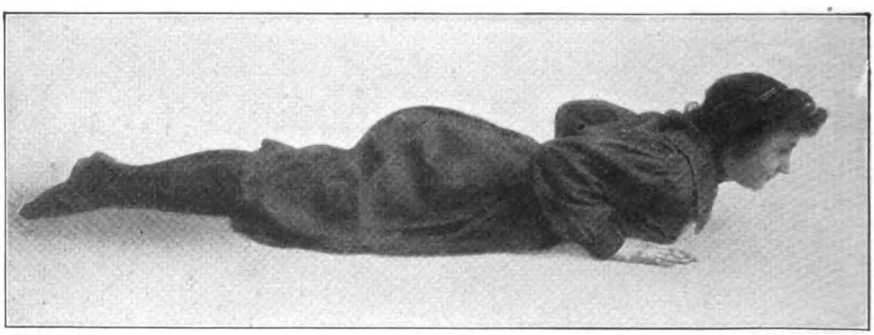
strengthening all the muscles, keep them flexible. Heavy exercises, as is known, make for slowness and heaviness of movement, and this is destructive of grace. Dancing, fencing, etc., are among those exercises that develop grace. The charm of symmetrical and harmonious bodily development is that nothing is obtrusive, no part is over-prominent to offend the eye, but all is pleasing smoothness. There are no striking curves, as the form of corseted figure models might lead one to believe, but the curves and lines are so delicate they seem to melt into each other; and of measurements as of eighteen-inch waists and thirty-eight-inch busts this can hardly be said.

EXERCISES FOR SPECIAL PURPOSES.—On the following pages are presented some special exercises for women for various individual parts of the body and specific purposes. In all cases a series of general exercises is to be advised for purposes of general development and constitutional benefit, in addition to any of the movements illustrated here, but in many a course of general exercise is not sufficient to get the best results. There are few who are not more or less one-sided in their development, or particularly lacking in some special part, and in order to overcome such defects and bring them up to the normal symmetry of the rest of the body, some specific exercises are necessary. If one is particularly lacking in the development of the hips, for instance, she should pay special



No. 1. FOR THE EXTENSOR MUSCLES OF ARMS.—Lying face downward, with hands on the floor at the shoulders, push up to arms' length with the upper body, hips remaining on the floor. Repeat until tired. If this proves easy, then execute the same exercise with the entire body rigid, thus raising hips and all parts except toes and hands.

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attention to the building up of these parts, adhering to the necessary exercises faithfully every day, no matter what else she may do for the sake of her all-around physical improvement. The various topics are taken up alphabetically.

ABDOMEN.—See *Stomach and Pelvic Region.*

ARMS.—A well-rounded and beautifully developed pair of arms will go far to distinguish and to add to the personal charms of any woman, because of the fact that so many of the fashions of dress permit of the exposure of the arms. A small and undeveloped condition of these members has been a source of regret if not of vexation or humiliation to thousands of women, for it is through the condition of the arms as a rule that one may measure or conceive the general bodily condition of the owner. People may do this unconsciously, but they nevertheless cannot escape forming an opinion from what they see as to whether you are well developed, emaciated or otherwise, wholly apart from those general lines of the figure which in many cases are completely disguised by the artifices of dress.

The arms are used so extensively in most of the activities of life that one may easily find a multitude of serviceable exercises for them in addition to those presented here, which are very simple though effective. It really does not matter so much just what exercises one takes, so long as they vigorously bring into play the muscles for both flexing and extending the arms.

As for the forearms and hands, it may be said that exercises for these parts should consist chiefly of taking hold of things and developing what is called the "grip," for which reason all apparatus exercises are valuable if one has the facilities convenient. The mere act of taking hold of a bar above the head, and suspending the weight from it, will provide for the use of the grip, which really means the muscles of the forearm. The flexing of the hand in all directions at the wrist will also improve the forearm, involving all of the muscles of these parts not used in flexing and extending the fingers. Simple flexing movements of the wrist with dumb-

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bells in the hands will answer all the requirements of these muscles in most cases.

BACK.—In discussing the subject of proper carriage I have already alluded to the importance of strength in the muscles of the back, for it is chiefly upon these that one depends for the upright attitude of the upper body. With a weak back one can accomplish almost nothing. Indeed, one need only refer to the number of women suffering from weakness in this region to emphasize the importance of special attention to its development. The spinal column is the central fact of the human anatomy, and as I have tried to make clear in other places, robust strength of its supporting muscles should be the very first object of all consistent physical culturists.

No. 2. FOR THE ARMS.—Standing in an open door, and grasping with both hands a broom handle or other long strong stick braced against the other side of the door sash, lean backward until the arms are straight, and then pull yourself back to the position shown until tired.

I would especially direct the attention of woman readers to the special Supplementary Charts appended to this volume, and to my reference to them in Chapter III, *How to Develop a Powerful Physique.* It is true that some of the exercises suggested there will be found of a nature entirely too vigorous for the average woman, or otherwise unsuited, but others of the movements illustrated will be of great value, and it is well also to understand the reasons why these exercises are of such value in building vital or nervous energy. Chapter V of Volume I takes up this matter.

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In addition to the simple movements illustrated here for strengthening the back I wish also to suggest those which have to do with bending the body forward, a number of these being illustrated in connection with the *Class Drills* in another place.

BREATHING.—The subject of proper breathing is so important that although it has been taken up elsewhere, it has been thought best to make brief reference to it here lest it should be overlooked. There is perhaps no phase of physical training which is of more vital consequence than this matter of breathing, for it is upon this uninterrupted respiration that we depend to keep up the very fire of life. Any stoppage of the breath is very quickly fatal, and since the very fact of continued breathing is so important, the quantity and character of it is also a pertinent consideration.

Natural and deep breathing should especially be given attention by women because of the manner in which most fashions in clothing have interfered with its possibility. The wearing of two piece garments with constricting skirt bands and belts at the waist line, practically prevents any attempt at natural breathing, and especially so because of the corset which is almost universally used. This interference with the very bellows of life is only one of the crimes of the corset, but it is one of the most glar-

No. 1. FOR THE BACK.—With back to chair, hands on seat, and feet removed some distance, as in illustration, raise the back and hips just as far from the seat of the chair as possible, lower again and repeat, continuing until tired. If this seems easy it may be done with hands on floor.

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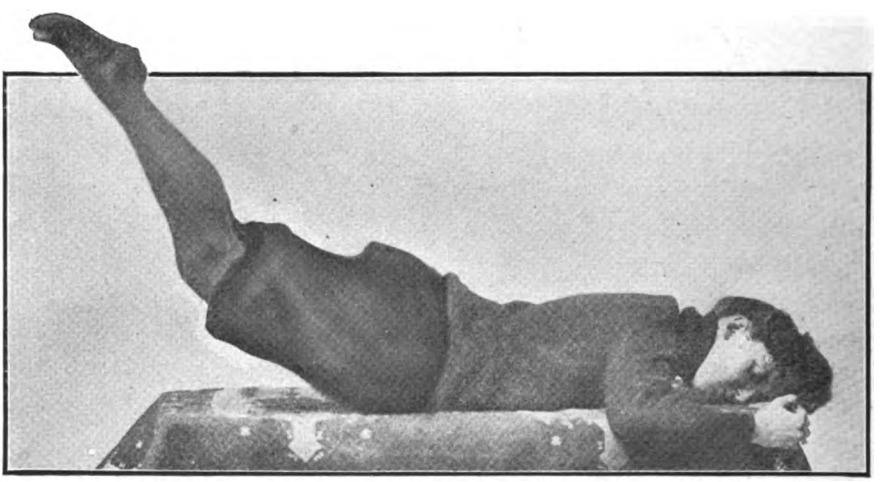
ing of them all, and without doubt goes far to explain the reasons why men have in the past regarded women as the "weaker sex." Hardly anything else could be expected of them, with their breathing apparatus restricted in this manner. If men had been subjected to the same fashion for several centuries, having the greater part of their breathing apparatus cut off from service, with chest walls pushed in, and abdominal viscera pinched almost beyond endurance, while at the same time the bodies of women were free and untrammeled, we should now have a very different story to tell as to which is the "weaker sex."

The first necessity, therefore, not only for correct breathing, but for the health and general development of the body, is to get rid of the corset, and to wear such clothing as will permit of the free expansion of the body in the region of the waist line and abdomen. Even if the corset is abandoned, the use of a separate skirt, with its cutting band, will still interfere with any normal breathing, leaving the victim to depend upon the expansion of the upper chest, for respiration, and neglecting the great lower portions of the lungs.



No. 2. FOR THE BACK.—Lying across a table or one end of a couch, face downward, and taking hold with the hands, raise the legs and hips as high as possible. Repeat until tired. If only the legs are raised this will affect the hips chiefly, but if endeavoring to raise the hips as well, the muscles of the entire back will be vigorously used.

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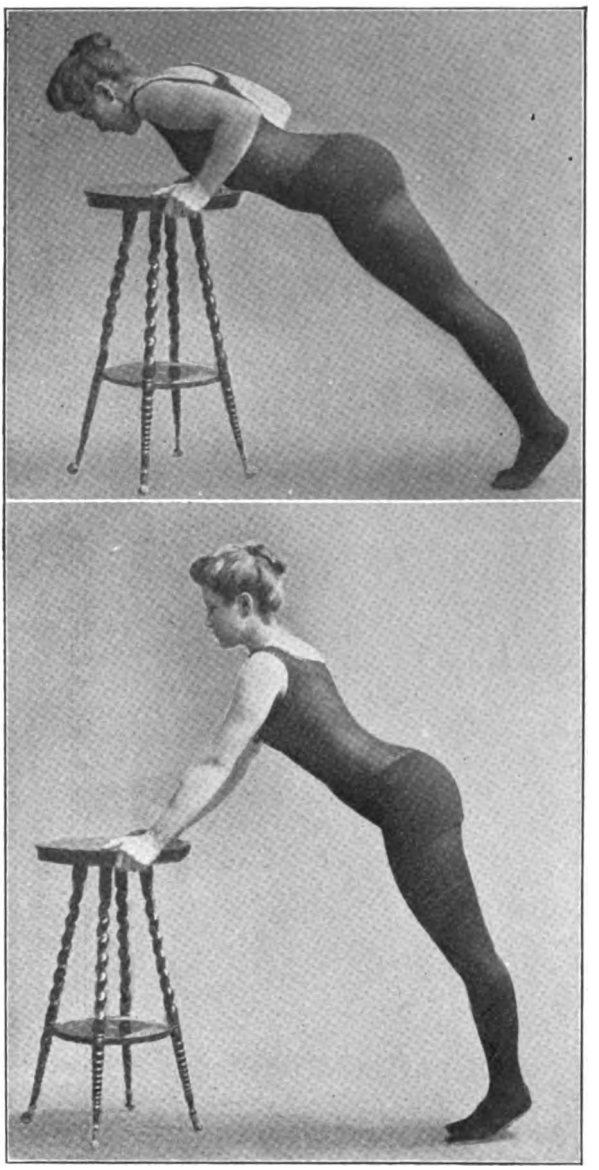

No. 1.—Standing two or three feet away from a table or other similar support, with hands on edge, and body just about touching it, as in the upper photograph, push up to arm's length as in the second illustration, with body rigid. Repeat until tired. Though this also employs the extensor muscles of arms, it is intended chiefly for upper chest muscles.

The reader should study the discussion of proper breathing in another chapter and pay close attention to the illustrations presented there. It should be noted that in the expansion of the lower part of the torso through diaphragmatic inspiration, one can feel the sides of the body expand outward, and the lower back backward at the same time that the region of the stomach moves outward in front. This complete expansion of the body all around is the essential and also the test of proper breathing.

BUST AND CHEST.—The development of a perfect and beautiful bust is one of the first require-

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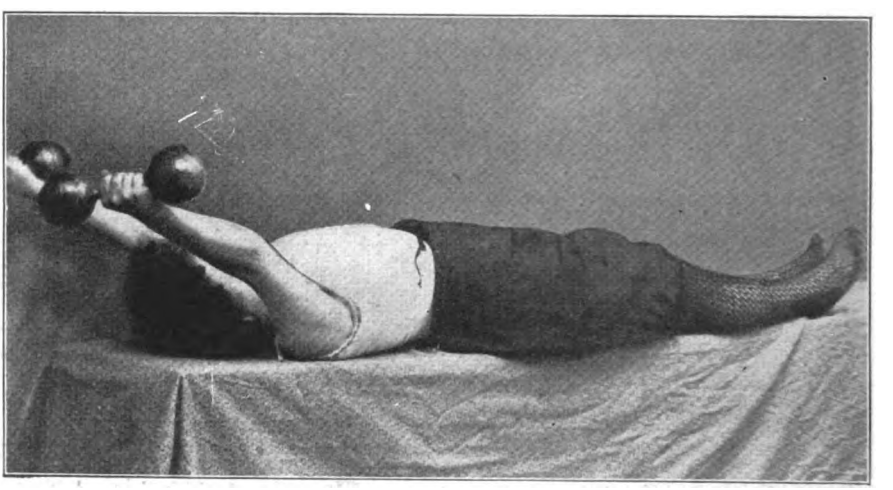
ments of vigorous and magnetic womanhood, not only because is it an essential to the symmetry and exquisite contour of the body as a whole, but because of its vital significance as an expression of superb womanhood itself. A faultless bust is to be desired not only because of its æsthetic and artistic value, but for the far deeper and biological reason that it is so intimately related to the very fountain of life.

The lack of bust development is an evidence of lack of vitality and health. It is true that one may have the health, so-called, which permits her to be on her feet and to walk around, but she is not a complete woman or in perfect health if she is lacking in this respect. A flat-busted, flat-chested condition may not indicate absolute sterility in a woman, but it indicates a condition of health in which approaching sterility may be a possibility, or in which, if not sterile, she may be productive of offspring lacking the full degree of vitality which should be the birthright of every child. It is significant that large families are the rule among those nations or in those lo-



No. 2. FOR THE BUST.—Lying on the back on a couch or table, (on floor, if more convenient) bring arms back over head as illustrated, then bring them up and forward to the perpendicular. Repeat and continue until tired. The farther down the arms are brought the better. After this, bring them down sideways instead of back of the head, varying the exercise for different use of chest muscles. It is best if light dumb-bells, books or other convenient small weights are held in the hands in this exercise.

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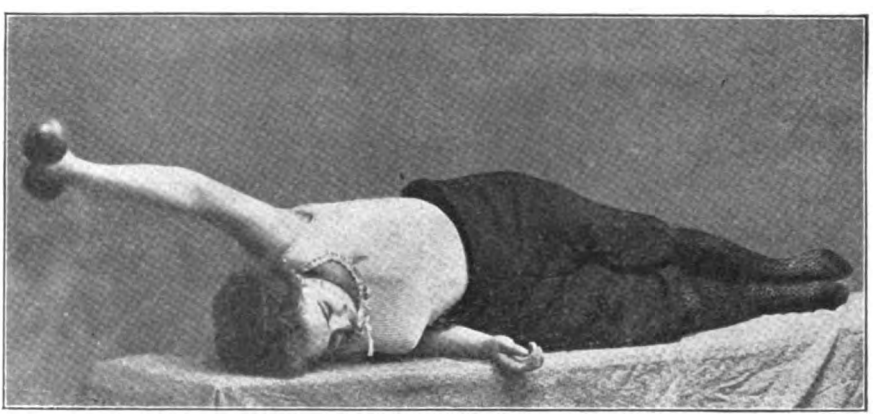
calities characterized by full-busted women—women able to nurse their babies instead of bringing them up on patented milk combinations administered in bottles. The full and perfect bust makes a woman attractive because it indicates her fitness for motherhood, which also to a very large extent explains her magnetic quality.

The first essential of perfect bust development, therefore, is the attainment of the highest possible degree of health and vitality. A condition of vigorous womanhood will assert itself in this way, for upon this fact, together with the requirements of perfect nutrition, depends the development of the glands of the breast which give it fullness. Next to this, a certain degree of muscular vigor is essential to prevent that sagging or falling of the parts which is inevitable in a state of weakness. On this account special exercises are indispensable.

I am presenting here some simple exercises which affect the muscles of the upper chest, not only because a full and well developed chest is necessary to serve as a sub-structure for the bust, but because it is the use of these muscles which will directly influence and invigorate the bust itself. It should be remembered that these muscles are concerned with the movements of the arms and shoulders, and that any other ex-



No. 3. For the Bust.—This is similar in principle to the last movement. Lying on one side, bring upper arm up, back and over the head, as illustrated, and then bring down to side again until tired. Same on other side.

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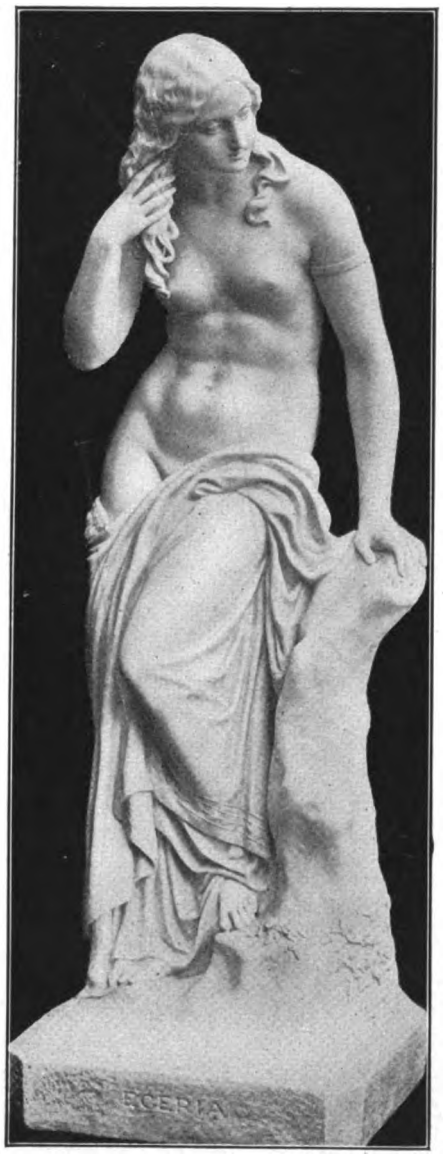

Egeria, sculptor unknown, a masterpiece of modeling, showing the ideal female torso of perfect development. Note that the bust is small in comparison with the common ideal, but far more perfect and beautiful than excessive, flaccid tissues. Womanhood, vitality, power and grace are expressed in this figure.

Fortune, by J. Franceschi, showing the artist's ideal of a perfect bust development, and indicating the error of the popular conception of an over-large bust as the perfect type. The small, though firm and well rounded bust is the ideal of all artists, and the most perfect evidence of superb, magnetic womanhood.

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ercises which have to do with pulling the arms and shoulders forward, or pulling the arms downward and forward from overhead, will also be effective.

There is one important phase of the subject, however, which deserves special attention, and that is the misunderstanding of the popular mind as to just what constitutes a perfect bust development. It is thought in many quarters that the ideal development of the bust is a very large one, but there never was a greater mistake. An excess of size in this part often means that a deposit of flaccid adipose tissue has taken the place of atrophied glands and muscles, so that conditions may be even worse than in the case of the flat-busted woman. Here, as elsewhere, mere fatness is neither desirable nor beautiful. The quality for which the average woman should strive in the bust should be firmness rather than large size, in order that the parts will stand up in the lines of their true beauty, instead of sagging as the large and shapeless breast is sure to do. It is only in the case of motherhood or expected motherhood that the bust should normally exceed the modest size or development of a healthy, vigorous maiden.

I would call attention to works of art everywhere to corroborate what is here said upon this point, for in both the classic figures of the antique and in all of the best works of art of the present day, the reader will see that the universal ideal of artists is a bust which is not very large, but firm and well rounded. Some illustrations of this kind are offered here to help make this point clear.

Therefore do not be alarmed if you have not a large development of the bust. See rather how vigorous it is, how firm, round and full in contour, and how closely it approximates that ideal which is expressed in these various works of art.

Hips.—A normal development of the hips is a most important factor in bringing about the suggestion of perfect femininity, for it is in the lines of the hips that the two sexes differ most widely. The woman lacking in this respect does

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No 1. For the Hips.—Standing on both feet, raise one leg with knee straight to a horizontal position in front of the body, as illustrated, swinging arms up to level of shoulders at side to help in balance. Do not do this too quickly, for it should be the contraction of the muscles, and not the momentum of a swing, that should raise the leg. Repeat until tired and then take the same exercise with the other leg.

not have the aspect of womanliness, as we have come to associate it with the most perfectly developed representatives of the sex. By this is not meant a large development, for this is just as unsatisfactory as an emaciated and scrawny condition of these parts, but rather the normal and natural outlines which go with perfect physical condition.

No. 2. For the Hips.—This is similar to No. 1, except that the leg is raised to a horizontal at the side, using different hip muscles. Alternately use both legs.

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Aside from the special exercises given here, the reader should note that such activities as walking and running, the latter especially, and all pastimes which have to do with walking, running and jumping, call for vigorous use of the muscles of the hips. And all such exercises will be equally valuable for reducing the hips when too large and burdened with fatty tissue as for building them up when too narrow and small. The influence of exercise in all cases is to restore a normal condition of the parts concerned, and thereby to bring about the condition of greatest possible symmetry and beauty. All open-air sports, therefore, can be recommended in connection with special exercises for improving this part of the body. The general lines of the figure depend upon the hips to such an extent that they should not be neglected.

LEGS.—Not a great deal needs to be said here about the

No. 3. FOR THE HIPS.—This is similar to No. 1, except that the leg is raised straight backward, as in this illustration. It should be brought up just as high as possible. Same with the other leg.

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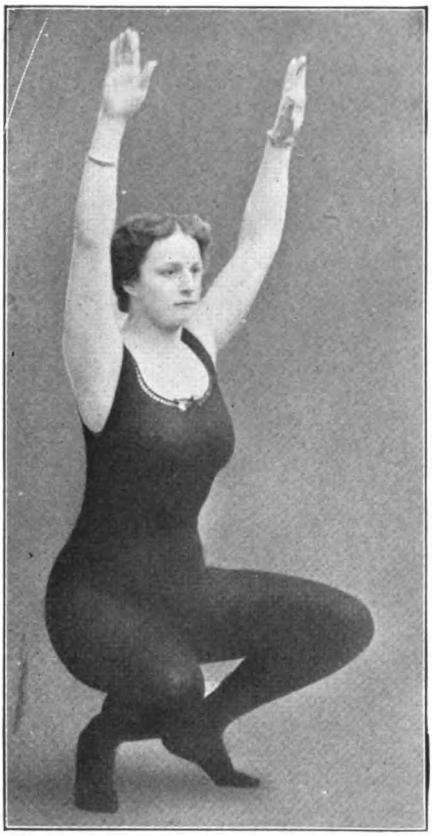

No. 1. For the Legs.—Standing first erect, with hands at sides, bend the knees and lower the body to a squatting position, as illustrated, at the same time swinging the arms forward and upward to position overhead. Rise to standing position, bringing arms to sides again and repeat until tired. This is a simple and common exercise, but is performed with greater comfort with this use of the arms to balance the body.

No. 2. For the Legs.—With feet well apart, lower the body and squat down on the heel of the rear foot, as in illustration, keeping the back straight. Rise and repeat several times, after which take same exercise, on the other side. The rear leg should carry most of the weight of the body in performing the exercise, making it more vigorous than the preceding movement. Also good for rounding the knees.

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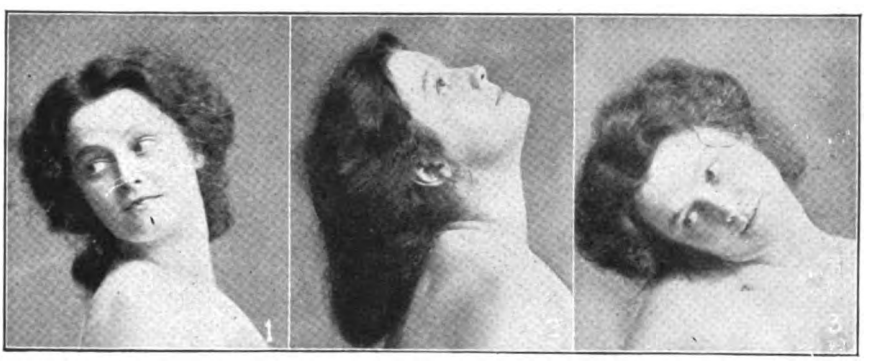
lower limbs, inasmuch as they will be vigorously employed by many forms of outdoor exercise if the intelligent seeker for health and strength devotes herself as fully as she should to all available open-air games and sports. A couple of exercises are illustrated here which will be of value, and which may be practiced night and morning if there seems to be any special lack of development of these parts. I would add, however, that the practice of running is the very best exercise in the world for developing the legs, and indeed, for furthering strength and vigor of the entire body, and the systematic practice of sprints in bloomers or other suitable costume cannot fail to beautify and make symmetrical any pair of legs.

In connection with these, I would also refer the reader to some special exercises for the calves in Chapter III, *How to Develop a Powerful Physique.*

NECK.—A perfectly developed and beautiful neck is one of the very first charms for which the physical culture woman should strive, for even more than the arms, it is a part of the



FOR THE NECK.

No. 1.—Turn or twist head far to one side, looking back over the shoulder as far behind you as possible, then far to the other side. Repeat until tired. Be sure to put the muscles of the neck on stretch in each direction.

No. 2.—First bring the head as far back as you possibly can, looking straight upward and stretching the throat, then bring the head forward as far as possible, with the chin resting upon chest, and stretching the back of the neck. Repeat until tired.

No. 3.—Bend the head first far to one side then to the other, continuing back and forth until tired. Stretch the muscles each way in this exercise, practically laying the head first on one shoulder, then on the other.

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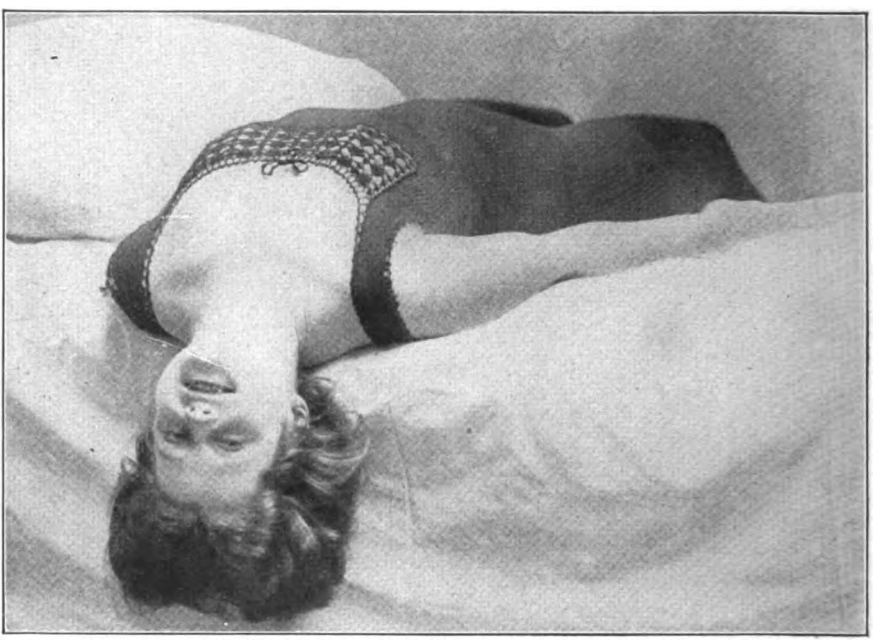
body that every one sees and cannot help seeing. Sometimes the fashions for women seek to cover up the neck, but even in such cases its form and character are more or less evident through the lace or other covering. A thin and scrawny neck is not only ugly in itself, but it expresses a lack of vitality and of general development, just as a full, round throat and a well-set aspect of the back of the neck indicate life and vigor. After realizing the importance of strength of the spinal column, the reader will understand why a well-set neck is associated with energy and power. Others may not understand the reasons for this, but instinctively they get the same impression of an individual, and, whether this is unconscious



No. 4. FOR THE NECK.—Showing another most effective form of exercise for the neck. Lying flat on the back across a bed or upon a couch, and with head extending over the edge, let the head hang far down as in the illustration, and then bring it upward and forward until the chin touches the chest, or as far as possible. Repeat until tired. Take the same exercise lying face downward, and then lying on each side. The movements are practically the same as in No. 2 and No. 3, except that in this case they are more vigorous because of the resistance of the weight of the head. If the exercise has a tendency to cause dizziness, it is because of poor circulation, and in such a case one should only use the first three exercises, in the upright position, until stronger.

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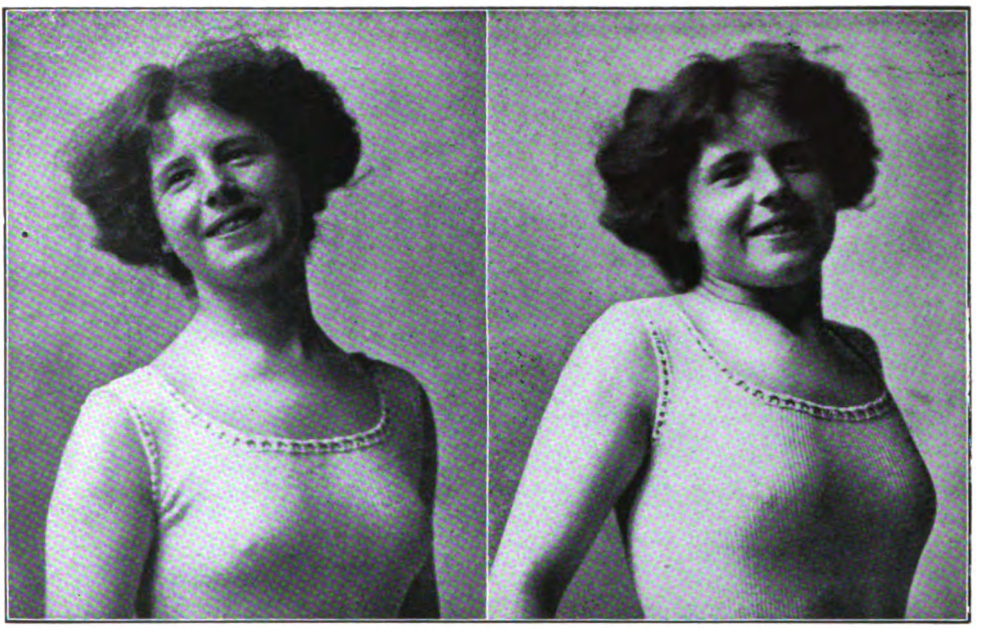

No. 1. FOR THE SHOULDERS.—From position with shoulders far back and down, shown in illustration at the left, raise shoulders as far upwards as possible, as indicated in illustration at the right. Repeat exercise until muscles employed are thoroughly tired. This is a splendid exercise for filling in hollows around collar bones.

No. 2. FOR THE SHOULDERS.—Bring shoulders far forward, as shown in illustration at the left. Now bring them as far back as possible, as shown in illustration at the right. Return to former position and repeat exercise until muscles are thoroughly tired.

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or not, the woman with an undeveloped or emaciated neck will have great difficulty in giving others the suggestion of personality.

The exercises illustrated here are very simple, but they are none the less effective on this account. They are not of a nature to build a prodigious degree of strength in this part, but rather to develop the neck normally and thoroughly, giving it that combination of grace and strength which makes for the greatest beauty. There are comparatively few of the women whom one sees on the street, at the church or any other place who have really perfect or beautiful necks, and yet there is not one of them who could not have this pleasure if they would give only a little attention to the subject. They may envy the graceful throat of some other woman, deploring the condition of their own, but I wish here to emphasize the fact that the neck is one part of the body that responds most quickly to exercise. It is often surprising to note the improvement that may be accomplished by these simple movements diligently persisted in for a period of a few weeks. Tight and stiff collars should be avoided above all things, for there is nothing more destructive to the beauty and contour of the neck.

SHOULDERS.—In a general way the beauty of the shoulders is associated with that of the neck, just as their lack of beauty is associated with an undeveloped condition of the latter. It is true that the shoulders are ordinarily covered up, and yet their beauty is often more or less manifested through laces and other forms of summer dress. Many young women desiring to wear evening dress have been humiliated by the fact that they would be absolutely unpresentable in any costume which disclosed the shoulders.

To a very large extent, the possession of beautiful shoulders is a matter of development and their proper carriage. A lack of strength in the muscles back of the shoulders gives rise to the tendency toward round shoulders, and exercises will not only establish them in their proper position but will develop and fill out their contour. To a great extent also,

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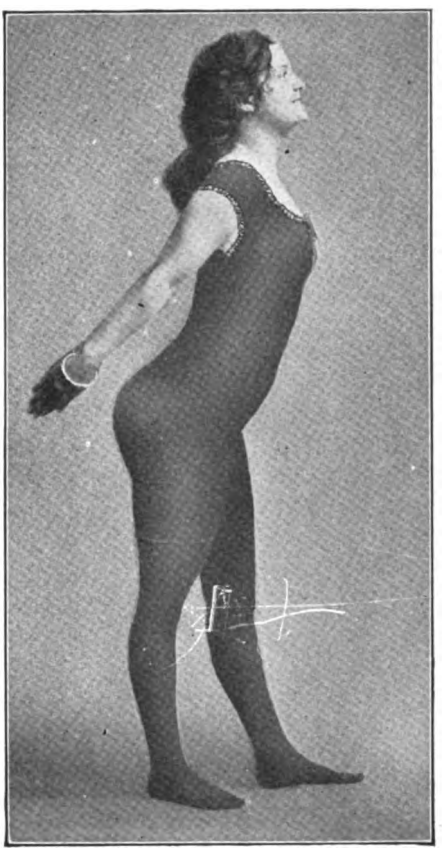
the beauty of these parts depends upon satisfactory nutrition, and if the unsightly hollows which sometimes mar the front of the shoulders are to be overcome, it is necessary that one pay close attention to a proper diet, insuring a good digestion and faultless assimilation, and building up the very highest degree of general health. Under conditions of satisfactory nourishment, the practice of these special exercises cannot fail to produce a perfect and exquisite beauty of the shoulders.



No. 3. FOR THE SHOULDERS.—Stand with arms outstretched in front, fingers touching, then swing them backward and downward to the position shown in this photograph, if possible letting the hands touch behind the back. Repeat until tired. Not only are the muscles of shoulders and back employed in this exercise, but the shoulders are pulled down as well as back and the chest expanded.

Together with these, there are many other arm movements and some exercises for the chest which will be very helpful in improving the shoulders. Exercises which bring the arms backward, and to some extent those which bring the arms upward, will be effective.

Stomach and Pelvis.—There is probably no other form of weakness so common among women as that of the muscles and tissues in the region of the stomach and abdomen. For this reason too much could hardly be said to urge the importance of adopting special exercises for strengthening and developing these muscles, and in that way invigorating the internal organs and making firm all of the other tissues adjacent.

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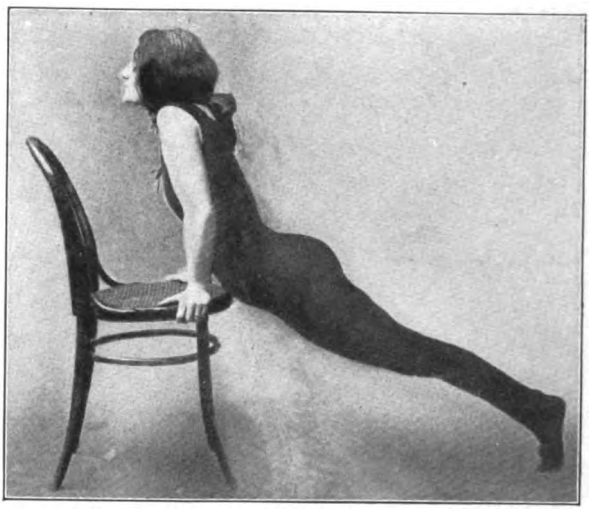
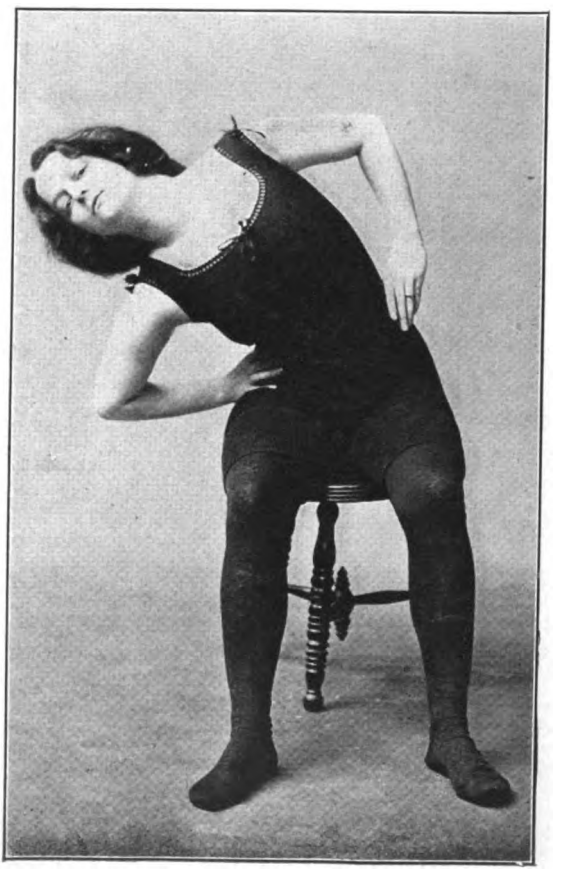
No. 1. FOR THE STOMACH. — With hands on edge of seat of chair, and feet two or three feet away, lower the body to the position shown in this photograph. Then without moving hands or feet, raise the hips and back as high as possible, lower and repeat, continuing until tired. Do not do this with the effort of the arms, but by muscles of stomach.





No. 2. FOR THE STOMACH.—Seated on a stool, with hands on hips, and feet apart, bend first to one side, then far forward, almost to the knees, then to the other side, in the manner illustrated. This may be made one continuous rolling movement. Continue until moderately tired. This not only exercises the external muscles, but in a way massages the internal organs as well.

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A very large proportion of women suffer from all kinds of disorders of the delicate pelvic organs, disorders which are for the most part the direct result of weakness and laxity of these tissues, poor carriage and imperfect circulation, the latter largely growing out of the other two causes. There is substantially one way for correcting the condition of stretched ligaments, prolapsus and general laxity of all parts, and that is through exercise. This is a matter that is taken up in a larger portion of this work, in connection with its curative aspect, but it may be said just here that practically all difficulties of this kind may be avoided in the first place by any form of exercise which will develop the muscles of the stomach and abdomen and strengthen the entire pelvic region generally. Here, as elsewhere, the preventive method is infinitely more wise and important than the curative, although substantially the same general scheme of exercise and vigor building will apply both in prevention and cure.

Perhaps the very best exercises for the muscles of these parts are the simplest, and it is such that we are illustrating here. The student of physical culture will know a great variety of other exercises which will accomplish the same results, and many of them are illustrated in connection with the class drills and other series of exercises in this work.

It seems to be the common notion that a woman's body is naturally soft in these parts, in spite of the fact that the walls of the stomach and abdomen are very rugged and strong in the case of the male sex, when in good physical condition. In other words it seems to be taken for granted that the stomach and abdomen of a woman should be flaccid, shapeless and altogether without character, a hopeless and impossible suspension of loose flesh when not retained and supported by a corset. To say nothing of the actual possession and toleration of such a condition, even such an idea of the temple inhabited by earth's intended fairest creature, is something to be ashamed of. But it is not true that any such is a natural condition, for when normally and naturally developed, a woman's body should be just as firm and snug and sym-

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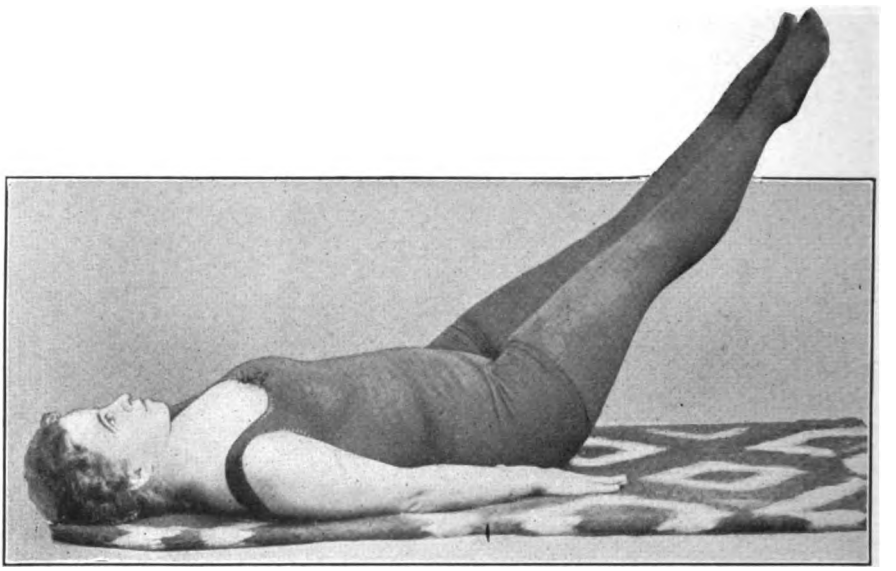
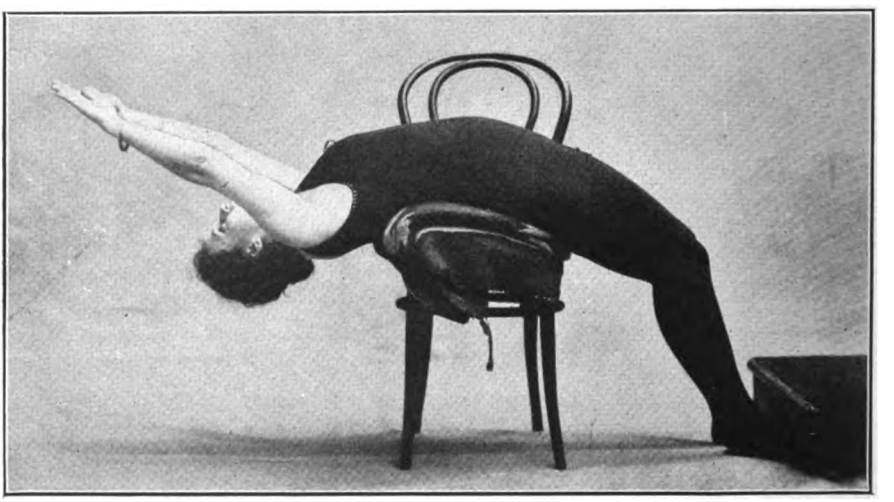


No. 3. FOR THE STOMACH.—Lying flat on the back, and keeping the knees straight, raise the legs in the manner illustrated, continuing the movement until they reach the perpendicular. Lower and repeat, continuing until tired. If this seems a little too vigorous at first, then perform the exercise with only one leg at a time until stronger.



No. 4. FOR THE STOMACH.—Sitting first on the edge of a chair, and with feet braced under some heavy object of furniture, bend backward and downward, with outstretched arms, to the position illustrated. Then rise again to the sitting position and repeat. Continue until tired. It may be well to place a pillow over the chair for comfort. This is a very vigorous and effective exercise, but may be made easier by not extending the arms, and also by not lowering the body so far.

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metrical in these as in any other parts. There should be the same substantial external wall of muscles covering the abdomen and the region of the stomach that we see in the male athlete, though naturally in the case of womankind there are not the same rugged and conspicuous outlines. Everything is smooth. If only for the sake of avoiding the danger of serious ruptures, every woman should make it a point to strengthen these parts, but exercises for this purpose will also help her to consume and obliterate the layers of fatty tissue which so often accumulate over the abdomen. Although, as pointed out heretofore, a prolapsed condition of the internal organs may usually be traced back to weakness of the back and the consequent faulty carriage, or at least largely so, yet weakness of these muscles is a contributing cause in most instances, and their vigorous development will help greatly in improving the carriage and avoiding prolapsus in the future.

In discussing the weaknesses of this part of the body we continually come back to the baneful influence of the corset. We simply cannot escape the consideration of this iniquitous device, just as women who wear it cannot escape the inexorable physical dilapidation which it brings about. The corset, more than anything else, is responsible for the common weakness of the pelvic region among women, both directly through its immediate influence upon the parts themselves, and indirectly through its influence in weakening the back and thereby disturbing the poise and alignment of the entire body, with the consequent prolapsus of all organs.

These exercises are of special value for invigorating the digestive organs and thereby improving one's powers of assimilation.

WAIST.—We are illustrating herewith some special exercises for beautifying the waist. A firm, snug and symmetrical contour of the body in the region of the waist is an absolute essential to the physical culture woman who wishes to present a good appearance, and although general exercise will usually bring this about in due time, it is often well to pay special at-

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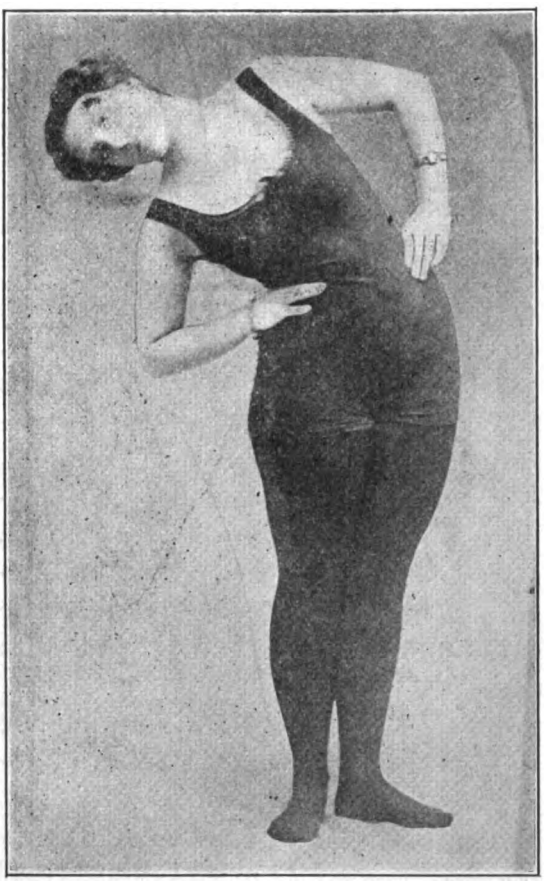
tention to this part of the body. The average woman depends upon the corset to determine what her waist shall be, having her clothing made to suit the model of the corset. But how infinitely better to have a figure of her own, so that instead of the hypocrisy of displaying a purchased form, she may take pride in the consciousness that the admiration of others comes in response to the charm of her own real self.

When the average woman discards the corset, the muscles of her body are weak and undeveloped, while all about the region of the waist she finds masses of shapeless fat. Obviously, she is not in a condition to wear a princess gown with such a figure, including the protruberance of the abdomen which is also usual under such circumstances. But with the practice of special exercises, faithfully persisted in morning and evening, she can accomplish almost a transformation in her figure. It may be said here that all exercises for special purposes would better be taken twice a day, though systematic exercises for general development and constitutional benefit should in most cases be taken but once daily.



No. 1. FOR THE WAIST.—Placing the hands on the hips, bend first to one side, then to the other, in the manner illustrated. Continue back and forth until tired, carrying each movement far enough to place the muscles of the other side on a stretch.

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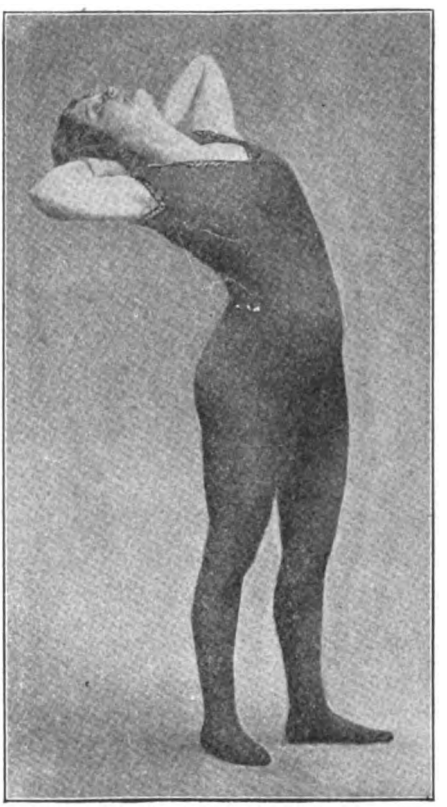
No. 2. For the Waist.—Charge to the position shown in illustration, with arms outstretched, then turning the body at the waist, twist or swing far around first to one side, then to the other. Continue back and forth until tired. This exercise is of little value unless the body is turned just as far as possible in each direction with each move.



No. 3. For the Waist.—With feet apart, and hands behind the head, bend first backward in the manner illustrated, then swing around, bending toward the right side, and continue in a circular movement around to the front, left side, back, etc. After several turns, reverse the movement, going in the other direction, and placing the body as much as possible on a stretch at all times. in the region of the waist.

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It will be encouraging to those who are in the worst condition to know that it is precisely they who will be able to make the most startling changes and improvements in the shortest time. When very poorly developed, the body will respond quickly to exercise, and will rapidly progress to a point not far from the normal. After securing a pretty fair development, however, it will take a great deal of persistent exercise to carry the development only a little farther. Wherefore, let the hopeless ones take hope, for they should soon be in a condition to surprise all their friends, as well as themselves.

HOUSEWORK AS AN EXERCISE.—Housework is a form of physical activity which is probably familiar enough to many readers. Unfortunately, there are many who conceive their housework to be sufficient exercise, or perhaps in some cases it is regarded as a substitute for special or systematic exercise.

Housework, as ordinarily carried on, however, is anything but exercise. It may be so modified as to be of real benefit, but in most cases it does not satisfy the first requirements of physiological exercise. Instead of building strength, it seems to consume strength and to exhaust the worker. So many of the movements are of a similar nature that it tends to pull the shoulders forward, cramp the chest, bend the back, stiffen the joints, and otherwise accomplish results which are entirely the opposite of beautifying the figure. The shapeless and distorted figures of most women who have been doing exercise for a score of years do not speak highly of the benefits of this form of work, the very first objection to which is that it is carried on indoors.

The reader is referred to the remarks upon the subject in Chapter II. *Exercises and How to Use Them,* for some of the necessary factors of true exercise, pointing out among other things the importance of complete extension and flexion of all members of the body during exercise, so that the muscles may remain pliable and in good condition. In housework the movements are short, jerky and otherwise unsuited to their development. In some cases there is not the relaxation

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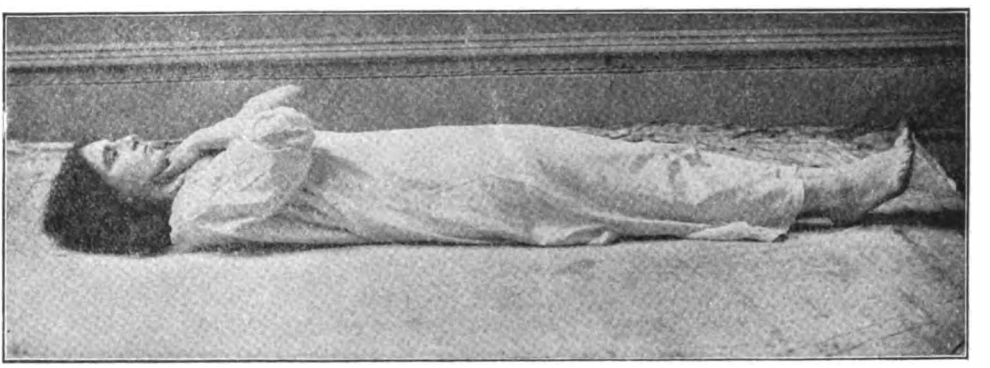
that should be frequently introduced. The housekeeper, therefore, is as much or more in need of special exercises and healthful recreations as anyone else, perhaps more so.

It is true, however, that improper dress has much to do with the failure to get good results from housework, and also that there are right and wrong ways of doing things. Some forms of housework may be converted into really beneficial activity by approaching them in the right way. If one will enter into the work with vigor and spirit, instead of with the plodding spirit, she may get a great deal of action into her movements, whereas otherwise they might be of a nature to stiffen her. But the most important thing is the question of proper carriage. The woman who goes out upon the street braced up in a corset, and very conscious of her appearance in public, may slump and slouch in the very worst way when doing her work at home. The erect carriage, the attitude of strength and vitality, will help her to do nearly everything much better, and when she bends over, in many cases, she will have no difficulty if she keeps her back straight and bends from the hips, instead of bending her back and keeping it bent for various periods of time. There is no reason for bending



First position for the "roll." Note position of arms and legs. Upper rms protect the bust. Legs well extended. It is not merely the exercise of he muscles concerned in bringing about the movements of the roll which are benefited, for perhaps even more important is the fact that the weight of the body is brought by turns upon its various surfaces, affording a practical and most satisfactory massage of nearly all parts of the person, stimulating the circulation to a powerful degree and tending to displace any soft or useless flesh.

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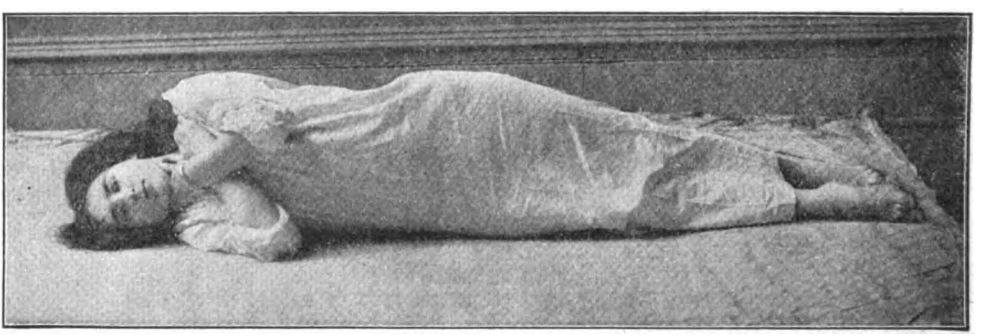
the back; it tires one too much. It is unhealthful, it is ugly, and it fosters a mental attitude consistent with the bodily pose. This question of proper carriage is a most important one in securing benefit instead of detriment out of housework, though even in the best conditions too much of it cannot be advised, and it can never really take the place of special exercises intelligently designed for specific purposes.

RELAXATION.—Just a word here in regard to the importance of relaxation and relaxing exercises for women, because of the great prevalence of nervous weaknesses and disorders among them. Nervousness in some form or other, in varying grades of seriousness, is one of the most common of all complaints, and although a radical improvement in the general health is necessary to overcome such weaknesses, yet at the same time the ability to relax at will, and the practice of special relaxing exercises which will give one this power, cannot fail to greatly alleviate and help to remedy such manifestations. In connection with sleeplessness this practice of voluntary relaxation is invaluable. I would therefore refer my women readers to the discussion of *Relaxation* in Chapter II of this volume, page 743.

ROLLING AS AN EXERCISE.—Rolling is a very interesting and suitable form of exercise for women, and has been much



Second movement, in which relative position of arms and legs is retained. A bed of green grass is the very best place for the roll, if one has a lawn convenient, and can slip on a suitable robe. Otherwise, spread a sheet over a rug or carpet and roll back and forth in each direction until tired. The less clothing worn the better, in fact, nothing more than a plain night robe should be used.

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recommended for removing superfluous flesh. That it is a natural and beneficial form of exercise may be attested by the fact that it is spontaneously or instinctively practiced by animals, and also from the fact that small children often find great pleasure in rolling over and over on the grass or down the slope of a smooth lawn. Who has not seen a horse, a dog or a cat roll and kick and stretch on the ground, invigorating and improving the circulation in all of those parts which come in contact with the earth?

It is not merely the exercise of the muscles concerned in bringing about the movements of the roll which are benefited, for perhaps even more important is the fact that the weight of the body is brought by turns upon its various surfaces, affording a practical and most satisfactory massage of nearly all parts of the person, stimulating the circulation to a powerful degree and tending to displace soft or useless flesh.

A bed of green grass is the very best place for the roll, if one has a lawn convenient, and can slip on a suitable robe. Otherwise, spread a sheet over a rug or carpet and roll back and forth in each direction until tired. The less clothing worn the better, in fact, nothing more than a plain night robe should be used.

ROPE SKIPPING.—Rope skipping is an exercise particularly to be recommended for its fitness to the needs of women. It is in truth just as well adapted to the needs of men, and is used extensively by boxers in training for extended contests, but it has that element of grace and lissome activity which appeals most powerfully to the feminine temperament. There is no pastime more dear to the heart of the school girl, in whose physical development it frequently plays the most important part. However, since childhood is suited to games of activity and agility, but without the stamina for prolonged endurance, the young school girl should be advised against trying to make records as to the number of jumps or skips she can go with the rope. She should be encouraged in this excellent exercise, but with the suggestion that she strive for variety of fancy steps, none of them very long continued. In

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adult womanhood, however, there need not be any fear of overdoing by too prolonged exercise, provided the rope skipping is not continued for more than ten or fifteen minutes. More time, with brief intervals of rest, would be better, but young women, when in fairly good training, have possibilities of endurance like those of young men.

RUNNING.—Running is a vigorous and most beneficial form of exercise for women, not so much as a competitive sport, but as a means of physical development and health building. There is nothing in the world that will do so much for beautifying the hips, though the legs will also be perfected to the highest degree through daily sprints. There was a time when it was thought "unladylike" for a young woman to run, but the world is modifying its opinion upon this subject, in the direction of common sense, and games for women in which running forms the greatest activity are now very numerous.

In Chapter IV of this volume, the subject of running is discussed in detail, under the head of track athletics, and while our fair readers may not be interested in the competitive aspect, nevertheless they may glean some points of form which will be very useful. It is comparatively easy to overdo this vigorous exercise, and I would therefore emphasize the caution *never to continue running after it has ceased to be a positive pleasure.* Observing this rule, however, it would be well to do a little running every day.

SPORTS AND GAMES FOR WOMEN.—All manner of open-air sports and games are especially to be recommended for women, in order that they may develop the same splendid stamina and endurance that their athletic and sports-loving brothers enjoy. Tennis, golf, rowing, riding, swimming and other vigorous outdoor pastimes will not only develop strength and promote the most vigorous health, but will do more for accentuating the natural beauty of girlhood than all other influences combined, with the exception of a wholesome diet and systematic exercises for special purposes. It needs hardly be repeated that outdoor exercises are infinitely more valuable than those performed indoors.

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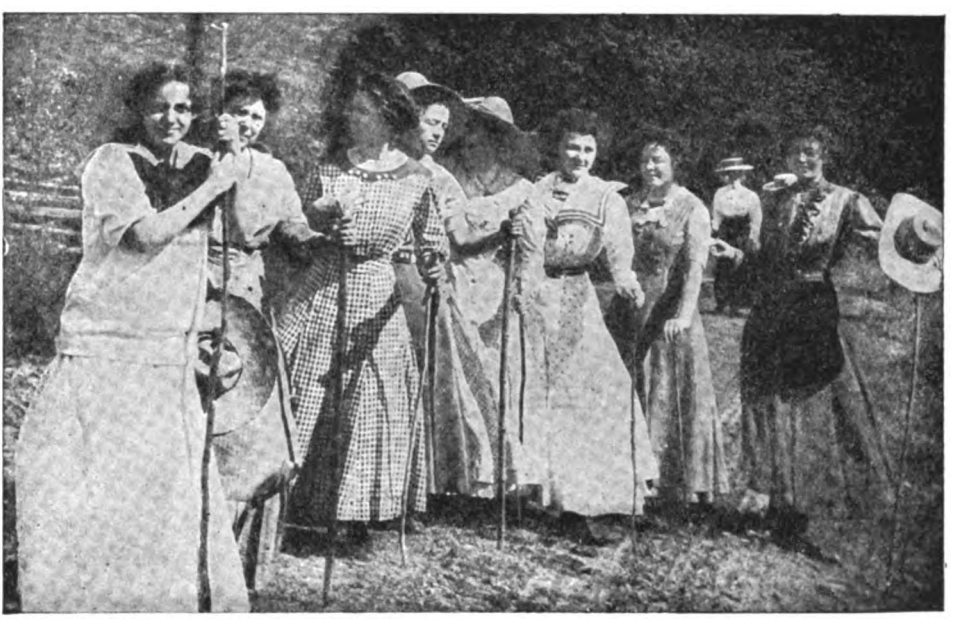
Our fair readers are respectfully referred to the chapter in this volume on *Competitive Exercises and Sports,* for a somewhat detailed discussion of all prominent outdoor pastimes. It may be said that there are very few, if any, of these which are not as well suited to women as to men.

WALKING.—Though the subject of walking has been taken up in another place, it is mentioned here because of its value and importance to women as a means of acquiring health and beauty. It is a form of what we may call constitutional exercise, valuable for its health-building qualities rather than as a means of any special bodily development. It improves the circulation and the digestion, tones up all of the vital and functional organs, favors perfect action of the depurating organs and brings about that purity of blood that gives a good complexion. No matter what special and systematic exercises one may take for building muscular strength and symmetry, every one should do at least a certain amount of walking in the open air, breathing the pure air freely. The reader is respectfully referred to the general discussion of this topic in Chapter II.



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A girls' walking club on the roads of Indiana

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CHAPTER VI.

VOCAL CULTURE.

THERE is beauty of sound as well as of sight. There is color in tone as well as in light. But there is no other sound with the charm of the human voice at its best, resonant, rich and sweet. And when art has been extended to its farthest limits, there is still no other music like that of the song well sung.

We sense our fellow beings chiefly through sight and hearing, likewise giving them impressions of ourselves through both our physical aspect and the tones of our voices. What we call personality, therefore, including all of those magnetic qualities which distinguish the man or woman of power from the nonentity, is very largely expressed through the voice. And this voice may be made anything that we choose or will. A good speaking voice is just as important as an intelligent, attractive and expressive face, from the standpoint of both business and social advantage, and should be regarded as an essential part of the complete development of every individual. A pure, sweet and melodious voice is not only the first requirement of the singer or public speaker, but it is a necessity even for truly pleasing and satisfactory conversation, and a daily joy to its possessor.

Some among us, very fortunately gifted by Nature with great vitality, pleasing features and agreeable voices, need do very little except to maintain good health and physical vigor in order to retain these charms. With the rest of us, it is often necessary to adopt special measures for bringing about a sadly needed improvement in these matters, and it is just as possible for every man and woman to build up and enjoy a beautiful voice as to develop a beautiful, vigorous body. Indeed, need of the latter as one of the prime conditions of the former is one of the most important points on vocal culture which we wish to point out here.

This fact, that a pure-toned, rich and resonant quality of

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voice depends fundamentally upon a robust development and condition of body, is especially to be emphasized here, because it is so generally neglected elsewhere. It is a matter of universal observation that great singers of both sexes are universally men and women of robust physique and at least normal physical vigor. Perhaps in most cases this is not so much the result of special training along physical culture lines as of having been born with a powerful constitution. Perhaps also in many cases they are inclined to the accumulation of adipose tissue, but at least this indicates assimilative vigor, rather than that lack of vitality which commonly goes with emaciation below the normal weight. At all events, the possessors of rich and powerful voices are nearly always of the type of men and women, who, with special training, might distinguish themselves through their strength. They have high, full chests, large, sound lungs and the full throats which go only with a vigorous neck development. The voice of the consumptive, or of the flat-chested one who is threatened with consumption, is weak and thin, and even though he may be versed in the technique of singing, yet his voice will lack color and brilliancy, fullness and resonance, power and durability.

It is not essential for purposes of vocal culture that one develop the external muscular bulk of a Hercules, but he is not likely to have the lung power and the desired chest development if he does not have at least a normal and vigorous body throughout. And just as the weakling must develop and round out his entire body before he can hope for anything like a living voice, so the possessor of an ordinarily good singing voice may greatly improve its tone, timbre and power by general methods of physical development. One would not expect good tone from a violin, the body of which is defective, no matter how well versed in musical technique the player might be. We should expect the instrument to be as perfect in every way as possible. In the case of the human voice, the instrument by which it is produced should be as perfect as possible, and physical culture is therefore an indispensable factor in vocal culture. This fact will be appreciated only when the student

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comes to realize that the vocal cords are not all of the instrument of voice. The entire breathing apparatus is concerned, as well as the resonance chambers of the head, throat and mouth.

In speaking here of the importance of a good chest development, it must not be understood that chest breathing is referred to, for that would be fatal to good singing. A full chest development is necessary not only to provide plenty of room for the lungs, so that there may be an ample supply of the residue air even after exhalation, but especially because of the function of the sternum or breastbone in giving resonance to the voice. It acts somewhat like the sounding board of the piano or a violin, and that is why good singers always have good chests. It does not matter how much force is used, for nothing but a weak voice can be produced with a sunken chest, whereas the tones will be strong and vigorous, and without effort, if the chest is full and robust.

Diet is also a most important factor in vocal culture for the very reason that, as already stated, the condition of the body and of the health has everything to do with good voice production. The vocal cords and the air passages concerned must be free from irritation and catarrhal disorders, and errors of diet have so much to do with such conditions that too much care in this direction cannot be taken.

It may be said in a general way that diet applies to vocal culture as it applies to athletics, namely, that what is best for the general health and the body as a whole is also best for the specific purpose in mind. There is no special food that is of exceptional value for the voice, except as it may be of exceptional value for the all-round nutrition of the body and for producing a pure and wholesome quality of blood.

If our throats and heads are foul with catarrhal discharges we have taken into our systems something that Nature does not want or too much of something she does want. Enlarged tonsils are often removed by surgery (fee $25.00), both operator and victim being in seeming ignorance of the fact that they are depurating organs and would not be enlarged

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had they nothing to depurate. Hoarseness, laryngitis and kindred ailments, the result of local inflammation, are, when not caused by overwork, signs of a wrongly-fed system—of stimulating, irritating foods long continued. No rightly fed person need fear them.

Unfortunately the singer is, no more than others, exempt from the tyranny of the M. D., and his supreme factotum, the specialist. He has been taught to believe that he must "take something" for his voice; he eats unsparingly of ill-assorted foods at ill-appointed times, along with his equally ill-advised friends, and relies upon the beguiling cough drop or other opiated dope for colds, coughs and hoarseness; he swallows two raw eggs, sucks a lemon and gargles with listerine.

At the very outset the first thing you must learn is that a clean system and a clear voice are not so much the effects of what you eat and drink as they are the happy consequences of your having *left out* of your diet those things which Nature does not want. In short, your aim must be to learn what, how and when *not* to eat—the search for "something to clear the voice" should be superseded by a careful, thorough self-denying elimination of those foods and drinks that clog the system and, consequently, the voice. And you will find that, after the eliminative process has been carried to its proper end, your diet will consist of just enough of good, pure food to rebuild the everyday wear and tear of functional processes and mental and physical activities; and such an amount will seem, in comparison with what you are now eating, ridiculously little.

Why Nature elects to use the mucous membranes of the throat and nasal cavities in excreting part of the system's accumulated waste and poisons is not so pertinent as the fact that she does. Certain waste matters find there their most ready exit and there Nature excretes them.

Colds affect the voice primarily at the throat; acutely as hoarseness, chronically as laryngitis. Pharyngitis (chronic sore throat) does not directly affect the voice, but may do so indirectly through inflammation of the soft palate, uvula and

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fauces, thus decreasing the size of the pharynx, which is a resonating chamber. Voices are most affected by hoarseness in the lower or chest registers. Thus bassos and contraltos are more completely disabled by it than are the higher voices. Be the hoarseness ever so severe the upper mixed tones and the head tones are not seriously impaired by it. If the cold be "in the nose" the nasal resonance is clouded or dead, and the tenor cannot "appear"; if "in the head" the soprano has lost her best tones and the brilliancy of her entire voice and must disappoint her audience.

Nature, if permitted, will, in an incredibly short time, remove your "cold," cure your hoarseness and restore your voice to its normal efficiency. If you continue without a halt the same habits which made the "cold" a necessary move of Nature the conditions become chronic and you have catarrh or laryngitis. If you continually take in superfluous or poisonous matter, Nature must, in order to save you, continually throw it off—you *must* have catarrh. Neither drugs, nasal douches nor inhaled medicated fumes will cure it. The mouth, having no excretory membrane nor glands, shows no inflammation during colds and catarrhal conditions and those singers who have been taught to force every tone to resonate "in the mouth" are least liable to disability from colds. Treatment for colds and catarrhal conditions will be found in other parts of this work.

A vitally important condition of good singing is an empty stomach, and one who is wise will never attempt to sing at any other time. The chief reason for this is obvious in the fact that the full stomach interferes with the perfect breathing and the control of the breath essential to good voice production. The diaphragm is hindered in its action, and this part of the body is generally so crowded that even the attempt to sing is attended with more or less distress. Furthermore, the voice itself is not so clear just after eating, unless one has eaten practically nothing. The work of digestion calls for such a large supply of blood to the stomach that the circulation in the throat is likely to be less active, and sometimes the voice is more or less thick

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or husky as a consequence, this disappearing with an empty condition of the stomach. One should not sing or use his voice for prolonged public speaking for at least four hours after a meal, and it is better to use it six or eight hours after. This plan is followed by practically all great singers.

The two meal per day plan is not only the best, but practically the only plan by which the professional vocalist may always appear "in good voice." It is not only the best plan for promoting the highest degree of health in most cases, but it permits of a perfectly empty stomach when singing in the evening. The arrangement should be that of breakfast and dinner at noon, rather than the no-breakfast plan with an evening meal. If the dinner is eaten at one o'clock or at any time in the early afternoon, the voice will be clear as a bell when the time comes for its active use. If any vocalist is in doubt upon this point, he will need to make only one experiment each way to find out what a wonderful difference this will make in his singing condition. It should also be said here that alcoholic beverages are particularly disastrous to the voice, producing a dryness of the throat which is fatal to tone production.

While speaking of the physical requirements of the voice, and its relation to the condition of the body, it may be said that a condition of warmth of the entire body is always favorable to good intonations. Perhaps in saying warmth we should have said an active circulation. But this is associated with the natural warmth of the body. If chilled, or still shivering from previous exposure, it will be impossible for you to sing or to speak and do justice to your voice, for it simply will not respond. Under such circumstances, if compelled to speak or sing in public, radical means of regaining the vigorous warmth of the body should be adopted, so that the circulation in the air passages will be active and the voice clear. The very best, indeed, almost the only satisfactory method in such a case, is active exercise, not only quickening the movement of the blood, but arousing such deep breathing as will also help to restore a normal state of all the parts concerned. Any calisthenic or tensing exercises in one's dressing room would answer the purpose,

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but the more active the better. Often a condition of nervousness incident to the prospective appearance in public will cause a dryness of the throat and a seeming paralysis of the organs of speech, but this also may be overcome by such exercise as will restore an active circulation. A good test of condition is the warmth of the hands and feet. If the hands are cold, something should be done to get them warm, not by external means, but by accelerating the general circulation of the body. I have known a speaker who upon finding his voice in a husky condition just before making severe demands upon it, made it a point to go out and run a hundred yards once or twice just before going on to be introduced. In this way, though breathing heavily as he stepped to the front, he managed to find his voice at its very best, clear, vibrant, and with that carrying quality that distinguishes the properly and easily made tone.

Such is the relation of the voice to the general condition and vitality of the body that the former may be regarded somewhat as a barometer of the latter. An athlete of my acquaintance was accustomed to judge of his strength and condition in this way. Upon getting up in the morning of the day of some athletic games, he was able to estimate very closely the running records which he would be able to accomplish upon that day, judging the state of his vitality by the condition of his voice. This is mentioned only to emphasize the importance of absolutely perfect health and a robust condition of body as fundamental to good vocalization.

The production of voice is accomplished by a truly wonderful mechanism. As every one knows, voice is produced primarily by the vibration of the "vocal cords," consisting of a pair of lips stretched across the air passage into the lungs, these lips being open in ordinary breathing, but being caused to vibrate by the escaping breath when drawn more closely together. These vocal cords, however, can accomplish little without the other parts of the instrument, including the breathing apparatus and the resonance chambers of the larynx, pharynx, mouth and the nasal cavity, which may be known more advantageously as the naso-pharynx. This initial sound

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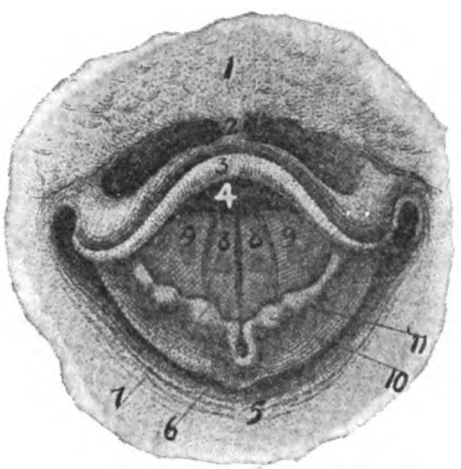
produced by the vibration of the vocal cords is a very faint one, but because of the fact that it is reinforced and multiplied by the resonance of these air chambers it emerges with the full sound of the voice as we know it. It is as in the case of the violin, in which the vibration of the strings themselves does not generate much sound, but in which the reinforcement of the sound by the air of the box, set in vibration by the vibration of the string, produces a round full tone that will fill a large building. It is also like the case of the trombone or other brass instrument, in which the sound is multiplied by the megaphone character of the end of the instrument.

The larynx is a cartilaginous cavity forming the upper part of the trachea, or windpipe, and it is in this that the vocal cords are situated, stretching across forward and back just under the epiglottis. There are nine cartilages in the larynx, three single, (the thyroid, cricoid and epiglottis), and three pairs (two arytenoid, two cornicula laryngis, two cuneiform.) These are all connected by ligaments and moved and controlled by a host of small muscles. The interior of the larynx is lined with mucous membrane. The thyroid is the largest of these cartilages, consisting of two alæ, each of which forms a side of the larynx, and when joined together these form a triangle, the apex is familiar to everyone under the name of the "Adam's apple." The cricoid cartilage, located just beneath the box formed by the thyroid, is not unlike a signet ring, with the important part, that representing the signet, behind. The "arytenoids" (The Greek for pitcher), are so



Photograph Showing Larnyx During Delivery of a Very High Note.
1. Roof of tongue.
2. Fold from tongue to epiglottis.
3. Epiglottis.
4. Inner projection of the epiglottis.
5. Wall of the pharynx.
6-7. Opening of larynx.
8. Vocal cords.
9. False vocal cords.
10-11. Small protuberances.

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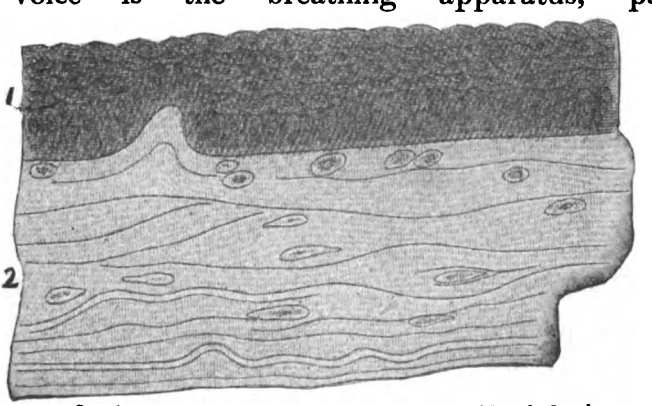
named because they resemble the mouth of a pitcher when brought together. They are small triangular bodies placed on top of the cricoid, in the upper part of the signet portion of the latter, and are important because they are movable and because the vocal cords are attached to them.

The larynx is the origin of the voice in all cases, and such terms as "head-voice" and "chest-voice" are somewhat misleading, for the vibration in all cases is generated by the breath acting upon the vocal cords. The so-called registers of the voice refer to tones of a like quality produced by the same adjustment of the vocal cords, and they should really be given names which describe them more accurately than "head" or "chest" voices, etc. The so-called "chest-voice" is produced by the vibration of the full length of the vocal cords, reinforced largely by vibration of the air in the cavity of the chest, while the "head-voice" or falsetto is produced by the vibration of only a part of the vocal cords, these being so forced together at their posterior ends as to permit only the open portions of the forward ends to come into play, the sound being reinforced by the resonance of the upper cavities, or in other words, the mouth and bony cavities of the skull. Those who think they "feel" their head notes coming from the forehead, or the back of the nose, are mistaken, for they all originate in the larynx.

Briefly, then, the power which produces the voice is the breathing apparatus, particularly the diaphragm, the vibration is generated in the larynx by the vocal cords, and the quality of tone after this depends upon the expansion and resonance of the upper air chambers,



Section of the Mucous Membrane of a Vocal Cord. (Very much magnified.)
1. Surface of flat cells.
2. Elastic fibers.

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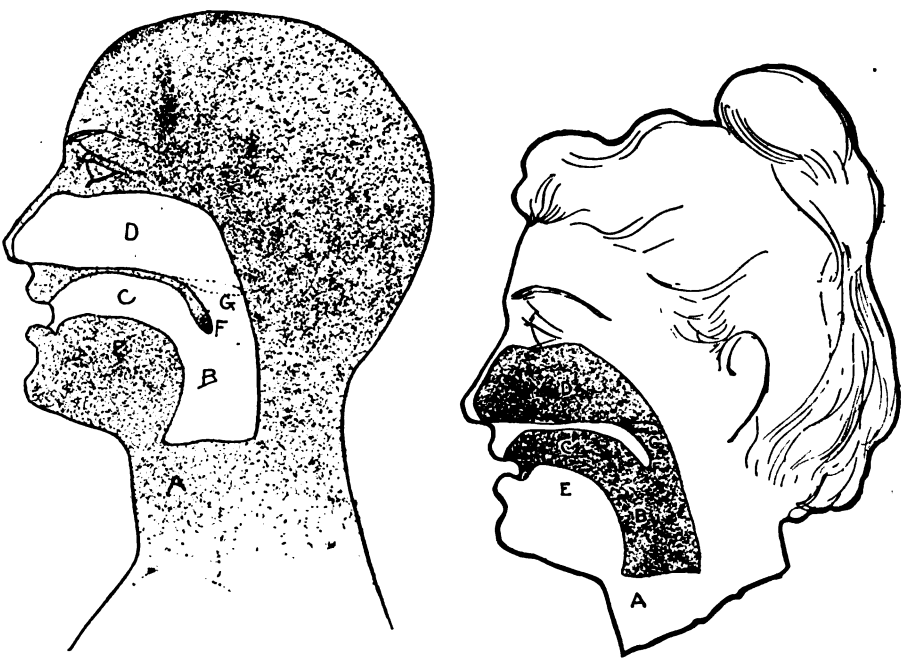
upon the manner in which the tone is directed past the teeth and lips, and to a certain extent upon the chest and its formation, as already said. The first, and all important factor, however, is the power and its control. Without this breath control, and absolute freedom in breathing, good voice production is impossible. The various breathing exercises which the physical culturist has been accustomed to will therefore be of great value in this connection, and if one has not yet made a practice of such breathing exercise, then I would refer him to the special exercises of this kind illustrated elsewhere in this work. But in taking such preparatory breathing exercises, I would ask that the student place his hands not only upon the stomach, in front of the waist, to see that it expands properly with inhalation, but in turns also upon his sides and also upon his back, to see that the expansion of the body extends to the sides and also backward in each inhalation. For only under such complete expansion of the body backward, sideways



Profile of head showing resonance spaces. B. Pharynx. C. Mouth. D. Naso-pharynx. F. Uvula in position for normal tone. G. Soft palate raised, cutting off resonance of naso-pharynx. E. Tongue. A. Point at which initial tone is formed. It will be noticed that in the cut at the right the resonant spaces of the pharynx and above the back of the tongue are entirely open.

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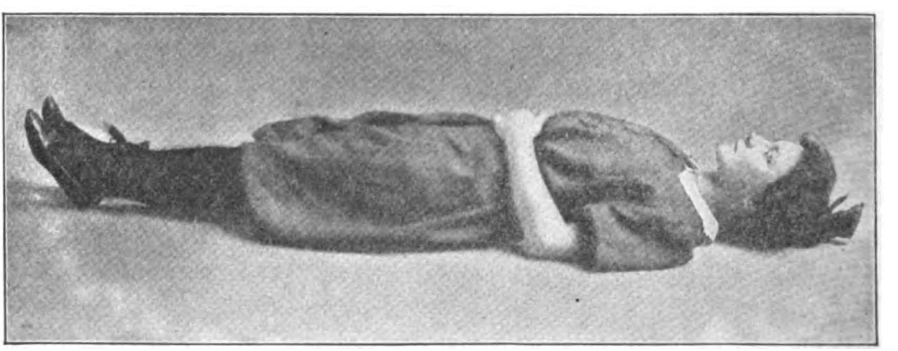
and forward, at the waist line, is the diaphragm acting correctly. This is essential to good singing and the breath control that it depends upon. And what applies to singing also applies to the correct formation of voice in speaking.

In addition to the ordinary breathing exercises for breath control, it is well to practice a special exercise for refilling the lungs in the momentary pauses permitted when singing or speaking. Under such circumstances, there is no time for the long inhalation through the nose. It must be through the lips, and is accomplished by a quick "gasping-like" action of the diaphragm. Having exhaled completely, fill the lungs almost in an instant with a gasp, expanding the body at the waist line only. The lungs will not be entirely filled, for this is not desirable for the best vocalization, but the deeper parts of the lungs will be supplied with air in this way. This should be practiced assiduously, until you can do this without any suggestion of strain or effort, and you will then never get out of breath either in speaking or singing.

Remember that it is not force that makes a voice powerful, but control of the breath. Violent expulsion of the breath cannot accomplish any good in giving volume to the voice, and can only strain the vocal cords. In all things connected with the voice, there must be no strain of any kind. It is often said that it is hard to sing, but this is not because there is any physical effort or exertion required. It is rather because of the mental difficulty of control, or the difficulty of restraining



A good position for first vocal exercises. Lie flat on the back and practice breathing, one hand over the stomach to see that the body expands at the waist line when inhaling, and contracts when exhaling, or as you sing your vocal exercise.

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the tendency to exertion or strain. Everything must be natural and easy, the only place where there may be any stress at all being at the waist, in the action of the diaphragm. But even this should not be appreciable when the muscles concerned are properly developed.

In order to acquire the general relaxation of the body, or as we would better say, the freedom from tension necessary for perfect tone production, it is well to commence the practice of breathing exercises and some vocal exercises by lying flat on the back. In doing so one hand may be placed over the stomach to assure yourself that you are breathing properly. After you can do these exercises, and especially the first vocal exercises upon the back without tension, then you may practice them in the standing position.

The position of the body is a most important one, and it scarcely needs to be said that an erect carriage of the body is the essential thing, though without strain. I would especially refer the student to the discussion of "Carriage" in Chapter V, on *Physical Training for Women.* The same general rules for carriage will apply in speaking and singing, except for the emphasis that there must be no stiffness or tension. For this reason the position of feet together is not recommended, but rather a position with one foot a little in advance, the weight resting upon the forward foot, preferably upon the ball of the forward foot. In leaning forward, the swaying should be done from the ankles. The chest should be well up and forward, the abdomen consequently restrained, but all this without strain or tenseness, so that the muscles about the waist may act freely. It is perhaps unnecessary to say anything here about the matter of dress or the use of the corset in women. It is obvious that any constriction about the waist, of any kind, must interfere seriously with the production of the voice. This proper position of the body is necessary for two reasons, namely, that the chest may be in a position to aid in the most perfect resonance of the voice and also that the breath may be properly controlled. Even in the expression of tones of great volume, very little breath is required.

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Having the physical foundation and health necessary for a good voice, having the proper position and the breath control, there remains the important matter of the placing of the voice, upon which the quality of the tone depends. This is a matter about which there has been much difference of opinion among experts, and about which entire books have been written in technical jargon. The importance of the question is indisputable, however, for every one knows that many beautiful voices have been ruined by methods taught by the most high-priced teachers. Surely, when one pays $6.00 a lesson for vocal instruction, he or she expects only the best results, but in some instances there is just as much danger of ruining the voice in seeking the tutelage of some such "master" in a far-away land as of going across the street and paying fifty cents a lesson. We cannot here take up the pros and cons of the placing of the voice, but wish to offer briefly the "first principles" upon which a good voice depends.

Muscular contraction of face, uplifting features, very common among singers. This tends to induce the contraction of the throat as well through sympathetic action of muscles and should be carefully avoided.

The complete relaxation of the throat and throat muscles is the one first and greatest essential of the perfect tone. Above all things, let there be no squeezing of the throat. Rigid muscles here are the cause of harsh tones in both speaking and singing. As we have said, the sound and the pitch originate in the larynx through the vibration of the vocal cords, but the timbre and quality of voice is determined chiefly by the resonance of the hollow spaces above. If these hollow spaces are unchanged, the tone will be natural, but any contraction of the

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muscles of these parts, and especially of those of the throat, will cause some of these spaces to close up more or less, and others to change their form, so that the tone will be anything but pleasing. These spaces must be kept open, and the first principle of good vocalization is to avoid making hard work of it, to avoid any exertion of any of the throat muscles, but on the contrary to keep them absolutely relaxed. *The pure tone is the tone that is made without effort,* and if your vocal instruction does not proceed in accordance with this fundamental condition, then there is something wrong. It is in this respect that a great many vocal teachers and pupils go wrong.

The expression of the face, with uplifted features, shown in illustration on page 1066, is a common one among vocalists, this muscular contraction of the face also inducing more or less contraction of the throat muscles, and rendering good tone impossible. By placing the thumb and fingers upon the throat very gently, feeling the "Adam's apple" and adjacent parts, this muscular contraction and also the movement of the thyroid cartilage can be sensed very plainly.

To make sure of the complete relaxation of all of these muscles, and thereby insuring the open and unchanged condition of the resonance chambers, the student should at first practice most singing exercises with thumb and fingers on the throat. To secure this relaxation most completely, it will help to relax all of the features of the face as well, letting the jaw drop loosely and assuming as much

Relaxed features, an aid to securing relaxation of throat and throat muscles, allowing resonance cavities to be open wide.

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of a drowsy expression as may be necessary for the most absolute freedom from tenseness of all parts. The illustration on page 1067 gives a good idea of the mental attitude necessary. In this position, sing a soft tone, without consonants—just a mere vocalization. There will be vibration, but there should be no rising of the cartilage, no tightness or contraction of the muscles. It may help you in this if you will remember that there should be no rising of the back of the tongue in the mouth, such as takes place in swallowing. After you can get this relaxation while singing simple vowel sounds, then you can proceed with other singing exercises. It is a mistake for anyone to try to sing songs without such preparation as is necessary to master the essentials of perfect tone production, and without a thorough course in such exercises as are offered here, together with plenty of practice in scales.

For helping to acquire this relaxation of the throat and also for developing resonance of the upper chambers, humming is an ideal exercise and should be much practiced every day. This should be started very softly, without any constriction of the throat, and gradually allowed to become a little louder. Practice humming in various keys. A very good exercise for the purpose is to imitate the sighing of the wind, with various fluctuations of pitch, since this is exceedingly effective for developing the resonance of the naso-pharynx. Practice other humming exercises with mouth closed and with it open. Say the syllable, "ing," a humming noise that should come out of the nose on the breath, which may be felt slightly by the fingers placed under the nostrils. Place the thumb and forefinger upon the bridge of the nose in this exercise so that you can feel the vibration in the nasal chambers and be sure of executing it correctly.

To avoid throatiness one should avoid the feeling that he is singing in his throat. The ideal tone is that which proceeds unimpeded through the open spaces of the larynx and mouth and is directed forward against the hard palate in the upper forward part of the mouth, or, as one might say, toward the upper teeth. One should think of this in singing his exercises

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until he has so thoroughly established this forward placing of the voice that he will continue it naturally and without further conscious thought. One of the most perfect of all exercises for attaining this forward placing is the practice of singing the word "Noon." This will naturally bring the voice forward as desired. It should then be varied by singing, "nan," "neen," "nahn," etc.

No attempt at the use of consonants should be made until after one has mastered the singing of pure vowel sounds, and these should be sung with mouth open freely, but without the strain that comes from forcibly opening the mouth too wide. The broad "a" (ah) sound will require the mouth well open. Instead of practicing the pure vowels without consonants, however, it will usually help in the proper forward placing of the voice to use the consonant "l," and always making sure that there is no constriction of the throat or tightening of the muscles there. It must not be hard work, except in the way of mental application, and the less mental stress the better for the bodily control. It is best in the beginning to practice only a few minutes at a time, and perhaps several times each day. Sing on the various notes of the scale, accompanied with chords on the piano, if convenient, "La," "Lay," "Lee," "Lo," "Loo." It will also be well to vary this by changing the vowel sound all in the same tone, as "La-a-ee-o-oo." Following this may come other singing exercises of the same character, as taught

Correct standing position for singing or speaking, weight on forward foot. Practice of humming exercise with fingers on bridge of nose to feel vibration of nasal cavities.

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by instructors of the Italian method, or similar methods, together with scales, etc. Up to this point, however, the suggestions given here are just as valuable for those studying to improve the voice for purposes of elocution, public speaking or pleasing conversation.

There is one exercise that is especially to be recommended, both for breath control and for assurance in regard to the necessary ease of tone production. That is the practice of sustaining a tone on one breath for some time, and can advantageously be practiced in conjunction with a piano. Time yourself with a watch, take a fairly good breath, but not a forced one, strike a chord and sing the tone, "Ah," or any other vowel desired, or varying the vowel if preferred. The tone may also be varied in volume, for both loud and soft tones should be made with the greatest economy of breath, or, in other words, with the strictest breath control, holding it as long as comfort will permit, and then, after two or three intervening breaths, repeating the exercise on the next note up the scale. In this you should sustain each note from twenty to forty seconds, though it is not unlikely that before long you may sustain each note for more than one minute on the same breath. However, you will then be sure of breath control and of ease in vocalization, and the voice will roll out in all its fullness and resonance.

The prospective public speaker need not practice all of the above exercises for his own special purpose, but it will help him greatly in the cultivation of his voice if he will do so. The fundamental principles of good tone in singing will also apply to the good speaking voice, both as regards the necessity for a foundation of physical vigor and health, good position, the control of the breath in the region of the diaphragm and the placing of the voice, with the imperative relaxation of the throat in speaking. The public speaker should not place any strain upon his voice in the attempt to be heard, and especially not when out-of-doors. He should rather depend upon the proper formation of his tone and its consequent carrying power. He should not pitch it too high or too low for

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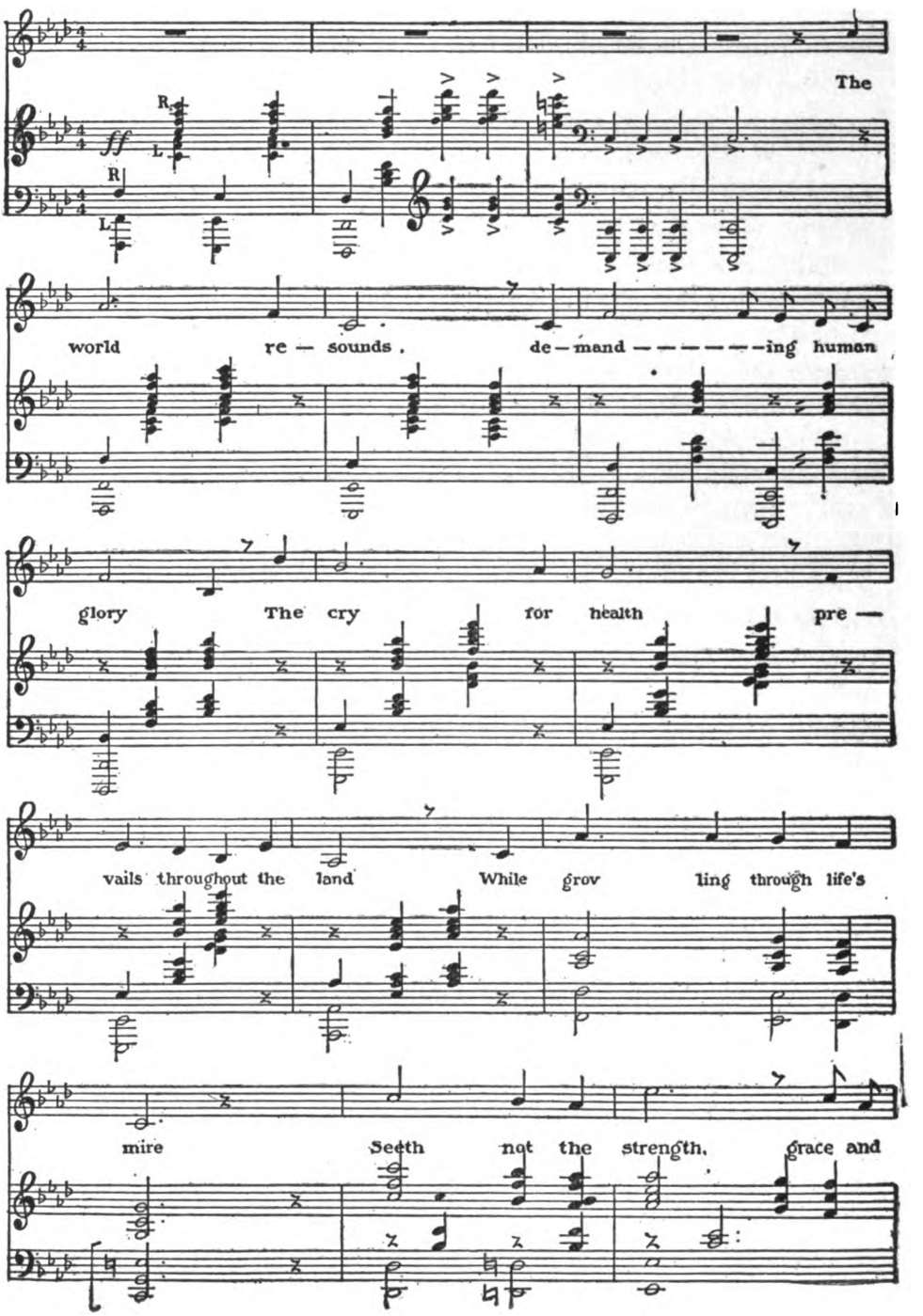
MANHOOD GLORIFIED

SONG

Words By
Bernarr Macfadden

Music Adapted By
Bernarr Macfadden

Maestoso

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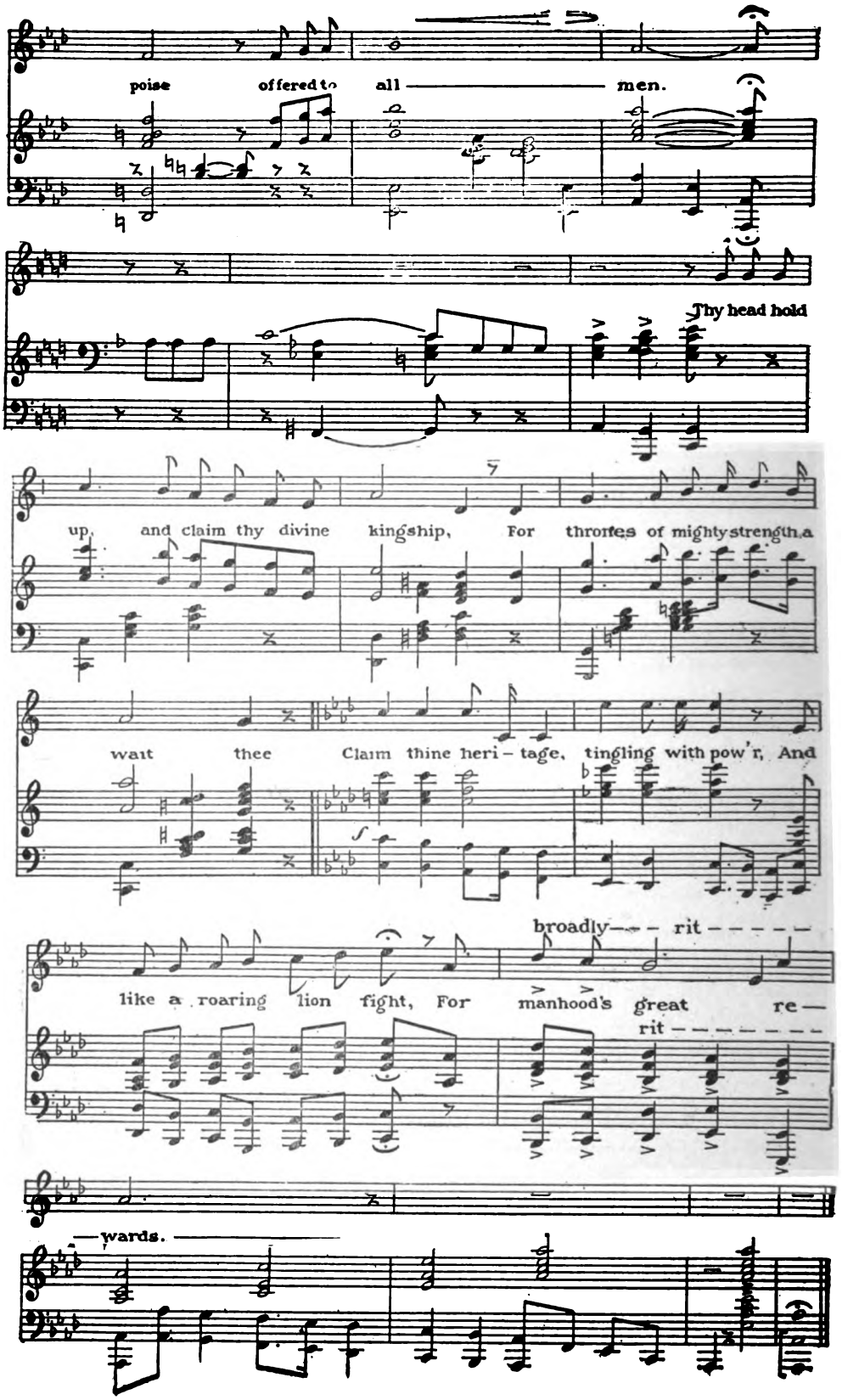
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effectiveness, for this will mean strain, and in most cases the very tightening of the throat muscles which it is most important for him to avoid. The public speaker should stick to his own natural voice, and should avoid trying to imitate other voices, or to adopt at different times a different register for the sake of contrast and supposed oratorical effect. Sincerity in delivery will always go farther with any audience than these attempts at oratorical effect. A good orotund voice, clear and vibrant, is the best for public speaking. The best orator of the present time is he who does not seem to employ oratorical tricks to catch the emotions of his audience, but who seems only interested in the presentation of his unanswerable logic, who invites you to "think" rather than to be moved, and who leads you to think with him. The ideal voice for the purpose is one that seems natural and is natural, which sounds loud to those far away because of its carrying quality, but does not seem loud to those near the speaker.

Reading out loud a certain length of time every day is an invaluable exercise for the prospective public speaker, but it is imperative that he observe the proper position in doing so, in which case he will be able to read aloud for hours at a time without strain. It is all a question of the proper use of his voice. For this reason I would advise against trying to read aloud when sitting down. It is not only for the sake of avoiding the strain upon the voice at the time, but for the sake of not forming bad habits in regard to position and breath control. One should stand erect, with chest well up, though comfortable, so that the power of the voice may come from away down, with always plenty of reserve power behind it, if it should be necessary. After one has tired the voice by reading in a seated position, he may then continue to read in a proper standing position and be surprised to see how his vocal organs have shaken off their strain and fatigue. Such activities as "rooting" at a baseball game, giving the college "yell," and other allied abuses of the voice are very harmful. One should use a megaphone on such occasions and remember the necessity for the proper position and the use of the breath.

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While the subject of vocal culture cannot be treated here as fully as in a book on the subject, yet some of the vital and fundamental factors of good voice production are suggested in the foregoing pages, and will doubtless be of value in connection with personal instruction from teachers.

I am presenting in connection with this chapter (on page 1071) a song that I recently composed. I was very much impressed with Beethoven's "Creation," and after singing it for some time I thought that if appropriate words were adapted, it would make a splendid physical culture song. I provided some words to suit the harmony of this composition, but afterward found it advisable to make some slight changes in these words and of adapting a new air to accompany them. The song, as it now stands, has not the jingle that would perhaps gain for it popularity; it has not been written for that purpose. Rather is it intended for those who have given considerable time to vocal culture and who can put unusual feeling into their vocal efforts.

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CHAPTER VII.

WHAT IS DISEASE?

APPARENTLY this is one of the easiest of questions to answer. Almost any man would say that he could tell you what disease was in comparatively few words, and yet, when one considers it in the light of the theories propounded by the various schools of science and medicine, it seems to become one of the most difficult of questions. For no sooner is an answer given than new questions spring forward, each one apparently more difficult to answer than the preceding one.

The fact is, it is not necessary for us to know all the various theories and ideas that men of science hold in regard to disease. It is wiser and better that we devote our attention to a study of the conditions of perfect health and seek to attain these, with their consequent happy results. At the same time, it is well briefly to survey the field of scientific thought as to this question, and then endeavor to eliminate the mystery and consequent dread that make disease such a terror to the afflicted.

One authority states that "any departure from the normal performance of the natural functions is defined as disease." Webster says: "Any state of a living body in which the natural functions of the organs are interrupted or disturbed, either by defective or preternatural action, without a disruption of parts by violence which is called a wound."

These definitions imply that one understands what is the normal performance of the natural functions. Without any attempt at detailed accuracy, it may generally be stated that that exercise of the functions of the body that is accomplished perfectly without discomfort, distress or pain is a normal performance. For instance, the person, be he young or old, who sees perfectly with both eyes, and without strain or distress, objects that are close by, and objects that are at a distance, and recognizes all colors and forms readily, may be said to have normal eyesight. The man who breathes naturally and easily, whether at rest or during any reasonably violent exer-

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tion, and continues to do so year after year, may be said to have lungs and breathing apparatus that normally perform their natural functions. That person who continuously and regularly finds the excretory canal in perfect working order, without constipation or looseness, or any irritation in either stomach, bowels or anus, is undoubtedly enjoying the normal performance of the natural functions of excrementation.

Everything that deviates from these normal functions is what is meant by disease.

You go to a man suffering with a severe cough, great expectoration of phlegm, and with pain in his lungs. Ask him the question: "What is disease?" He answers: "I am diseased, for I suffer." You go to a physician and he tells you that that man is suffering from the disease called tuberculosis.

You see the child walking down the street, his hand to his ear, crying bitterly. You ask his mother what is the matter. She says he has the earache. That is an acute disease, giving intense pain for the time being, but which quickly disappears if intelligently treated.

You see a highly strung woman suffering from hysteria. She will tell you that that is a disease that afflicts her constantly, and that makes life unbearable.

Each of these persons thinks he has answered the question: What is disease? But immediately the mind asks: Are these not merely the statements of *manifestations* of disease? These are merely symptoms. What is the disease itself? How is it caused? Why is it caused?

If one could tell, as a result of microscopic examination, the peculiar condition of the organ and of its component parts that are the seat of the pain, even that knowledge would not satisfactorily answer the question.

Yet what a real thing disease is, and what awful power it manifests in human life.

Every one of the hundreds of thousands of physicians in the land—physicians of every school, allopathic, homeopathic, osteopathic, hydropathic, electric, eclectic, and the so-called new thought, mind cure and faith cure—is a proof of the terri-

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ble hold disease has on mankind. Nor can it be ignored that in the numerous Christian Science churches—magnificent architectural structures—is to be seen another proof of organization to eliminate the horrors of disease. Every hospital, every sanitarium, every medical school and college, every drug store, speaks loudly of the power of disease. Think of the hundreds of thousands of people, from the chemist to the laborer, engaged in the making and dispensing of drugs for medical purposes. Think of the millions of dollars expended every year by the makers of nostrums, or so-called quack medicines, for advertising their nefarious wares. The newspapers of the country receive annually millions from this source, and one cannot move in a city or country but monster bill-boards thrust their announcements of these deceptive wares before his eyes.

What is disease? Go to the thousands of hospitals scattered throughout the land and ask the poor victims of its ravages, rolling and tossing on beds of pain, whose days are one long anguish, waiting for night, and whose nights are one long prayer for morning.

It makes the mind dizzy and the heart thrill with sympathy, that at once discourages and appalls to contemplate the dreadful varieties of awful manifestations that disease presents. Go from ward to ward, and cot to cot, and see the victims of disease writhing and burning in the grasp of such fevers as typhoid and typhus.

One absolutely grows sick at heart as he thinks of endeavoring to set before an intelligent mind the diverse manifestations of this fell monster, disease. Its manifestations are protean. As soon as you have become familar with what you think to be all his appearances, by a flank movement he brings another army of horrors before you, and when these have been studied and you are about to lie down to rest, he marches before you, with fife and drum, another regiment, and these different regiments we designate in general terms, such as "Nervous Diseases," "Diseases of the Respiratory System," "Diseases of

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the Heart and Blood Vessels," "Infectious Diseases," "Diseases of the Digestive System," "Diseases of the Thyroid Glands," "Diseases of the Urinary Organs," "Constitutional Diseases," "Diseases of the Muscular System," "Diseases Caused by Animal Parasites," etc.

One cannot pass away from this subject without a brief reference to the varied forms of insanity. No one who has visited an insane asylum and has been allowed to see all the manifestations that diseases of the mind take but has been thrilled with horror, and absolutely weakened by the overwhelming power of the sympathy that has arisen within his heart. Excitement of the highest degree, ravings, yellings, shriekings, tearing of hair and clothes, howlings, cursings, with the wild vagaries of hallucinations, and all the way down a long gamut to the fearful horrors of despondency and melancholia.

No wonder that the very thought of disease brings terror to the human heart; that it seems the most mysterious and dreadful scourge that can be visited upon human nature.

Hence it will be seen that disease is the unquestioned curse of civilization, swallowing up the peace, happiness and comfort of a large part of the lives of hundreds of thousands of people, demanding a tribute of millions upon millions of money to combat it, requiring the best energies of thousands upon thousands of educated and cultured men of the world to fight against it, and thus depriving humanity of the happiness and usefulness of not only its victims, but of those whose time and energy are expended in overcoming its dreadful ravages.

If diseases were of such a character that scientific men were absolutely agreed as to the various symptoms they present, and they knew absolutely what and how much of a certain drug to administer to get rid of that disease, we would not so severely condemn their theories and methods. But what are the facts? We find, and they openly confess, that their theories as to what disease is and how to combat it are as diverse and chaotic as it is possible for them to be, and their many and diverse schools of medicine clearly attest this fact.

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Take, for instance, *allopathy,* which is the name given to the old-fashioned system of curing disease by *strong* doses of drugs. The word itself explains the theory and practice of its followers. It is made up of two Greek words, *allos* and *pathos,* the first signifying *another,* and the second, *suffering.* As Webster defines it, it is "that method of medical practice which seeks to cure disease by the production of a condition of the system either different from, opposite to, or incompatible with the condition essential to the disease to be cured." The theory of the allopathist, therefore, is that the way to remedy a disease is to produce a contrary or warring disease in the same body, that will be powerful enough to nullify, destroy or drive out the first disease.

Now, how is this to be done?

First of all he must determine what the disease is. This is called making a diagnosis. With a perfect science there should be no real difficulty in accomplishing this. But experience demonstrates that in many cases ten different physicians will make as many different diagnoses.

Let us, however, suppose we have gone to one physician, enumerated the symptoms of our trouble, and he has diagnosed the disease. He is now ready to treat it. What is his method?

The allopathic physician has a list of drugs, how many hundreds or thousands, the layman can readily understand from the vast number displayed in the drug stores. Yet these are only a small proportion of the great whole. He also has a book called the "pharmacopœia," which contains a list of drugs that the profession recognizes, and the doses that are to be administered to produce the effect desired.

Having diagnosed the disease he now prescribes one or more drugs, to be administered in a certain form, and so often. This is his chief work. He asks a few general questions about appetite, the action of the bowels, etc., and gives a few general directions—that too often amount to nothing—and then leaves the drug or drugs to do the rest.

How does this dosing system actually work out in daily practice? Here are two persons suffering from the same

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symptoms: One is a child a year old, feeble, delicate and very susceptible, the other a man of rugged frame, of great physical power, "as strong as an ox," and no more nervous or refined than the ox. In each of these cases the judgment of the physician is left to determine, first, the particular drug he shall use—for it must not be forgotten that there are often a score of drugs all said to possess power in combating this particular disease; second, whether it shall be mixed with any other, or how many other drugs; third, the amount of the dose, and fourth, its frequency.

It must also be remembered that we have to presuppose the physician's diagnosis to be correct. He now administers the dose.

What is the result?

Is it any exaggeration or untruth to say that in hundreds and thousands, nay, millions of cases each year the results are not what were expected? And how could it be otherwise? As we have shown in an earlier chapter, the whole "Science" is based upon guesswork, and the cleverest guesser is the best physician. Instead of following rational and natural methods the allopathist seeks to produce another and warring disease in the body of the patient, and thus hopes to free him from all disease. How absurd and ridiculous when looked at from the clear standpoint of unprejudiced reason. The fact that one may describe the same symptoms in exactly the same words to ten different physicians, and each one will diagnose the disease as different from each other, and each will prescribe a different drug for its cure, should lead thoughtful and intelligent people to place no reliance upon the guesswork system by which the ordinary drugging physician is controlled.

While we would not have it thought for one moment that we universally rail against all men of the medical profession, for we recognize that many of them, no matter how mistaken they are, are men of the highest integrity and honor, yet we know it has been almost the universal fact that physicians, when consulted by prospective patients, have made it their practice to throw all the air of mystery possible around the case, using

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long and incomprehensible words, declaring that it was a most difficult case to handle, and thus adding the fear and terror of the unknown and mysterious to be combated by the already frightened sufferer.

Now come the homeopathists and present their claims and theories. Webster defines homeopathy as "the art of curing founded on resemblances; the theory and its practice that disease is cured by remedies which produce on a healthy person effects *similar* to the symptoms of the complaint under which the patient suffers; the remedies being usually administered in minute doses."

Here then we have the very opposite of allopathy. The homeopathist tries, by drugs, to produce in the patient the very symptoms his disease shows, while the allopathist seeks, by drugs, to produce opposite symptoms.

Apparently the fundamental theories upon which homeopathy is founded are just as misleading and unstable as those advocated by allopathy. It must be admitted, however, that homeopathic physicians in general have made a decided step in advance in getting away from the strong drugs used by the allopathic physician. The minute doses of sugar-pills cannot possibly have the same deleterious effects inevitably produced by the strong drugs used in allopathy.

Both allopathists and homeopathists are firm advocates of the "germ" theory of disease, and both schools have instilled terrible fears in the hearts of humanity by the frightful stories they have told of the ravages of these germs upon the human system. Yet what does common sense and reason affirm? Do they not clearly show that if there was anything in their theory every inhabitant of our larger cities would cease to live within six months. The average dweller in a city during the day will breathe millions of disease germs. You will often find the air in the New York subway, for instance, so thick with germs you can almost taste them. Now if there was anything in the germ theory, the employees of those various enterprises where thousands of people congregate would soon fall victims to some serious disease. But there are no manifestations of this nature.

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By this we do not mean to affirm that the microscope does not reveal germs in human organisms. But what we wish to emphasize, with all the power we possess, is, that the *healthy* man or woman need no more be afraid of disease germs than of the man in the moon. The healthy organism has no place for them. They can get no foothold, nor, if by accident they do happen to lodge in the healthy human body, can they find any nutriment. The result is, they die or are immediately expelled. Hence the medical profession has done a cruel, wicked and heartless thing in filling the hearts of humanity with dread of these germs.

Fear is in itself one of the greatest causes of disease; indeed, it is worse than disease, for it destroys the peace of mind that alone makes life worth living. No healthy person need ever be afraid, whether it be of contagious disease, parasites, or germs. We affirm with the greatest assurance that the universal dread of germs is unnecessary, injurious, untrue and therefore unscientific and the sooner we are rid of this foolish fear the better will humanity be.

We now come to consider the claims of the *osteopath*. Webster says osteopathy is "a form of treatment based upon the scientific manipulation of the bones, supplemented by other manual manipulations, with the idea of restoring, facilitating, or improving the functions of the body." In other words, osteopathy tells us that disease is due to lesions of the spine and that the removal of these defects will in all cases remedy the disease.

This I believe to be at least partially true. The lesions in the spine may be the cause of some disease manifested in some other part of the body, but we are also assured that the spinal lesions are often caused by trouble elsewhere.

Yet our own experience has demonstrated that there is much practical usefulness in osteopathy, no matter what the theories are, and we firmly believe that it comes more near to solving the problems presented by disease than either of the older schools of medicine, which, by the way, is not saying very much. It is, however, a step in the right direction. It objects

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to creating either "warring" or "similar" diseases in the body of the patient.

Thus far, therefore, we have no conflict with it, but, as I shall clearly show later, it does not go far enough. We do not believe in the naturalness or efficiency of the "neck cracking" treatments that are often administered by osteopaths. There may be some necessity for these extreme measures when there is actual need for spinal adjustment, but when otherwise the stimulation of the spine can be accomplished without the "cracking" process. We have a case on our hands at this writing where these severe measures in spinal adjustment have apparently bruised the nerves issuing from the parts of the spine that were so treated, and though months have elapsed since the treatment was administered the patient is still far from well. Intelligent treatment is resulting in gradual improvement, and final and complete recovery may be looked for, but it was an emphatic lesson of the possible dangers of these extreme methods.

The *electric* practitioner believes that the potent force of the body is electric, and that, when a person, through disease, is unable to absorb or generate sufficient electric force to exhibit the exhilarating health described in Chapter I of Volume I, this lack of electricity may be artificially supplied.

As this whole matter is a pure theory, though patients do express some feeling of satisfaction in many instances after receiving artificial electric currents, we have nothing particularly to say either for or against it, though it is an interesting fact to note that the practitioner in America, who, today, more than any other physician, uses artificial electricity on his patients, is himself such a perfect dynamo of electric energy, *naturally absorbed or generated,* that he never goes near one of his own machines for generating it. This demonstrates our belief, namely, that the person who lives properly, in accordance with hygienic principles, needs no artificial electricity. It might be well to mention that numerous cases have come to us who have maintained that they were injured by electric treatment. Electricity is a powerful agent, and the results of

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its improper use would unquestionably be seriously destructive. And remember that little or nothing is known of the nature of electricity and therefore it is easily possible to make dangerous mistakes.

Then comes the *eclectic* physician. He is one who believes in "selecting"—for *eclectic* practically means *selecting*—from the methods and medicines of all schools, and combining or using them as he chooses. He, therefore, has the widest kind of latitude and may be a most useful aid to natural healing and development of power, or, on the other hand, a retrogressive practitioner of the most dangerous class.

We have not yet referred to the *hydropathist.* He is one who "follows a mode of treating diseases by the copious and frequent use of pure water, both internally and externally." "This system," says Webster, "is said to increase the cutaneous exhalation to a very large amount, and thus to draw off speedily from the blood certain deleterious matters." Hippocrates had a practical knowledge of the beneficial effects of hot and cold water in the treatment of disease, and many of his directions have not been improved upon in two thousand years. From his day to this, water, hot and cold, applied internally and externally, has been used as an aid to the body to rid it of the poisons and deleterious substances which cause the symptoms we term disease. We believe thoroughly in the science of hydrotherapy—the modern name applied to this method of treatment. We use it constantly, adding at the same time hygienic care in diet, fresh air, sanitation, etc., and, more particularly, the development, by Physcultopathy, of a body strong enough to eliminate all poisons, resist the encroachment of all germs, parasites, etc., and thus free from the possibility of ordinary disease.

We now come to a brief consideration of New Thought, Mind Cure, Faith Cure and Christian Science, in their relation to disease. As all of these systems deal with the body only through the mind, and steadfastly abstain from the use of drugs, we have nothing to say against them. We believe it possible to carry some of their principles to extremes, but no matter

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how extreme their adherents may be they cannot suffer more from their trust in their own mentality, in the God they worship, or in their belief that God is all in all, and mortal man a temporary illusion, than have the victims of the older systems of medicine. We deem this subject of such great importance, that in a succeeding book, my readers will find a whole chapter devoted to our ideas as to the power of the mind over the body and its diseases.

We have thus, in a broad and general manner, discussed the various and conflicting theories of disease and methods of combating it. Before presenting our own thought and methods we desire to call attention to a few practical considerations that should not be overlooked.

At the outset we believe it will be generally conceded that there are few indeed who enjoy that perfect and abounding health described in the preceding chapter, and that there are but few who are not familiar with disease and its consequent pain in one form or another. Is it stating the matter too strongly to affirm that to the generality of mankind disease is the thing dreaded most of all, and to the suffering, the most insistent thing in life? Few people can rise above the immediate ravages of disease and pain and continue their daily vocations as if they were in perfect health.

Yet, in spite of the apparent dominant power of disease, it is our mission to come to the afflicted sons and daughters of man with the most perfect encouragement and hope. We wish, in all earnestness, sympathy and conscientiousness, to help remove this fearful dread of disease on the part of humanity, and implant in its stead an assurance that disease is unnecessary and abnormal and therefore preventable and curable.

Whatever may be the extent of our lack of knowledge as to the exact nature of disease, there are many things of which we are sure. We know that certain courses of action will positively produce some form of disease. For instance, a man may be in perfect health. Let him, however, shut himself up in a badly ventilated room, refuse to go out of doors, refuse to exercise, and at the same time persist in eating three heavy meat

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meals per day, mixing up the meat with every other kind of food given in the ordinary first-class hotel dinner. Does it need any great medical knowledge to know what the result will be? Let a man refuse to sleep for a month; what will ensue? Or let him drink whiskey and smoke strong tobacco from morning to night! Or shut himself in an absolutely dark dungeon for a few months! Or indulge to excess in running, or, as the Sacred Writer puts it, "squander his strength on women." Every man knows that these things are bound to produce distress, discomfort, disease, and that if the evils are persisted in the disease cannot eliminate the poisons that have accumulated in the blood and body, and death ensues.

Seeing, therefore, that certain courses of action are injurious to health, it is natural and rational to assume that there are other courses which are beneficial to health. We study the lives, the daily actions and habits of those men and women who live in perfect, or almost perfect, health and what do we find? Almost invariably that, in one way or another, they follow, consciously or unconsciously, the pathway that we have marked out and set forth as the pathway of Physcultopathy—the method of cultivation of the body. Thus, therefore, we come naturally to a consideration of the Physcultopathic standpoint in relation to health and disease.

At the very outset we wish to call attention to the marked difference that exists between the principles that govern the various schools and theories of medicine and the school of healing we call Physcultopathy. The former deal with disease; they fight, combat, struggle against the evil. Theirs is a warfare to overcome an evil. On the other hand, our philosophy and methods are positive. We seek to establish health. We make health the habit of the body and mind, and where health is there is no room for disease. We cannot emphasize this point too strongly upon our readers. Get HEALTH, abounding, vital, exhilarating Health, and disease will flee away from you as the darkness of night flees from the powerful rays of the morning sun. Health, Life, is opposed to Disease, Death. The average individual merely exists. He does not *live* in the

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true sense of the word, and when the question is propounded, "Is life worth living?" he has good reason for hesitating before making a reply. If you are *living* in every sense of the word; if you know the meaning of health and strength of the highest degree; if you have been fully, completely developed, you are all the time thrilled with the pleasure of mere living. Living to you is beautiful; you are full of strength; you have a surplus supply of vim and energy. You are in complete possession of manhood or womanhood. When you possess such a power, an irresistible force presses you onward. Your pleasures come from activity. You are active because you love it. You work because you find pleasure in it, and disease has no dread for you, for, knowing its impotency to harm, you are filled with self-confidence. You know there is no need to worry, no matter what disease may threaten you. You can be self-composed; you can say to yourself, "I fear no disease, for I am so strong that I cannot be attacked by disease."

In approaching the consideration of disease from the Physcultopathic standpoint, there are two most important ideas that we wish to advance. These are, first, that, in the main, *there is but one disease,* and, second, that *disease is a beneficent process of nature instead of the enemy it seems to be.* Let us endeavor fully to elucidate these two propositions, which to many will be positively startling.

1. There is, in the main, but one disease. We do not claim infallibility for our opinions, and this is merely a strong opinion, as the result of a careful study of thousands of cases brought under our immediate notice, and of all the theories of diseases and medicine propounded by the many and various "schools." Notice, also, that we say "in the main." Naturally, all diseases caused by accidents, such as fire, falling from high buildings, partial drowning, wounds made by knives, gun shots or some other method outside of the body, the taking of poisons, the presence of animal parasites, etc., do not come under the general category.

Hippocrates, often called the father of medicine, held to this idea, and it is that disease exists merely in the fluids of

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the body; in other words, it is *impurity of the blood.* This disease may manifest itself in hundreds of different ways. There may appear thousands of symptoms. Medical men have named these various symptoms and they have been classed by them as different diseases (we have already named many of them), but they are all the result of one disease. Practically every advocate of natural curative methods believes there is but one disease and that disease is impurity of the blood.

Blood may be made impure in a thousand different ways, and these ways will be fully discussed and presented in our chapter on "The Causes of Disease," and elsewhere; but, in brief, it may be stated that the various organs that have to do with the making of this vital fluid have certain functions to perform. If these are interfered with, or disturbed, the work is improperly, imperfectly accomplished. This results in the retention in the blood of certain poisonous or deleterious elements or substances which should not be there. If the eliminating organs are unable to do their important work, and the impurities remain and pass into the circulation, disease—discomfort, distress, pain—sooner or later ensues.

2. This latter fact now leads us naturally to our next proposition, viz., that disease is a beneficent process of Nature, instead of the enemy it seems to be. If there were no discomfort, distress, pain, there would be no warning given to the poisoned man that his body was diseased, and in a shorter or longer period death would ensue as the result. But the pain gives forceful warning. It calls his attention. It says, Halt! There's something wrong here! Remedy these wrong conditions or there will be greater trouble! And the speedier the warning is heeded, and the cause of the trouble removed, the sooner is the disease cured. Hence, is not our second proposition apparent, that "Disease is a beneficent process of Nature, instead of the enemy it seems to be"? In other words, disease is the endeavor of the body to get rid of that within itself which, if retained, will cause worse disease, or more or less speedy death. It is the sign-board at the railway crossing, the ringing of the bell, the beacon of the lighthouse that warns from the

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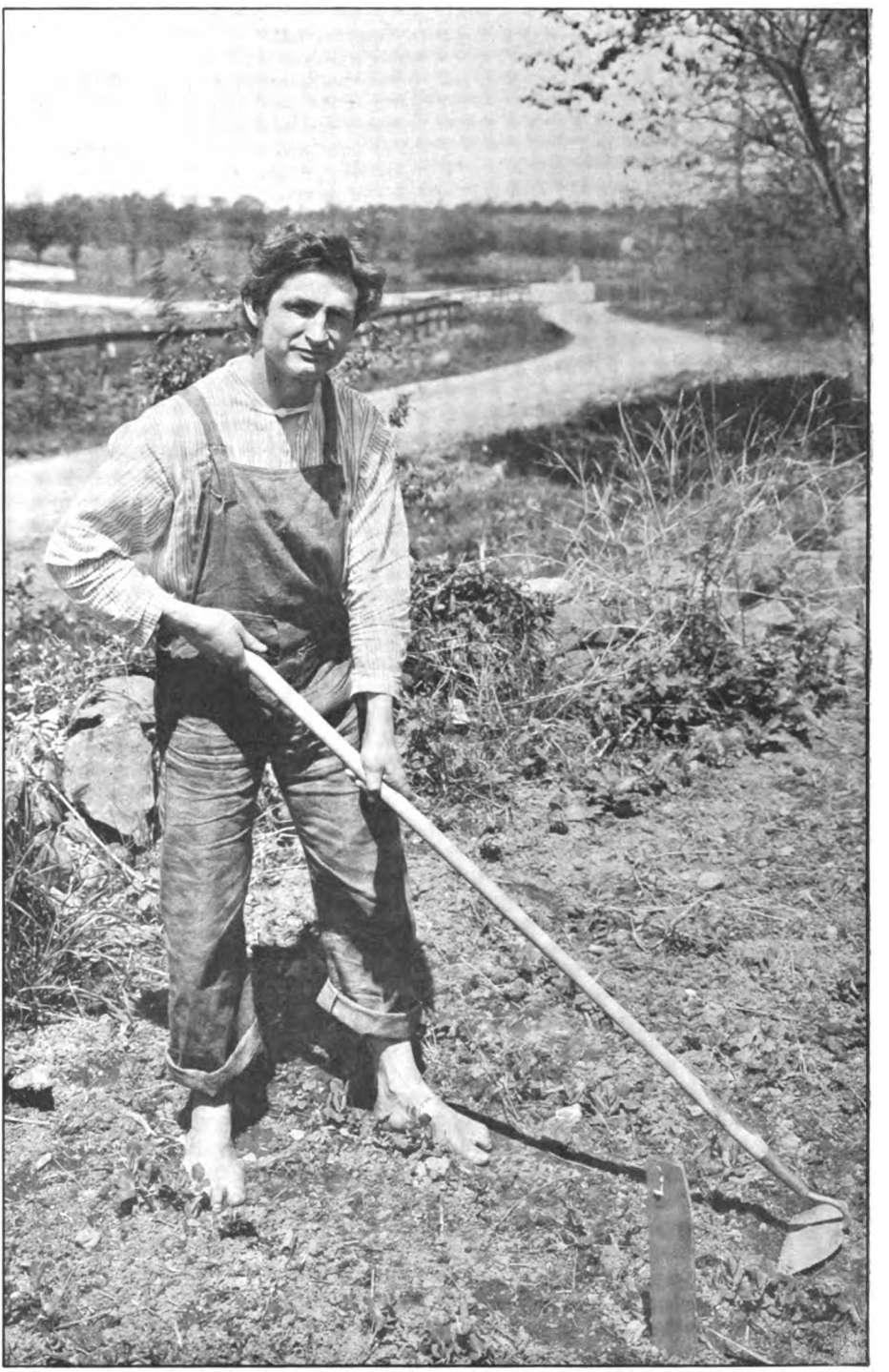

The simple life is the healthful life—this photograph shows the editor of this volume getting close to nature.

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destroying locomotive, the sunken reef, the rocky shore, that would otherwise dash you into constant suffering or a speedy death.

That I am not advocating a mere notion of my own in thus emphasizing what I believe disease really to be, let me quote from an address recently delivered by Sir Frederick Treves at the Inaugural meeting of the Edinburgh Philosophical Institution. Sir Frederick is an eminent personage in the medical world. He was Surgeon-in-Ordinary to King Edward of England from 1901 to the time of his death. I quote his exact words as cabled from England to the New York *Herald:*

"In the popular view," he says, "it is held that disease is a calamity, that its end is destruction and that it is purposeless, except in one direction—that of doing harm.

"Popular terms bear testimony to the prevalence of that belief. A man is said to be 'struck down' by disease as by the avenging angel. It seizes upon him as does a roaring lion. It consumes him as does a fire. The attitude of the medical man towards disease is that of an opponent to deadly influences.

"He has to combat an enemy to mankind whose every movement is dark and malicious. There is no symptom of disease that is not believed to be noxious and, as such, must be stamped out with relentless determination.

"If the patient be ill, the illness must be stayed. If he coughs, the cough must cease. If he fails to take food, he must be made to eat. And why? Because there are manifestations of disease and, therefore, of ill intent and to be banished.

"I hold that there is nothing preternatural in disease; that its phenomena or symptoms are marked by purpose and that that purpose is beneficent.

"Disease is one of the good gifts, for its motive is benevolent and protective. I cannot express that more precisely than by saying that, if it were not for disease, the human race would soon be extinct."

Sir Frederick Treves then demonstrated his proposition

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by instances. His first was that of a wound and the supervening inflammation which was a process of cure to be imitated rather than hindered.

Peritonitis, which had always been spoken of as the operating surgeon's deadliest enemy, was in reality his best friend.

The general mortality of the common disease known as appendicitis was low. This fortunate circumstance was due to peritonitis, for without that much abused ally every example of the disorder would be fatal.

Another instance given was that of a common cold which was, no doubt, a so-called bacterial disease.

"Catarrh and persistent sneezing are practical means of dislodging bacteria from the nasal passages, while the cough removes them from the windpipe."

"According to popular medicine," he said, " the phenomena constituting disease are purposeless, profitless and wantonly distressful, so that the victim demands from the physician means for stamping out the trouble. These symptoms, however, are in the main manifestations of a process of cure and are so far benevolent that without them a common cold might be a fatal malady."

These ideas so forcefully presented by Sir Frederick cannot be too strongly impressed upon the mind, or too widely disseminated. They would do much to awaken in the thoughtful, at least, a horror of all systems of drugging which seek to stifle these notes of warning given by disease. The physician who gives morphine to the sufferer from appendicitis is simply inviting death. The pain is Nature's call for help, for relief—and this call should be intelligently obeyed and not stilled by the deadening influences of potent drugs.

As I wrote many years ago: "Disease is a process of cure. It is the result of efforts on the part of the functional system to bring about a normal condition of health.

"It is the route back to health.

"It is the means adopted to throw off the various accumulations of foreign or impure matter which has interfered with the normal condition of health.

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"A disease becomes chronic when the conditions producing it become chronic.

"If a boil appears on the body one does not usually adopt means to drive its virulent contents back into the system, but allows it to run its course, or else tries to hasten the process of expelling the impurities it contains.

"Nearly all diseases can literally be compared to a boil. A boil rids the system of impurities—it is a means adopted to reach normal health.

"Nearly all diseases are similar. When they appear they are like a boil in its first stages. They are preparing the way for the expulsion of impurities with which the system is overloaded.

"Even if it were possible with the use of a drug to cure or drive into some other channel a disease immediately upon its appearance, it would be like driving the contents of a boil back into the system. The disease must run its course—*It is the process of cure.*

"If this great truth can once be thoroughly understood, one need never have fear of any disease.

"There are rare occasions where the accumulations of impurities are so copious that the symptoms of the disease assume such virulence as to cause death, but such cases are extremely exceptional, and only occur when the patient's habits have been most uncommonly perverted."

In further illustration of this position, let us consider one or two other diseases and endeavor to show that the pain accompanying the disease—which to most people is all they care to know about disease—is their best friend *under the evil conditions that exist.*

For instance, let us take the dread disease called pneumonia. This disease is nothing more than what might be termed a cold on the lungs. To be sure, you must be vitally depleted in order to be attacked by this complaint, though remember you may appear vigorous, you may look healthy, your cheeks may be red, you may be a picture of vital vigor, and yet may not be immune from this disease. Very fleshy

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men or women, especially meat-eaters, or alcohol drinkers, are liable to be attacked by pneumonia, and it is really more difficult to effect a cure in such persons than when there are less of the ordinary signs that indicate vigorous health. Let us say, however, that fat is not health. Too red cheeks are a sign of disease rather than of health. It is more difficult to cure a fleshy person of a dangerous disease than it is one of medium weight or even those termed thin. When one is attacked by pneumonia, there are frequently knife-like pains in the chest and excruciating soreness all about this region of the body, and when the disease begins to abate, you eliminate a vast amount of mucus or phlegm from the lungs. Now this vile poison had accumulated in the body, because it could not be thrown out by the ordinary organs, and you have therefore had pneumonia. The disease has appeared simply to throw out these poisons, these foreign elements, which, if they had remained in the body, would undoubtedly have caused death. Pneumonia may be said to have intervened and saved your life. This idea may seem strange to the uninitiated, but not to those who have a clear conception of the nature of disease and its purpose.

Pneumonia is not necessarily a dangerous disease, if treated in the proper manner. Where natural methods are used, pneumonia is rarely followed by death. The percentage of deaths is so small that it is hardly worth considering, although the mortality record from this disease ranges from twenty to thirty per cent. when medical methods are used. A larger part of these deaths are caused solely through improper treatment, through a want of understanding of the nature and cause of disease. The patients die because it is declared that they have to be fed, because a certain amount of nourishment is supposed to be necessary to keep up the strength of the patient. The digestive organs of one who is attacked by pneumonia are not in a condition to assimilate food, and if food is forced into an unwilling stomach, a large amount of poisons is certain to be absorbed and circulated through the blood from the undigested matter the patient consumes. When you are suffering from a complaint of this character, your entire bodily strength is

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devoted to the one purpose of cleansing the body. You have not an iota of energy left to digest food, and every mouthful of food given adds to the poison that must be eliminated.

Many other diseases might be taken up and dwelt upon in a similar manner. There are the various signs that appear as the result of skin diseases. These diseases are known by many names, and yet they are simply an outward manifestation of an internal condition. They are brought there by the blood. The disease is not simply superficial, it is actually in the blood. It is a part of the blood. Of course, there are skin diseases that are supposed to be contagious. They are passed from one to another, but as a rule such diseases are brought about by a minute insect, and a better way to cure complaints of this kind is to use some method of destroying the insect. In such cases I believe in the use of a poison that will kill these insects, just as I believe in the use of poison to kill rats and mice. Medicines and poisons are useful under such circumstances, but I know of few other occasions where they are required.

Health and strength and poison cannot possibly harmonize —they are not related. When you put poison into the body every organ which comes in contact with that poison is excited to the greatest possible degree of activity for the purpose of eliminating it. Take a small quantity of alcohol, or use one of the patent medicines that contain a liberal quantity of this poison. Take a spoonful, and it may cause you to feel temporarily benefited, refreshed. This result, however, is produced simply by a momentary excitement of the internal organs. There is no permanent benefit from a remedy of this kind. One simply makes the various organs work a little harder to throw out the poison that you have used, and the result of this waste of vital vigor must be an injury instead of a benefit. The alcohol, it must be remembered, makes absolutely no change in its transit through the body, and every organ with which its comes in contact is compelled to make an extra effort in order to be rid of the poison.

The body is at all times doing the best it can to maintain health and strength. When you consider the abuse that the

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average human body endures in this day and age, one might reasonably come to the conclusion that man is the toughest animal upon the face of the earth. We hear much talk about a cat having nine lives, but the ordinary man or woman of to-day surely has ninety-nine. There is no living creature upon the face of the earth that could exist under the conditions that the average human being of to-day endures. Take any wild animal of the forest—even the fiercest, strongest lion, and make him live as a civilized man, eating three meals a day whether he needs them or not, and I would venture the assertion that his great strength would lessen in a short time and he would soon die of one of the various diseases from which we have to suffer.

You will therefore see that disease is a physical house-cleaning. This refers largely to acute diseases, as I have already shown, though chronic diseases to a large extent perform a similar office. This is illustrated very accurately in a chronic running sore which refuses to heal. The pus poisons that are eliminated in this sore cannot be thrown out by the ordinary organs that are supposed to perform this duty, and they therefore seek this particular sore for outlet. As long as the body is encumbered with these poisons, this running sore will remain, but, as has been proven in hundreds of cases, by simply changing the habits of life, by purifying the body with a view of eliminating these poisons from the blood, the pus that appears at this point of the body gradually decreases and finally the sore heals entirely.

You have a fever, for instance. There again is an accelerated pulse, a very high temperature, every organ of the body is accelerated to its greatest degree of activity for the purpose of throwing out poisons which if allowed to remain in the body would in many cases cause death. The fever, therefore, comes as a means of saving your life, and death would undoubtedly ensue because of the accumulation of poisons if it were not for the appearance of these fever symptoms. Some outlet must be found for the poisons, and disease is the outlet. When attacked by a fever, even a layman should realize that his body is harboring a vast amount of impurities

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or poisons. They must be eliminated in some way, and the disease is Nature's endeavor to thoroughly effect this purpose.

By all means get rid of the idea that disease is a mystery, a something to be deadly afraid of, a power that, like the lightning, may strike anywhere, everywhere, in the most unlikely place, without warning or reason. It is nothing of the kind. It comes as a friend, it gives timely warning to help you escape from destruction or death, hence its warnings should be understood, heeded and obeyed.

The sooner we comprehend the fact that disease is brought upon us by our own actions the better it will be for us. Disease is the result of our own misunderstanding of the great health laws. Disease is impure blood. You may ask how we are to trace the various diseases to impure blood. Let us take apoplexy, for instance. How would impure blood cause the symptoms connected with this complaint? Some say it is produced by unusual pressure of blood on the brain. How will impure blood produce such a manifestation? Unquestionably the pressure is first of all brought about through the existence of impure blood, and the really serious symptom of the disease, the breaking of a bloodvessel, has been made possible because of the weakened tissue which naturally results from defective elements furnished by the blood. The tissues are too weak to hold the blood pressure. You therefore cannot have apoplexy even unless your blood is impure, unless it fails to contain those elements needed to build the proper tissue.

The blood is the life. It makes your body, it makes every part of your body. There is nothing within the body but what has been placed there by the blood. For instance, you have a manifestation of some disease. One or more of your organs is sore, inflamed. What is the cause? This inflammation must have been brought there by the blood, except in such cases as already mentioned. It could not be brought there in any other manner, and yet when such symptoms appear you often consult a surgeon. He may find the organ slightly misplaced and diseased, and he will frequently advise you to cut it out. Now, how are you going to eliminate disease by simply cutting out

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the organ in which the disease has manifested itself? Disease is really not in the organ itself, it is simply a sign of disease. The disease, I repeat, is in the blood; therefore, the proper way of treating a diseased organ is not to cut it out. The proper way is to remove the impurities from the blood, to make this vital fluid so virile, so full of health and strength that the poisons will be carried away and recovery will then be complete and definite. In the majority of operative cases, the disease for which the knife has been used can be cured quickly simply by purification of the blood. The poison, the inflammation and soreness are caused by impurities in the blood. There may have been local conditions that would help to produce the inflammation, but if the blood contains proper healing elements, the disease could not possibly become chronic, for the blood would then slowly but surely heal the affected part.

The reader should now be fully persuaded to accept the statement of our assurance that *most disease is preventable.* There is no physician of any school who will not agree to the proposition that if the body be healthy it has the power to resist the aggressions of any kind of disease. Even though one accept the germ theory to its fullest extent, we have shown that disease germs cannot grow and thrive in a healthy organism. No matter what *contagion* is, or *how* it works, it has no power over a healthy body. In other words, disease either comes and is totally ignored by the healthy person, or if it succeeds in making an entrance it is so quickly and so unceremoniously kicked out that its presence has had scarcely any opportunity to make itself felt. So we believe in fostering two distinct attitudes of mind towards disease: first, that you have no need to fear it, and second, that if it takes hold of you, it only requires courage, and a quick, sharp fight to eradicate it. The first proposition, fearlessness, we have already briefly discussed. Let us give a few moments to the second. The fighting spirit is good, when properly understood and controlled. It is the power of initiative set in motion. It is the fighting spirit against things as they are which makes progress possible, stimulates improvement, encourages invention and causes enlightenment and civil-

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ization. It is the fighting spirit that prevents tyranny, compels graft to loose its hold, and that drives greed, lust, and all other evils to get under cover. The fighting spirit means strength in training, watchfulness, caution, courage and confidence. Let every man and woman be imbued with this spirit, and with knowledge to accompany it, the world would see disease almost banished in two or three generations. For every fighter knows he must be kept in training. In that one idea, we have proof that disease can be prevented. It has no power if one is willing to keep *himself in training.* And what does training mean—even what some might term the lower kind of training that the prize fighter demands? Simply that they live naturally, bathe properly, breathe pure air, live in the open as much as possible, exercise the muscles thoroughly and keep all the functions to their healthy performance by doing nothing to render them abnormal in exercise.

Now let a man or woman of intelligence determine to get into training to fight disease. How long is it going to be before such a one becomes absolutely sure of that method that keeps out disease? Experience has demonstrated that in a comparatively short space of time reasonably perfect health is established and may be maintained from that hour to the time when the body, slowly dissolving itself, allows death to come easily, painlessly and without fear or terror.

There is a vast difference, however, between our theory of the preventability of disease, owing to perfect health and the theory—guesswork—of the physiological chemists who claim to have discovered how to render us immune from disease by means of antitoxins. While this matter will be discussed elsewhere, I wish to make reference to it here, for I believe that *no person can be regarded as truly and perfectly healthy who is not absolutely immune from any and all disease,* except, of course, those caused by accident. These chemists assert that they have discovered an antitoxin or serum which absolutely destroys diphtheria.

Pasteur claimed to have discovered a serum for the cure and prevention of hydrophobia; Koch for consumption, and so on.

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In fact, for a time the medical press was flooded with assertions that now, at last, by means of these antitoxins all infectious diseases could be overcome and immunity secured. And there loomed before the American and other civilized peoples a menace more terrible than that of vaccination, viz., that we should have to submit to compulsory injection of a serum for diphtheria, one for scarlet fever, another for yellow fever, typhus, typhoid, hydrophobia, glanders and a dozen other dread diseases which human flesh is subject to. What a frightful thing to contemplate! Yet, if the theory of compulsory vaccination be a correct one, how much more ought it to apply to the antitoxins which we should be assured would give us absolute immunity from these dread diseases.

In the middle of the year 1909 I wrote an editorial in *Physical Culture* which, in the main, is herewith reproduced, as suggestively covering this ground of immunity, and the difference between our methods and those of the chemical physiologists.

What would it be worth to the average individual to feel, at all times, immune from disease of every character? The value of this assurance could not be adequately measured, and yet this immunity could be secured and retained on to the very end of life. The fear of disease is universal. To most people it is a grim spectre. It assumes fearful aspects.

I am satisfied that almost any broad-minded individual can be freed entirely from the fear of these gruesome possibilities. Not only can one be freed mentally from the fear, but one can develop and maintain such a high degree of vital strength that disease can never secure a hold upon the body. I realize that to many this may seem to be a greatly exaggerated statement, but to those who have lived in accordance with the methods of Physcultopathy, and have indulged in a degree of reasoning on the subject in their own behalf, the conclusions advanced are facts, and are truthful in every respect.

Disease cannot attack a perfectly healthy body. Disease germs can never secure a foothold in healthy tissue. The entire medical world is continually searching for some means of ren-

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dering the body immune to disease. They are delving deeply into apparently impenetrable mysteries in their endeavors to solve this important problem. Their investigations, however, have been more or less confined to the study of disease itself and the symptoms and detailed characteristics associated with it. For instance, medical scientists have discovered what are commonly termed germs or microbes in the pus or other matter discharged from the inflamed surfaces of the diseased tissues, that are the results of various complaints. Great importance has been attached to the discovery of these germs, and the conclusion has been reached that in all cases these particular minute organisms are the cause of the disease with which they have been associated.

These deductions have been accepted as the result of experimentation. One experiment, for instance, has been to inject the germs of a definite disease into the circulation of a healthy animal. These germs usually cause the disease with which they have been associated. Even this experimentation, however, does not necessarily prove that the germ is in all cases the cause of the disease, for if these same germs were placed in contact with the mucous membrane which is said to be the seat of infection, they will produce the disease for which they are considered responsible only in those cases where the vital resistance has been lowered, or where the mucous membrane provides fertile soil for them—in fact, in those cases where poisons or impurities have accumulated to such an extent in the body that they are actively seeking a means of outlet. Then such germs may be able to produce the disease with which they have been identified.

Practically every advanced student of medicine is now prepared to admit that disease germs are innocuous or harmless to those who possess what might be termed a high degree of vital resistance. Such persons are classed as immune, and it has always been an unsolvable riddle to me why the germ-seeking scientists do not turn their attention to the study of the how and why of this immunity. They are seeking a method of insuring immunity against disease. Why do they devote

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so much time to the study of the minute details of disease itself, instead of learning something of the nature of the forces within the body which can render it practically immune from all disease?

Almost every physician will tell you that the severity of the attack of any acute disease will depend upon your vital resistance; in other words, upon how much functional strength or general bodily vigor you may possess. For instance, in a circular distributed by the Indiana State Board of Health we find the following:

"Diphtheria may be so mild as to pass as a 'simple cold.' We know this to be true because microscopical examination of children's throats have again and again discovered the germs to be present when the diagnosis was 'a little cold,' or 'a mild tonsilitis.'

"Diphtheria germs are frequently found in the throats and noses of children when no complaint is made, when there is no fever, and when no sign of illness can be discovered. Why all the symptoms of diphtheria do not appear under such circumstances may be due to the child's resistance (good health), or because the germs themselves are weak. It is found that diphtheria germs from the throat of apparently well persons, when cultivated, produce a poison which will kill guinea pigs and rabbits. It is further found that if 'weak germs' are transferred from one child to another they frequently grow strong and produce unmistakable diphtheria. Before this discovery was made the doctors thought it was necessary for spots or a membrane to appear on the tonsils and the walls of the throat before the case could be diphtheria. Only not-up-to-date physicians think so now. Very frequently the mistake is made of diagnosing a case as tonsilitis when it is diphtheria. The fact is, hundreds of cases of diphtheria are called sore throat, tonsilitis, or something else, and all such wrongly diagnosed cases may, and frequently do, spread diphtheria. This is how it happens that people frequently say, 'I can't see where my child caught diphtheria, for there have not

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been any cases around here,' while many undiscovered cases were on the streets or in school all the time."

Remember these statements are made by a specialist, who emphatically believes in the germ theory of disease. "Diphtheria may be so mild as to pass as a simple cold." There must be some definite reason for the mildness of such an attack, and would it not be easy for an advanced student of the healing art to discover this "reason why"? And, "It is found that diphtheria germs from the throat of an apparently well person, when cultivated, produce a poison which will kill guinea pigs and rabbits." Now, if germs are in all cases the cause of disease, how could one remain well with diphtheria germs in his throat? In fact, do not the statements of this authority prove absolutely beyond all possible controversy that disease, even in accordance with his own theories, is made possible, not by the so-called germ, but by the condition of the body itself? In other words, when the vitality of the body is lowered, which usually means that it is overloaded with poisons or impurities, which frequently assume the form of mucus or pus seeking an outlet from the inflamed membrane, then disease is easily acquired, for under such circumstances the body actually needs disease or some means of cleansing it of accumulated poisons. Such a disease may assume the form of diphtheria, scarlet or typhoid fever, or any one of a thousand other symptoms for which the medical profession have high-sounding, and often unpronounceable names. Let us quote further from the same authority:

"Diphtheria germs have been frequently found in the throats of persons who were quite well and who were not afterward brought down with the disease. Some people seem not to be susceptible to diphtheria, and the germs, although present, do not grow and cause the disease. A high authority tells of a nurse who carried diphtheria germs in her throat for a long time and introduced the disease into five families. This fact explains in a degree how it is possible for diphtheria to appear when there seems to have been no exposure, and it also teaches us to be very sure that recently recovered patients

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are free from diphtheria germs before they are allowed to go out."

You will note the statement: "Some people seem not to be susceptible to diphtheria." If the germs are found in the throats of persons who are not afterward brought down with the disease, and if it be true that the germs are in all cases the cause of the disease, how can anyone come in contact with them without suffering from the complaint? The advocates of the germ theory themselves thus prove in a very forcible manner that the proper way to make oneself immune from disease is to maintain the vitality at high-water mark. In other words, the dangers on which advocates of the germ theory of disease lay stress offer not the slightest menace to an individual who will so guide his habits of life as to maintain a superior degree of health at all times. Our contention, therefore, that disease is, after all, not a thing to fear, but that it is actually bodily "house cleaning," and cannot come to you unless there is need for eliminating impurities that have accumulated in your system, is to a certain extent upheld by the medical men themselves.

The medical scientists should turn their investigations to another channel. They should learn something of the powers of resistance possessed by the body, they should learn why health itself practically makes one immune from all diseases, and instead of going deeper and deeper into the unfathomable depths of the germ mysteries, they should begin to learn how to teach rational methods of building the vitality needed to insure freedom from all disease.

Disease is not an enemy! It is a friend! It comes as a means of bringing relief. It is an effort on the part of the body to right a wrong. It shows that the body is struggling for life and health, and on many occasions, if it were not for the diseases that come as a means of ridding the body of the vile accumulations of poisons, death would unquestionably ensue. Therefore, disease in many cases actually saves life. To be sure, if there is but a small amount of foreign material in the circulation and tissues of the body, the attack of the

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disease will be slight in character, though the authorities we have quoted refer to this physical characteristic as "resistance or good health."

All this reasoning brings us back to the question: "What is the cause of disease?" The medical scientist takes the disease itself, with all its minute symptoms, and attempts to solve the problem then and there, but it is far back of this. The cause of an acute disease, for instance, may have begun years before the body is finally attacked.

Medical men are slowly returning to Nature. They are beginning to abandon the use of drugs; they are realizing that the body itself must be depended upon to right physical wrongs, that drugs and poisons are useless. And the day is not far distant when they will all have to fall in line and commend in every detail the conclusions advanced by that famous physician, Professor William Osler, now of Oxford University, England, who has endorsed practically every rule of living inculcated by Physcultopathy.

Professor Osler, in a lecture before the Pathological Society in Philadelphia, stated that "he is the best physician who knows the worthlessness of the most medicine." He stated there were four drugs of inestimable value in the practice of medicine, and when he said he would decline to name them a roar of laughter went up from more than two hundred physicians, who were his auditors.

Dr. Osler said that the prevention of disease has now become quite as important as a cure. "Who would have thought only ten years ago," he asked, "that malaria and yellow fever could be prevented and their cure made unnecessary? The discovery of the germ of tuberculosis had brought no cure for that dread disease, by drugs, but it had brought an amelioration, and sometimes cure, by fresh air and diet."

Years ago I came to the conclusions of Professor Osler and with all the fervor and power at my command have been presenting them to the people. I again affirm that the best way to render people immune from disease is, not to drug them, not to dose them with antitoxins, but to teach and in-

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duce them to live normal and healthful lives, lives of simplicity and naturalness.

Thus believing, we come to our next proposition, viz., that *most manifestations of disease are curable.* To me, with my experience of over a quarter of a century, this has become almost an axiom. There are cases where the vital forces are so depleted, and the courage and fighting spirit of the patient so lowered, that death ensues. But, taken early enough and with intelligence, there is literally no disease under the sun that ought not to succumb to man's power. It may require "eternal vigilance," but surely if that is the price we are willing to pay for liberty, we should be willing to pay the same price for health. And it does not require drugs, special nostrums, great learning or superior intelligence. All it requires is common sense, persistence, energy, belief in the body that it is doing the best it can for itself, and that if helped, not hindered, in its efforts, *it will bring itself into a healthful condition.* I have thousands of letters from all parts of the world from persons who have suffered from nearly every disease known to man and who have said in effect:

"I have suffered from this and that disease, and I have tried every method know to medical science and have failed to secure results, and after trying your simple suggestions I have been able to secure that health and strength that has been denied me for many years."

How then can we be any other than filled with confidence that our position is a secure one and our methods unassailable? They have been tried over and over again, thousands of times; they have brought results where every known means advocated by the medical fraternity had failed; they are simple; they bring certain results in practically every instance, so that it becomes a mere matter of believing what you see with your own eyes.

In a lecture delivered in 1909 in one of our Sanatoriums I made the following personal statements, which are worth reproducing here:

"Nearly twenty years have elapsed since I first had oc-

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Health and happiness go hand in hand, just as disease and invalidism bring misery and unhappiness.

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casion to try out these fundamental principles. At the time to which I am about to refer I was considerable of an athlete; I was indulging in all sorts of athletic contests, and about this time I contracted a cold. I tried to cure it by increasing my exercise. I ran a number of miles and worked in the gymnasium to induce profuse perspiration. I thought I could eliminate the cold in this manner, but it was apparently too deep seated. I gradually grew worse, and I soon noted various symptoms of pneumonia, the knife-like pain in chest, etc., etc. The problem as to the means of cure finally became acute. Though I had never tried fasting before, I concluded to stop eating. I decided that the impurities were being fed by the food that I put into my stomach. In two days I noticed a difference, a slight change for the better, and I was practically cured in four or five days.

"Now suppose I had gone to a medical practitioner and described my symptoms, what would have been the result? He would have said, 'You go to bed at once! Why, you are seriously sick!' I would have followed his advice, I would have been housed up in a room with closed windows for fear of a draft, I might have been fed on milk and whiskey and a lot of other 'stuff,' and if I had followed methods of that kind, I would not be here. I am positive of this conclusion because many years ago I had all the symptoms of incipient consumption, and after building the vigorous health that I now enjoy, I became an enthusiast, a crank, as many might call me. When I first began to search for a cure, I tried everything, all kinds of drugs and medicines. I grew worse, slowly but surely, and as a last resort became interested in exercise, nothing but exercise, and as I was simply dying for the need of some activity of this kind, I recovered. I built myself into a strong man, and the more strength I acquired, the more enthusiastic I grew, the more thoroughly I became convinced that drugs were needless, that the pretension as to their being able to cure disease was a serious error and of great danger and injury to humanity. You may say that I am prejudiced, and perhaps I am; but if you had been compelled, as I have been, day

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after day for many years, to read letters from thousands of victims of drugs, you might be prejudiced against the drugging methods. I believe every man and every woman is entitled to superb health. If you have enough vitality to live, you have enough strength to be healthy. Life, if it is worth living at all, is worth living in its highest, noblest sense. If you cannot be a man or a woman in every way, you might just as well get 'off the earth.' Take advantage of every opportunity to develop your body, make yourself strong and capable. Do not let those around you dictate to you.

"Do your own thinking! Come to your own conclusions! Use your own reason, and I am assured that you will forever abandon the old, complex and harmful methods of the past, and follow the simple and helpful methods we advocate. For in the one there lie misery, wretchedness, disease and death, in the other joy, happiness, health and life."

If, then, what we have advanced be true, ought we not to lose our great dread of disease? And it is one of the missions of Physcultopathy to help bring about this desired end. As was once stated in one of my public lectures to invalids:

"I would like to transmit to you the supreme confidence that comes to me when I happen to be attacked by a disease of any kind. I would like everyone to be able to help himself under such circumstances. I would like to see each one avoid that feeling of fear that often ensues when there is a slight pain or any other symptom that indicates disease. One special reason for the pressing need of this mental confidence is the destructive power possessed by fear itself. When you become possessed of a fear of disease, it has the best of you in the beginning. In fact, fear, the product of ignorance, is a disease in itself. Therefore, if you can eliminate fear when you are attacked by a complaint of any kind, if you can simply say to yourself: 'Well, I know the nature of this complaint, it cannot scare me, I know that it is simply a symptom, which is the result of natural causes and it will finally disappear.' If you can make such a statement to yourself when attacked by a complaint; in other words, if you can eliminate fear, then you

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will do a great deal in the beginning towards curing your disease.

"Disease is functional disturbance. In some cases you might say it is lowered vitality or lessened vital resistance. There is something wrong with the functional organism. Disease has not come upon you because you have been attacked by a germ of some kind, it has not come because you have breathed some extraordinary microbe, it has appeared because you are ready for it, in most cases because you have deserved it as a penalty for violating Nature's health laws. It has nevertheless come upon you as a friend. It is not an enemy. I would like especially to emphasize that disease is not an enemy. It does not come upon you like a thief in the night; it does not come to injure you. It comes to benefit you. Disease is, therefore, not a bad thing; it is a good thing. This may seem an unusual statement, and yet it is truth. I do not believe that disease is sent upon us for the purpose of making us suffer. Disease is useful. It serves a beneficent purpose. It really comes in most cases to clean our bodily house."

After reading these ideas for the first time in the *Physical Culture* Magazine, one of our good English friends wrote a letter of criticism in which he said: "I think disease should rightly be considered an enemy. I quite agree with you that disease only attacks those that are weak and of depleted vitality, but does that make disease a blessing? This world is a world of eternal fighting—only the fittest survive—but that surely does not make the destroyer of the weak their friend. There are diseases, as you admit, which are contagious. Perhaps all diseases are contagious, but they only develop where they find favorable soil. Disease does not exist in the blood, but the food for it does. There are two factors that determine the contraction of disease—the state of development and vigor of the attacking microbes and the degree of resistance of the organism they attack. The issue is this: That although we must try and develop resistance of our bodies and minds against attacking microbes by building up vitality, bodily and mental vigor, we must none the less directly combat these

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microbes by sanitation and cleanliness. We must not present to them a passive but an active resistance."

In response to this I made, in part, the following reply:

"Under no circumstances do we believe that disease is a condition to be desired. Circumstances sometimes compel one to choose between what might be termed two evils. For instance, if one had opportunity to choose between death and disease, the probabilities are one would take disease, and that really gives you a clear impression of what we meant when we stated disease was not an enemy, but a friend; not a curse, but a blessing. We meant to convey the idea that disease is friendly, beneficent, when it was actually needed by the system to cleanse the organism of impurities—to eliminate the poisonous or fetid matter that might be clogging functional activity. It is not difficult to realize that under such circumstances disease is friendly, and one might further state that disease never attacks one under any other circumstances. You cannot be attacked by disease if the body is in perfect health. Disease cannot enter your organism unless there is need for it. Therefore, when disease comes, you have deserved it; you are requiring the particular symptoms manifested by the disease at that particular time for very important reasons.

"Our friend says that disease does not exist in the blood, but food for it does. If food for disease exists in the blood then why can we not reasonably state that disease itself exists in the blood? If foreign or poisonous matter which is the cause of various symptoms of disease exists in the blood, then it is the blood which is out of order and it might be termed the direct cause of disease. If these impurities or poisons can be thrown out of the blood there would be no reason or cause for disease, and naturally disease would not appear.

"He also says there are two factors to determine the contraction of disease—the vigor of the attacking microbes and the vital resistance of the organism. Here is where he makes a very serious blunder, for the vigor of the attacking microbes is determined entirely by the fertility of the soil with which they come in contact. In other words, if the microbes, no matter

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how inactive or undeveloped they might be, should come in contact with tissues that are loaded with impurities and poisons, which are food for microbes, they would quickly become vigorous and multiply by the millions. It should be remembered that microbes are nothing more or less than minute scavengers and their purpose is beneficent. If the particular conditions which are essential for their existence are found they will thrive and multiply. If the particular poisons with which they are associated are present they will grow strong, but if the body is healthy and vigorous, if the organism is free from disease, the blood free from poisons, the microbes, regardless of their character, are powerless. They are not needed and they waste away and die when they come in contact with healthy tissue.

"We should, of course, try to develop the resistance of our bodies to the highest degree and by every means within our power, through sanitation and cleanliness, and the various vital building methods should be adopted with that particular purpose in view, but we should at the same time understand clearly and definitely the nature and cause of disease. We should understand that the body under any and all circumstances is working for its own good; that disease, if it does come, is the best means that the body can adopt at that particular time, and under the existing circumstances, to combat the unfavorable conditions that must then and there be resisted. There may be diseases that are contagious, but we think the most experienced bacteriologists will admit that no disease is contagious to perfectly healthy tissues; that a man enjoying perfect health can eat disease germs by the millions and they will not have the slightest effect upon him—but if the circumstances are otherwise, if there are poisons in the tissues and the body is not properly cleansed of impurities, disease can of course secure a foothold, and the germs under such circumstances might be capable of creating the disease with which they are allied.

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"We want to entirely eliminate the idea of mystery with which disease is almost universally regarded. We want to make

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our friends understand that the functional processes of the body are at all times striving with might and main to bring about the very best results. When you build strength, when you add to your vital power, you are diminishing the possibility of disease. But if you neglect the body, if the blood is charged with foul poisons of all kinds, these poisons continue to accumulate, and there comes a time when they taint the blood stream, and the tissues throughout the body are everywhere clogging the functional activity, and then the resisting powers of the body call a halt. They call for some relief; they send out a message for help and help comes in the form of disease. This disease as a rule takes away the appetite; it is preceded by various symptoms containing inflammation, soreness, and is accompanied or followed in nearly all instances with the elimination of a vast quantity of vile poisonous material, which is really and truly the actual cause of the disease, and the elimination of these poisons represents its true object.

"Let us not make any mistake. Disease is not an enemy; it is not unfriendly; it only comes when it is pitifully needed. Sometimes it actually saves life and it is a choice between itself and the grave. There is no need of seeking disease; one should avoid disease, but it should be avoided by maintaining that degree of health which does not allow of the accumulation in the body of those poisons which are the actual causes of the various symptoms associated with disease."

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CHAPTER VIII.

CAUSES OF DISEASE.

I HAVE thus far endeavored to show that health is the normal, natural condition of every human being. If this be true, then disease is an abnormal and unnatural condition. Upon this first fundamental statement all the ideas and methods of Physcultopathy are based. Yet, at the outset, we realize the great difficulties that arise in discussing this question with candor and honesty and at the same time with clarity and judgment.

I have already shown the divers opinions that are held by the different schools of medicine. Where doctors differ, laymen may choose for themselves. If every reader of these pages would eliminate the ideas of mystery that he has been taught to associate with disease and its cure, and would study the question involved, intelligently, for himself, there is no doubt but that disease would lose much of its terror.

The great trouble is that most people totally ignore the relative questions of health and disease, until some form of disease takes possession of them. I use this term "takes possession" advisedly, not that disease comes in that way, but because nearly every sufferer from disease feels he is "taken possession of." His whole thought centers on his disease. It is the chief thing of the universe to him. An earthquake might come and unless the shock were great enough to make the sufferer forget his pain he would care little or nothing of what became of the world. At such a time as this the subject of disease assumes a prodigious importance, and, as a rule, at such a time the sufferer is least competent to do his own thinking; consequently he calls in the services of a reputed expert in whose mastery of medical lore he feels compelled to repose confidence and whose orders he generally follows with a blind faith that is as pathetic as it would be laughable were its consequences not so fraught with danger, and, oftentimes, death.

Most of us depend entirely too much upon the judgment of others, in matters of disease, and if we could only impress

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A Youngster Bearing Promise of Attaining a Strong, Healthy Physique.

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all those who read with the terrible necessity of doing some of their own thinking on important subjects, the effort expended will not be unrewarded. I earnestly desire to encourage the habit of investigation in every one. In the study of healing, as well as every phase of human life, use your own judgment. When doctors disagree, it is time for you to do some thinking on your own account. He who depends entirely upon what can be accomplished through drugging, when his health is in need of urgent attention is walking blindly towards impending disaster. He is apt to fall over the edge of a precipice, and into the great beyond at any moment. One might say he is blindly feeling his way through life. He is unable to look ahead, and he knows not what is before him. He is groping in the darkness of a hidden mystery, though in many cases his fears are alleviated to an astonishing extent by sometimes absurd and ridiculous advice that guides his physical welfare.

I have no set and immovable theories to defend, upon which I invariably depend. I have had a large personal experience in healing disease, and in teaching others to heal their own diseases. I have carefully and thoroughly studied the theories and principles of the various schools of physicians and common sense has urged me to reject them. I have openly and frankly said so, and have also openly explained why, and then, with equal candor, frankness and sincerity, gone on to explain why we should revert to simpler methods of obtaining health, driving out disease, and maintaining health.

Though I have studied the subjects for over a quarter of a century I am still studying and expect to continue to do so as long as I have the capacity for reasoning. As long as you maintain an open mind, you will progress and will be able to deduce clear, rational and really valuable conclusions. My advice is: Take no conclusions for granted. Learn all you can from the knowledge and conclusions that are presented to you by books and by those lobked upon as authorities; all knowledge is of value. Test the ideas thus acquired.

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Do not accept them as indisputable facts. For instance, if you read a book that appeals to you, do not accept the statements made in it until, through your own individual efforts, you have been able to prove the truth of its conclusions. The questioning habit is a splendid one to cultivate. Take nothing for granted until you have proven it to your own satisfaction.

It is from this open standpoint of mind that we shall discuss the question and seek to show, in this chapter and succeeding ones, the causes of disease and how easily preventable many of them are and how that simple and natural methods will generally, in the other cases, restore the sufferer to health, or at least mitigate his sufferings.

All disease may be summed up as caused by a deviation from the natural and normal course of life. What is the natural and normal course of life? To this question there are almost as many answers as there are inquirers. There can be no denying that in many of its aspects civilization is a series of deviations from nature. For instance, in a state of nature we should be born, live, work and die out of doors; we should wear practically no clothes except when cold compelled; we should eat food just as it was found prepared for us by nature; we should use neither artificial light nor heat; we should walk, ride perhaps on the back of animals or on vessels capable of sustaining our weight in the water; we might even attempt, like Sinbad the Sailor, to take flight on the back of the roc; but electric cars, automobiling, railroads or flying machines and all other paraphernalia of our advanced civilization would repel us as being unnatural and therefore injurious.

Yet we cannot ignore the facts of civilization. We do live in houses, and wear clothes, and use fire to cook our food and a thousand and one other things that separate us from a state of nature. Are we then to imply that civilization is a foe to health; that it is the creator and breeder of disease, and that the men and women who seek to live healthily must abandon civilization and revert to a natural condition?

While there is much of truth implied in these questionings, it is both foolish and impossible to expect men and women of

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today to abandon civilization and revert to what would generally be deemed a condition of primitive savagery. Hence the problem is to weigh carefully the advantages and disadvantages of civilization; to use the advantages as much as possible; to avoid the disadvantages with rigorous care, and at the same time to take advantage of all natural methods which will aid us in building up strong and healthy bodies, capable of repelling disease, or, where disease exists, find out the best methods for its elimination.

The following will be found to embrace all the known causes of disease: 1. Heredity; 2. Mental Influence; 3. Contagion; 4. Improper Diet; 5. Overstrain or Understrain; 6. Physical Causes; 7. Mechanical Causes; 8. Chemical Causes.

Before proceeding to a detailed explanation of these causes I would call particular attention to the fact that they are divisible into two great classes, viz., those that happen to us without our knowledge or volition, and those that we bring upon ourselves. We might therefore term these two great divisions, the *unavoidable causes* and the *avoidable causes*. In discussing the following lists, therefore, it will be observed that we have devoted but little time to the unavoidable causes—for reasons which will be self-apparent—and have enlarged considerably and with all the emphasis at our command upon those causes and diseases that are avoidable or preventable.

1. HEREDITY.—Heredity has always been regarded as a predisposing cause to certain diseases. But the more advanced scientists are inclined to view with disfavor many of the ideas that have been so strenuously held in years gone by. Luther Burbank claims that heredity is but "the sum of our past environments." Tyson, one of the most eminent professors in America on "The Practice of Medicine," however, asserts that "There is reason to believe that the children of alcoholics are not only more susceptible to the degenerative effects of alcohol, but also to other disease such as gout, rheumatism, syphilis, and diseases of the nervous system. Among the latter may be men-

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tioned especially epilepsy and melancholia, dementia and insanity."

It is well known that infants are born suffering from syphilitic and scrofulous diseases. "At the present time the most common cause of blindness among civilized peoples, is the purulent, or gonorrheal, conjunctivitis of the newborn." —*Reissig and Jelliffe.* Congenital dislocation of the hip-joint is a hereditary disease, and many other ailments, of greater or lesser seriousness, are known to exist in the newborn.

2. MENTAL INFLUENCES.—No intelligent person can question the wonderful influence the mind has over the body in the cause of disease. Many people are perpetually sick because they perpetually worry. Violent frights have caused convulsions, paralysis, insanity and even death. Mental distress is often said to cause insanity in predisposed individuals. In a later chapter we shall discuss the power of the mind in the healing of disease.

Especially upon the young would I impress the importance of preserving the right mental influences. *Fear* is a constant predisposer to disease. There is an epidemic—yellow fever, smallpox, cholera, etc.,—and in some subtle way, which our scientists have not yet explained, perfectly healthy people, yielding to fear, become subject to the disease. Parents and physicians too often have taught children fear—fear of this, fear of that, and of the other. We are afraid of wet feet, of draughts, of taking cold, of germs, of night air, of running up stairs, of childbirth and of a thousand and one things that there ought to be no fear of whatever.

There is but one thing we should fear, and that is fear that we may be wrong, and even that a really healthy mind will never contemplate—for no really healthy person ever wishes to do wrong. Fear is a despot as cruel as it is cowardly, as mean as it is powerful. It takes every mean advantage and strikes one unawares and in the back. It never comes out in the open and in the light like a courageous opponent, but fights in the dark. It "suggests" certain evils, urges you to "think

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over" things, and is sure "you ought to be more careful." It hints, whispers, nods, lurks, sneaks, skulks, slinks, prowls, mystifies, disguises. It lures its victims on by lulling their fears for a while and then suddenly reawakens and strengthens them by shouting "Boo!" at them unexpectedly. It sometimes appears to grow like the genie out of the Oriental bottle, until its immense form reaches to the sky and shuts out the light of the sun; and again it hovers around like a black cloud assuming all kinds of horrible shapes and fearsome forms. It has power to make you dream and thus with cowardly ruffianism strikes you while you are asleep, whispering in your ear of this danger and that, of this possible evil and that, until crazed with its direful suggestions, the victim's brain reels and topples over into semi-insanity.

Quit being afraid. Strangle this monster fear. Become men and women, fearless and unafraid. Face all there is, bravely, knowing that a foe well faced is half conquered. God and Nature mean well by you in every way. Trust that basic fact. Rely upon that. Strengthen your heart and courage with that, and then as you walk through the years of life you will come fully to realize that difficulties and dangers disappear before the brave of heart.

Anger is a cause of disease. Anger poisons the secretions. Who has not felt the mouth become dry, and then bitter, under the effect of anger? Nursing mothers have killed their babes under its influence, their milk becoming charged with anger-generated poisons. Long-continued anger produces a breaking down of muscular and nervous systems, often causes acute and, finally, chronic dyspepsia, insanity and death.

Jealousy is a cause of disease. It unsettles the nervous and digestive system, disturbs the circulation of the blood, irritates the brain and is a most frequent cause of insanity.

Prudery is one of the most serious causes of disease. According to the Standard Dictionary, prudery is the "exhibition of extreme propriety in conduct and mental attitude; an undue and sometimes insincere display of modesty and delicacy; primness; overparticularity." This does not entirely ex-

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press it. It is important that you distinguish between true modesty and prudery. One may be ever so modest, and yet consider and discuss the subject of sex in every detail, in a pure-minded, wholesome manner. The term prudery, however, refers to excessive and affected modesty, and implies a degree of insincerity. Prudery involves hypocrisy, which is only another name for dishonesty and deceit. In fact, hypocrisy is a most contemptible form of lying. Prudery is distinguished by its indisposition to accept and face the truth, or to tell the truth. Its representatives would have us believe that ignorance in regard to sex means innocence and virtue. Prudery simulates this innocence and virtue by a conspicuous silence, and it would if it could stifle the entire subject of sex by crying out "shame, shame" every time it was approached. In this way, not only boys and girls, but even men and women are left in ignorance of the sexual quicksands and pitfalls which they are bound to come across at some time of their lives when, as is manifest, they should be possessed of that knowledge by which they would have thorough understanding of the dangers in question. Ignorance is always dangerous. Philosophers have said that "ignorance is the only sin." The more vitally important any subject is, the more dangerous it is to be kept in ignorance in regard to it. The great facts of life and sex are of the very first importance and those who would encourage ignorance about them are public enemies of the most dangerous type. The prude is invariably inclined to pruriency; indeed, it is difficult to conceive how one can be prudish who is not prurient. Moreover, the prude fails to realize that morality is a matter of behavior, and not an attribute of any special material thing or organ of the body. Because of the very common misconduct and perversion in sex matters, even on the part of the prudes themselves, all being due to ignorance, they have placed upon the reproductive function the stigma of impurity. They fail to understand that there can be no indecency attached to sex except by reason of the misuse they have made of it, and that the reproductive function in itself is as natural and as pure a function in human beings

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as it is in flowers. Still and in view of his abnormal vileness, it is conceivable that the prurient prude would find something vulgar and degrading in the reproduction of plants.

My experience is that all attempts to hide the facts of natural function, or to keep knowledge of it from the young, foster the very mental activity we are supposed to deaden by our silence. No young person, boy or girl, who is intelligent and observant, or who reads and studies, is going through life ignorant of sex function nowadays, and frank and open discussion and explanation is the only moral, right and sensible procedure.

We have received thousands upon thousands of letters from young men and women who have gone down to perdition, wallowing in the wreck of sickness and ruin, simply because of this accursed prudery—because they did not have parents, guardians, or teachers who were clean, intelligent, and noble enough to tell them the truth in regard to matters of sex.

Worry is another mental cause of disease. To be in a perpetual state of fret, of mental unrest, of undue solicitude, of disquiet, of anxious dread, of fearful anticipation, and of terrifying expectation—how can one not become diseased when given up to such mental condition? Mothers worry about their children when they are absent. How absolutely absurd! How foolish! How insane! Can the worry protect the child? If there is any truth in the idea that our mental conditions are transferable then the worry injures and jeopardizes him instead of protecting him. And certainly when the child has returned to the presence of his mother the expression of the worry would disturb him if he were as healthy as a Hercules, and as serene as the Sphinx. So that both "worrier" and "worried" are injured by worry.

Husbands worry about their wives, and wives about their husbands, business men about their business, society women about their social functions, financiers about their investments, chemists about their experiments, students about their examinations—all futile, all wrong, all unnecessary, all provocative of disease.

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Another prolific cause of disease is unhappy marriage. This may be a mental or a physical difficulty, or a combined one, but there can be no question but that disease is often the result of improper or unhappy marital conditions. No man, no woman, can live continually in a state of irritation, discontent, unhappiness, regret, or anger without suffering, and this soon begets disease of mind or body. Nervous disorders, brain diseases, dyspepsia, sexual diseases all may spring from an unhappy marriage.

Besides the suffering to the ill-mated couple, if there are children they are made subject to disease. Children born in unhappiness are almost sure to be prone to disease, and others are subject to the irritating influences that come from the quarrelings, the irritations, the sulkings or the heart-breakings that arise from these unhappy marital relationships.

It may not seem scientific to those who regard "life" as subject merely to the laws of the scalpel and miscroscope, to make the statement, but we wish to assert that another great cause of disease, too often ignored by the scientist, is what the churches call "sin." Sin is wrongdoing. It may be merely in thought and thus come under the head of mental influences, or it may be converted into act and then come under some other head. We do not intend to enter into any discussion as to the nature of sin, or its origin. The human mind is so organized and trained that it generally recognizes the law of the "ten commandments," and knows that violation of those is sin. Violation of law often produces remorse. Concealment is also necessary and remorse and concealment, anxiety lest one be discovered, and fear of consequences if discovered, are some of the strongest *mental* causes of disease associated with what is called sin.

3. CONTAGION.—As I have shown elsewhere, the medical world believes thoroughly in the idea that many diseases are caused solely by contagion. We largely combat this idea, but at the same time we recognize that there are certain parasitic contagions which are the result of transferring living organ-

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isms from one body to another, as ring-worm, the itch, the trichina from eating diseased pork, the tape-worm, etc. But the most important phase of the theory of contagion as held by the later schools of advanced scientists is that generally known as the "Germ Theory." The miscroscopists tell us that there are three forms of disease germs in the blood. These are *rods, spheres* and *spirals* and they are divided into *bacteria* or *bacilli, cocci* and *spiralla,* as they assume one or the other of these three forms. They are all generally known as *bacteria* or *germs.* And we are told that the germs of anthrax, of diphtheria, of tuberculosis, or influenza, leprosy and the plague are rod-shaped or *bacilli,* while those of erysipelas, of gonorrhea, of pneumonia and of trachoma are sphere-shaped or *cocci,* and the Asiatic cholera or relapsing fever are spirals or *spiralla.* This list, however, the scientists tell us, is merely suggestive and incomplete, as the work in this field is as yet in its early stages.

While I have written strongly on the absurd fears implanted into the hearts of people by the scientists in regard to "germs," I would not have it thought that I do not recognize any danger from contagion. In such cases as itch, ringworm, trichina and the like it is perfectly possible that the insects may be transferred from one body to another and this "transplanting" we call contagion.

In regard to the "germs" of disease, there may be a similar transplanting, but experience demonstrates that to a healthy body there need be no fear, as the germs have no condition for growth.

And the vaccine and antitoxin therapy methods which the scientists adduce from the "germ theory" are entirely repugnant to our sense of right and health; hence we oppose them with unextinguishable vigor and earnestness.

4. IMPROPER DIET.—Disease may be caused by deficiency or by excess. Foods may be improperly balanced, too much of one kind, too little of another. Upon the right solution of this question of diet largely depends the health of the race.

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Improper dietetic habits are the cause of many serious diseases. The average individual knows little or nothing of diet, and when you discuss the value of knowledge of this character, you will often hear remarks like the following: "My father lived to be eighty or ninety and he did not bother about these new-fangled ideas of health. He was rugged and healthy." He may have been, but as a rule he had a great deal more vitality than his sons or his daughters. He may have been one of those pioneers who grew up on farms, who had to chop wood and grub up stumps the larger part of their early years. These vigorous exercises, long continued, connected with the simple diet that he was necessarily compelled to subsist on, were the means of building great vitality, and consequently, after he attained maturity, any ordinary deviations from a healthful diet would have little or no effect upon him. The digestive organisms of many individuals possess such an extraordinary degree of strength that they seem to be capable of getting nourishment from any kind of food, no matter how difficult it may be for the ordinary stomach to digest.

In these days we are not called upon to live the vigorous and simple lives of our forefathers and naturally we do not have the vitality that many of them possessed. Then, too, we have been feeding on their vitality for generations. This conclusion is very easily proven by the experience of the average country bred man who moves into the city to found a home. He brings with him all the vitality and strength that he has gained from outdoor country life; but notwithstanding the great vigor that he brings to the city, his family tree, as a rule, exhausts itself in from three to five generations.

If the great cities were not fed by the life blood of the country districts, they would cease to exist. They would begin almost immediately to decrease in population and would soon be wiped out of existence entirely unless they learned the lesson of preserving the vitality of their people. The American people have been wasting their vitality generation after generation. We have been feeding largely for the last generation upon the vitality of the people who have come to

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us from foreign shores, and now we are beginning to realize that we must learn something of the laws of health if we are to fight disease, sickness and early death. We must learn how to feed ourselves. We know how to feed our horses. Scientific dietetics, so far as they are concerned with the feeding of hogs, chickens, dogs and various other live domestic property, have been thoroughly studied, but scientific dietetics for the human race are still in their infancy.

While I freely confess there is such a thing as being too anxious about diet, there is also an ignorance, a carelessness, a disregard of natural principles that is dangerous to health. We have seen that disease is a departure from the normal. To eat properly we must understand what is normal in regard to appetite; we must know what to eat, what to avoid, when to eat, when to fast, how to eat. These branches of the subject have been thoroughly discussed in the first volume of this work on Diet, but here we wish to call attention to some common and well known errors in diet which produce disease.

That *insufficient food* causes disease, is known to all who have seen or read of the famines of India, Asia, and elsewhere, or of the potato famine in Ireland and similar shortages of staple articles of diet among the poor of many lands. While what Jesus said is undoubtedly true, viz., that "man shall not live by bread [food] alone," it is a fact of universal observation that all animals subsist upon food. A diminution of this supply of food below a normal ration means malnutrition—incomplete nutrition, and this is disease.

But not only may the total quantity of food be below normal. One may be fed upon food which seems to be quite sufficient in bulk for one's needs, and yet be insufficiently or improperly fed. This we believe to be the case with white and bleached flour. Babies fed on a mixture made of white flour, water and sugar are poor, weak, anemic creatures and thousands of them die annually. Adults fed on white flour do not have the strength that do those fed on whole wheat flour, and constipation with its attendant evils is often the result of its use.

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If we were to enumerate all the dietetic errors of which the American people are guilty, we are afraid our list would be as startling as it would be long. The majority of Americans eat too much and they eat too great a variety of food at one meal. One has but to look at the menus of an ordinary hotel, especially those of the high class hotel, where course dinners are still the rule, or the American plan of service is still in vogue, to find adequate proof of this statement. From five to eight and even ten courses are served, often with a variety in each course. Take a full course dinner for example—I quote from a menu of August, 1910:—Cantaloupe; cocktail; oysters; soup; fish; (with relishes, olives, radishes, onions and pickles—sweet, sour and Dill); entrée of minced chicken; roast beef, salad, squab, (with a full assortment of vegetables); ice cream, cake, pie and other desserts; crackers, cheese; and coffee. This is an ordinary standard menu of a first class hotel, and no account has been taken of ice water, tea, milk, lemonade or other drinks, or the beer, wine and spirituous liquors that some people habitually use while partaking of a meal of this character. Does it need much wisdom to know that to eat heartily of such a meal is a crime against any stomach and that disease is an almost inevitable result?

For a moment recall the important fact that the stomach is a muscular pouch which receives all these various articles of diet and drink *together,* and then proceeds to *mix them thoroughly.* Contemplate this stomach mixture. Or better still, suppose you take all these various articles of food enumerated and mix them together in a large punch bowl. Now stir them altogether and carefully examine the mixture. Do you not think the result would be a frightful warning?

The experiences of all races in all ages have taught that too many varieties of food at a meal are always provocative of disease. It is the habit of most people today to eat too many different foods at the same meal. They also eat entirely too much.

If we would eat less in quantity, masticate more thoroughly and avoid such a great variety, confining the meal to, say, two or

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three articles, the digestion would be carried on to a far greater advantage. It is unwise, to say the least, to eat a combination of various articles of food at one meal. We eat all we really require of one or two articles of food and then we proceed to tickle the appetite with half a dozen other foods, while if the meal had been confined to two or three articles, we should not have eaten half as much.

Another serious dietetic error is found in connection with most foods where we eat too much and of too great variety. They are nearly all very highly seasoned; Salt, pepper, vinegar, with other spices and condiments are used to great extent, and when so used they are undoubtedly harmful and provocative of disease.

But it is not only the diet of the well-to-do that is disease-producing. The poor and the artisan are too often both ignorant and careless in their dietetic habits. Food is improperly cooked, and oftentimes depraved tastes are followed in the way of greasy pastries, meats fried in lard, sausages which are either too highly seasoned or preserved with injurious chemicals, and the whole meal washed down with ice water, hot coffee or beer instead of its obnoxious features being ameliorated by proper mastication.

This brings us to the consideration of another bad dietetic habit, namely, eating too fast. One has but to watch the people of a great city at its noonday meal to fully realize the evils of this habit. And in this consideration, we will leave out the people who are financially able to eat the elaborate course meals we have described, and who compel themselves to take more time. We refer to the class who visit the cheap restaurants, *cafeterias,* lunch rooms, etc. These, as a rule, are the men and women who do the actual work of a community and who, therefore, should always be in the highest state of mental and physical efficiency. Watch them from the time they leave their store, factory, workshop or office. They *hurry* to put on their hats, *hurry* to the eating place, *hurry* inside, give their order in a *hurry* (or if in a *cafeteria, hurry* to have themselves served), are impatient until their food arrives, of-

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ten commanding the waiter to *"hurry it up"*; and when fairly seated before their food, fairly attack it with a fury of *hurry* that would be ludicrous were it not both disagreeable and painful to contemplate. Instead of properly masticating hard food, it is bolted or washed down with water, coffee, tea or beer. And in hundreds of cases one may see the victims of these bad dietetic habits taking a pill or powder before or after the meal to counteract the ill effects of their own ignorance or indifference. Then, instead of taking a little rest after the meal, they hurry back to their work, taxing brain, hand or eyes unduly, and thereby adding an additional burden to their already overworked body.

This hurried mastication—or rather this insult to the real idea of mastication—results in putting an extra burden upon the stomach, and at the same time works a direct injury to the teeth.

Your stomach is not supplied with teeth; your teeth are in your mouth. They were put there for a purpose. No wonder we have need for so many dentists. If you feed a cow on slop food, her teeth will fall out. If you feed yourself on mushy food, if you use mostly those foods which require no chewing, your teeth will gradually lose their strength and vitality and will require fillings and may finally be destroyed through decay. Horace Fletcher, the mastication expert, states that you can live on half or at least three-quarters the amount of food you are eating at present if you will simply masticate your food thoroughly. Thorough mastication does not mean thirty-two times as has been advocated by Gladstone, the renowned English statesman. It means that you should masticate and continue masticating every mouthful until it disappears without swallowing. It frequently takes a great deal of practice to cultivate the mastication habit—to actually make it a habit. In some cases it takes determination. We have to be persistent for a long period. If you were to masticate to the extreme advocated by Mr. Fletcher, you would have to chew an ordinary mouthful of food from seventy-five to one hundred times in order to thoroughly masticate and liquefy it until it

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would pass down your throat without any effort being made to swallow. As a rule, if you will simply retain the idea that food should be swallowed at all times without effort, that is, that you should never make an effort to swallow your food, and never, by any means, *wash it down* with water, milk, tea or any other liquid, that you should masticate it until it seems to disappear without swallowing, you can rest assured that you are masticating sufficiently. This might not require you to masticate to the extent advocated by Mr. Fletcher, but you would be following the laws of mastication as nearly as can be expected. If it were not for the liquids that are used at mealtimes, very many human beings would nearly choke to death in endeavoring to swallow their food. The average individual takes a mouthful of food, and washes it down with a swallow of coffee, without mastication.

Another gross dietetic error is that eating keeps up the strength. We eat three meals a day because it is our rule, not because the body calls for it. Few people are able to eat three hearty meals each day without injury. It is not what we *eat* but what we *digest* that nourishes us, and when food is not digested every additional particle taken into the stomach is a direct injury and a sure inciter to disease. Few people know what real normal hunger is because they never give the body a chance to find out. The craving for food that we all have at the usual meal hours—that gnawing, empty sensation, is not hunger, as all can testify who have taken a fast for a few days, and have then felt the generous flow of healthful saliva, the keen delight of feeling the teeth biting a hard, dry biscuit, or the pleasure of masticating a dry morsel that ordinarily he would never have looked at, without any appetizers, condiments, extras or "fixins."

Unless the normal, healthful appetite calls for it, let the stomach rest, by taking a fast for a day, a week, or even longer. As a rule there will be no danger. It is not often that a fast can possibly do the slightest harm, and with all but one out of a million it will do much good.

Here is another important consideration. The less you eat

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to maintain health and strength and the vitality that is essential, the longer the human machinery will wear; the longer you will live; the fewer diseases you will have, and the stronger you will be in every conceivable way.

I have also demonstrated in my own and thousands of other cases that the more one adheres to a wholesome diet, the more you can rely upon your appetite and stomach to tell you what is good for you and the reverse. It becomes like a tender conscience—more sensitive to good and evil, and therefore, in time, can be absolutely relied upon. For instance: Many persons, when they have been accustomed to three meals a day and change to a more reasonable diet, find that their stomach causes them more trouble than it did when they were eating three meals daily. Then they become aware that they have a stomach. In other words, the stomach develops a capacity to discriminate between right and wrong; and some, when they notice this particular inclination, have the impression that they are beginning to acquire stomach trouble. Never were they further mistaken. They are, in reality, just beginning to get ready to really enjoy the pleasures of a healthy stomach, for this slight distress is proof that the delicate nerves of the stomach are coming to life. They are not being "doped" with food, and they begin to understand the difference between wholesome food and that which is pernicious, and the more closely you adhere to what is normal and right, the more delicately acute will become the nerves of the stomach. Then when you fail to obey the rules of dietetic wholesomeness it will very plainly indicate its displeasure in pain and discomfort.

Another important fact has been brought out by our large and long continued experience, viz., the danger of giving food to those who are suffering from acute diseases. This is no longer a theory. It has been proven so often, without a single failure, as to have all the positiveness of mathematical demonstration.

In all acute diseases, regardless of what they may be, the functional system is taxed to its utmost in eliminating impuri-

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ties. It has no time to digest food—no need for food. Proof positive that food, either liquid or solid, eaten under these circumstances, does not nourish the body in the slightest degree, is seen clearly in all fever patients. No matter how much food they eat, their bodies continue to waste just the same. In fact, it will nearly always waste still more when food is given, because the process of recovery is prolonged under these unnatural circumstances. The process of curing the body of its disease is compelled to cease in order to rid itself of the material that is forced into an unwilling and unprepared stomach. Thus a body already overloaded with an excess of food must be subjected to the outrage of being compelled to free itself from the additional impurities created by incomplete and imperfect digestion always produced when food is eaten under these abnormal conditions.

The muscles of the arms, legs and every part of the body are frequently so weak in illness of this character as to be almost incapable of action, and still patients and physicians have the incomprehensible ignorance to suppose that the stomach is still capable of digesting food that would nourish a day laborer.

The stomach is a muscular organ; digestion is carried on mostly by muscles, and these muscles are as proportionately weak in your stomach as they are in your arms, legs or elsewhere—even the digestive fluids are furnished almost entirely by elements of the blood which build muscular tissue, and when the muscles are weak this element is, of course, not plentifully supplied by the blood. Therefore, under these conditions, food is not needed and is not craved. But foolish doctors tell you that you must feed—that food is necessary to give the patient sufficient strength to bring about recovery. The instinct of the patient, which generally testifies to the absolute necessity for fasting, is of no importance. "No matter if there is no appetite for food you must be fed nevertheless," says the wise (?) doctor.

Thousands of years before the existence of medical science with its vagaries, its powders, its pills and its potions, there

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was in the possession of every human being an instinct which guided correctly his every action.

Even dogs, horses, cows and other domestic animals possess this instinct, though slightly marred by contact with civilization. All wild animals possess it in a perfect state. Though human beings of today are not blessed with the great protecting power of this instinct in all its completeness, they are, nevertheless, able to determine when they are hungry, and this instinct, no matter how much it may have been subverted, is a thousand times more capable of accurately dictating as to the time when food is needed than is any physician, regardless of how great his intelligence may be.

It will be remembered that when President McKinley was shot, I emphasized these facts in *Physical Culture* Magazine. I then believed, as I believe now, that the unhappy man was killed more by the food taken than by the assassin's bullets. Indeed, the bulletins of the medical men clearly showed that this feeding while the President's body was enfeebled and enfevered was the cause of death. For the first six days after the bullets entered his body, he practically ate nothing, and his condition was so satisfactory that the physicians who attended him said that he would soon be able to sit up. The President was a fleshy, well nourished man and could have been well fed from his own body for from thirty to sixty days without injury, thus giving every opportunity for the elimination of all poison generated by the bullet wounds, and allowing them to heal. The effect of a gunshot wound is to produce in the body what is practically an acute diseased condition. It is a made sore, which in the process of healing is accompanied with fever and inflammation. Had this sore in the President's case been treated by the simple, natural method, no food would have been given to him until all fever and inflammation had subsided. Unfortunately, the physicians were cursed with the erroneous, and proven to be false, notion that to maintain the strength capable of eliminating the fever and healing the wounds he must eat. The result was they urged the President to eat a meal of coffee, toast and chicken broth.

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The following day they themselves explained that "the accumulation of undigested food in the stomach had at that time become as rank as ptomaine and that a bolus of calomel and oil had to be given. It was exceedingly drastic. When relief came, exhaustion followed."

Here are cause and effect so clear that a child might read. The food was unnecessary and uncalled for. In the fevered condition of the President's body, it could not be digested. Undigested, it becomes a mass of poison, breeding ptomaine poisons enough to kill a dozen healthy men, let alone one in his condition. The result was death and the weeping of a nation.

I have quoted this case at some length in order that its lesson might be forcibly impressed upon the minds of readers. Let it be clearly understood: In all acute diseases, whether caused by accident, or otherwise, do not force the patient to eat until he positively craves food, and even if he calls for food, do not give it until all fever and inflammation have subsided. Exactly the same conditions apply in nearly every case to patients after undergoing surgical operations.

From what has been stated it will be seen that we believe the following dietetic habits to be serious causes of disease: The eating of white flour foods, eating too much, eating too large a variety at one meal, eating too fast, drinking at meals to wash down food improperly masticated, eating too highly seasoned food, eating improper and improperly cooked food, improper mastication of food, eating too often, and eating when suffering from the fever and inflammation of a wound, surgical operation or acute disease.

No wonder that with these conditions constantly violated the drug shop with its vast array of drugs and its worse array of patent nostrums flaunts itself on every street corner; that there are at least as many physicians as there are public school teachers, and more sanitariums and hospitals than universities. To a healthful, hygienic, self-respecting nation, every patent medicine advertisement and drug shop should be an insult, and every physician, whose duties were not confined to

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surgical cases, accidents, births and deaths, should be a reproach.

While we have here treated the subject of diet at some length, it has been mainly to show how improper diet contributes to disease. We wish especially to have our readers carefully and studiously peruse what we say on the health side of this diet question. Here we show what to avoid; there what and how to eat to gain and maintain that perfect and abounding health which is a perennial joy to its happy possessor.

5. OVERSTRAIN OR UNDEREXERCISE.—In this category may be included overstrain of the eyes by excessive reading or under improper conditions; bicyclists and other athletes often suffer severe heart and nervous strain by too long continued performances; many business and professional men, and even society women, break down as a result of nervous overstrain caused by the rapid pace at which we live. On the other hand, much disease is the result of want of exercise. If the eyes were closed for months at a time and then suddenly exposed to the light it will be found that they are permanently injured. So with the muscles. Sometimes the fracture of a bone will compel muscles to lie inert for some time. They then become "atrophied," which simply means wasted away, with a consequent loss of strength. Thousands of people, however, suffer daily from underexercise. To put it plainly, they are lazy. They eat too much and thus become "logy," and that is an excuse for their laziness. They thus become subject to disease and its suffering. We are equally opposed to overstrain as to underexercise, but where one person suffers disease from the former cause, we are assured there are ten thousand who suffer from the latter.

As we shall emphatically show, the science of Physculto-pathy has for a fundamental basis the proper exercise of every organ and muscle of the body. We contend with greater emphasis than any other health teachers or healers of disease that all the muscles of the body should constantly be exercised if health would be secured and maintained.

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6. Mechanical Causes.—Among these may be stated what we term the mechanical accidents, such as cuts, stabs, falls, bruises, and the like, but even here the problems are not simple. For instance, a man falls from a horse and fractures his skull, causing direct injury to the brain. This may induce paralysis, and general derangement of the nervous system and ultimately a complete wrecking of the digestive system. Other mechanical causes of disease are those connected with bad habits of clothing, as tight and high-heeled shoes, the use of the corset, the wearing of a tight, unventilated hat, etc.

While the accidents above mentioned are often unavoidable, bad habits of clothing are deliberate, or at least wilful, and, therefore, the diseases caused by them are preventable. The use of tight shoes prevents absorption of the insensible perspiration that is continually being given off by the pores of the skin, and this inevitably results in disease of the feet. Who is there that believes the foul odor that emanates from the feet of some persons is a sign of health? Such fetidity is always a sign of disease. It is the protest of the much abused feet, and is a warning calling for a change in the habits of the foot-abuser lest worse suffering come. The soles of the feet, as well as the armpits, and the palms of the hands are all especially qualified for throwing off waste matter, hence should equally be kept clean and aided in their important work. But this is only a small part of the trouble. Tight shoes prevent the proper circulation of the blood of the feet, and this, and the extra undue pressure on certain joints and other places, produce unsightly, disfiguring and painful enlargements of the joints, together with corns, bunions and other feet injuries. We speak of the brutality of the Chinese in cramping the feet of their women so that they are rendered incapable of walking, but our civilized habit is of exactly the same criminal nature, limited only in degree. There is no doubt but that one great cause of the diminution of the healthful and invigorating exercise of walking arises from this use of improper footgear.

In addition to the badly ventilated and too tight footgear, let us add the high-heeled shoe which distorts the foot in an-

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other way. Dr. Francis D. Donoghue, one of Boston's eminent surgeons, asserts that "only the small fraction of one per cent. (practically none) have normal feet or walk properly."

He says that thousands of shop girls, domestics, factory workers, working men, mechanics, artisans, machinists, and also people of the wealthy class are unwittingly but constantly laying up a store of trouble by ignorantly abusing the delicate joints and tendons of their feet and legs. Many a shop girl suffers pain about the hips and of the spine which she attributes to some internal trouble, aggravated by being on her feet ten of twelve hours a day, when the whole trouble is entirely owing to ill-fitting shoes with their idiotical and injurious high heels. When the foot is encased in one of these destroying implements, the bones, muscles, nerves and tendons not only of the foot, but all the way up the legs and back of the body suffer as a result. Hence every person seeking to be free from disease and live in perfect health should avoid this class of footgear and find one that allows the foot proper ventilation, right pose for the heel and the proper and natural freedom of the foot in exercise.

The same strictures that we have used in reference to tight shoes applies with equal force to tight, unventilated hats. It should need no argument to demonstrate that the natural, normal condition of man's head is not bald. Nature has kindly designed a hirsute covering for all her human children. Few suffer from baldness until it is created by the wearing of unhygienic and tight hats. The tight derby, or any tight unventilated hat, is little better than the much-abused stove-pipe. The effect on the scalp is much the same. Poor ventilation, and the constricting band around the forehead which prevents the free circulation of the blood that nourishes the scalp and hair roots, unite to accomplish the mischief. And the result is, we find young men who are bald. Experience has demonstrated that baldness is almost entirely preventable. It is unnatural and abnormal.

Another mechanical cause of disease is the corset or constricted waist.

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Of the corset we have not one good word to speak. It is evil, wholly evil and nothing but evil. It would have been far better for the race if every cent spent in corsets had been multiplied a thousand times and then put in one pile and burned, than that one cent should have been spent in this body-deforming and health-destroying contrivance. Looked at from the standpoint of the individual, the corset is a health-destroyer, disease-breeder and a producer of unhappiness. Looked at from the standpoint of marital relationship, it makes more unhappy husbands, childless fathers and mothers, mismated couples and divorces than probably any other one cause. Looked at from the standpoint of the race, it is an unmitigated curse, for it renders healthy motherhood impossible, and this, necessarily, means the decline of the race.

Perfect health demands perfect freedom for exercise of all parts of the body. A boy in the free restlessness of his boyishness and refusal to be trammelled by the fears of impropriety, and also because society allows him a much larger freedom than it does his sister, enjoys this freedom of body to a very great degree. Up to the time of puberty, at which time they are supposed to begin to wear long dresses, many girls have a large amount of freedom allowed them. But at this time, acting under a mistaken idea of kindness in supposing that her child needs the support of the corset, or controlled by the insane dictates of fashion, the mother encases the flexible, yielding, expanding and growing body of her daughter, budding into young womanhood, in this monstrous and cursed device of civilization. What is the result? From the very first the constraining and constricting influences produce nervousness and general physical irritability. This may be borne with complacency by the young miss, for a short time, while she is under the impression that her new article of apparel makes her more womanly. But, in time, this complacency wears off, especially as the injurious effects of the corset begin to be felt. The vital organs which, viewed from the standpoint of motherhood and of the welfare of the race, are far more important in the woman than in the man, are constricted, thrust out of place, diseased, and

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thus rendered incapable of properly performing their God-appointed functions. Digestive disorders arise and become chronic; the lungs are restricted in their development so that often they are less than half their normal size, and this predisposes them to consumption, and at the same time destroys the normal power of breathing. Hence oxygenation of the blood, which means both the elimination of the waste, disease-producing matter and the introduction into the vital fluid of the energy-producing elements, is incomplete, and general weakness and devitalization of the whole body results. The corset ultimately injures and makes shapeless, flaccid, and nerveless the flesh at the waist line; it destroys the beauty lines of the body, of the limbs, arms and bust by restricting nourishment, interfering with normal circulation and thus lessening vital power. The constriction prevents the perfect return of the venous blood from the parts below the waist line, hence produces imperfect circulation and consequent retention of impurities of the blood, thus laying the foundation for tumors, cancers and other abnormal and inflamed conditions which cause so many women to turn to expensive and dangerous operations for relief. It is the greatest cause of the functional disorders peculiar to women, and by weakening the nervous and muscular systems is the invariable cause of displacement of the important internal organs. It thus perverts and often destroys the instinct of sex. It produces childlessness and miscarriages; and in nearly every case children born into the world of corseted mothers begin life with a handicap that renders them an easy prey to disease, makes the life-struggle harder and causes many premature deaths. In conclusion, it can readily be seen that where the most perfect love does not exist in the heart of the husband, he loses his affection for his wife. This means marital misery and oftentimes ends in divorce.

Hence we would banish the corset from every home; we would prohibit its manufacture, sale and use as a racial destroyer, and we are assured that could this be done, we should remove a cause of disease that has brought untold misery and woe into this world.

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7. PHYSICAL CAUSES.—Disease is induced by exposure to undue cold or heat, impure air, lightning or electricity. People are affected by high altitudes and aeronauts suffer when they ascend above a certain elevation.

A great cause of disease is the custom of overheating the body by too warm rooms, and too heavy clothing. This seems to be an American proclivity. In England, where the inhabitants exercise more freely and lead more vigorous lives, one will find drawing-rooms from ten to fifteen degrees cooler than those of their American cousins. The waxy color seen in so many American faces comes from lack of exposure to fresh air and sunshine, dearth of exercise, and living in hot rooms.

Build up warmth in the body by accelerating the circulation; by using the right sort of food; by refusing to coddle yourself in warm places under the delusion that you are making yourself comfortable. Live out of doors as much as possible, and thrive upon the oxygen that is essential to keep the fire burning within your body. Fight the tendency to wear more clothing than is needed, lest you become so cold-blooded you will encumber yourself with so many clothes that circulation and general health will be interfered with. Excessive clothing is inclined to stop the pores and partially paralyze their activity and thus one becomes far more liable to colds and other complaints.

The barefooted boys and girls that one sees in Scotland on a winter day know nothing of colds or the many other ailments that our pampered children, living in hothouse parlors, have to fight all the time. It is a fact that the more the body is hardened, the less susceptible one is to disease and the more vitality he will generate. Linen makes better underwear than wool, because it more quickly absorbs the impurities, and therefore allows the pores to retain their activity. Next to linen, cotton makes the best underwear, and these materials can be worn with comfort during the coldest weather.

Endeavor to get hold of the great principle here involved, viz., that he who pampers himself in the assurance that he is

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thus taking care of himself is doing the very opposite of what he desires. The *greatest care* of the body is that which secures the most perfect health. And as we shall fully show in later portions of this series of books, that person only is wise who fortifies the body against cold by naturally warming the blood. By exercise, sharp walking, deep and nasal breathing out of doors, and proper food "put your overcoat into your blood," and thus you will be able to resist disease, as well as enjoy health.

A serious cause of disease is the breathing of impure air. Neglect to supply the proper quantity of oxygen is the cause of many very serious ailments. It produces disease frequently in the first instance and is the cause of its continuance in others. Early in the history of the *Physical Culture* Magazine we called attention to the value of outdoor treatment for consumption. We emphasized the importance of this method of treatment, and the result of our efforts and those of others is seen in the marvelous change that has come about everywhere in the treatment of this complaint. The medical profession is now advocating the outdoor treatment, and, strange as it may seem, many professors of various medical schools have admitted that medicine is ineffective in the treatment of consumption. All the scientific research carried on for the purpose of delving into the mysteries of germ life, as far as furnishing information in regard to the curing of consumption is concerned, has proved of little or no value. The scientific men of the past and of the present have neglected the simple and healthful principles of nature. They look on these simple things as unimportant. They fail to consider them of value because they are simple, and when some one comes along and proves to them their value, they often remark: "I was familiar with their value years ago." Now, within the simple theories that are being definitely advocated largely by nearly all members of the healing art who have eliminated the drugging idea, you will find the real science of bodily rejuvenation by natural diet, natural breathing in the open air, and natural exercise. There is no guesswork about this science. We

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know what we are doing and in practically every case are certain of the beneficial results.

To return to the immediate effects of bad air: When you are in a poorly ventilated room you breathe the same air over and over again, and while continuing this process you breathe in the noxious poisons that have already been eliminated from the lungs. By this process you poison yourself. Not only does the air lack sufficient oxygen, but it is filled with poisons.

This poison is the direct cause of catarrhal affections, and consumption is catarrh of the tissues of the lungs. This disease, which is dreaded perhaps more than any other, frequently begins with a catarrhal condition of the mucous membrane of the nasal passages, which in time passes down into the larynx, then into the bronchial tubes, then into the lungs, where it is known as consumption.

Impure air, therefore, is one of the chief causes of consumption, hence the converse, pure air is one of the chief remedies for it. *Fear* of drafts is one of the inducing causes of consumption. Notice we say fear of drafts—not the drafts themselves. Most people are afraid of drafts. They will sit in room where the air is warm and stagnant with impurities rather than permit fresh air to circulate around them. They will not permit the air to strike the back of their neck lest they take cold.

I would state most clearly and emphatically that there is nothing harmful in a draft. If you go out on a windy day, you meet a vigorous draft. The average individual will tell you that a draft is a current of cold air in a warm room. Whenever you go out of doors from a well-heated room in the winter, you will meet a current of cold air. Some say that baneful effects come from a current of cold air on one part of the body while other parts are surrounded by the warm currents. If you go out in the open air with part of your body heavily clothed and other parts of your body with little or no clothing, you meet a similar condition. Therefore, is it not self-evident that fear of drafts is a mere superstition, and if you desire to be free from disease, one of the first things you

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should do is to eliminate the fear of a draft? The oxygen that you find in pure air is absolutely essential to life, and you will live longer and be more capable, mentally and physically, if you freely supply yourself with a liberal quantity of the purest air obtainable. The only condition to be observed is that you keep the body warm. Let the drafts blow. Court them. Invite them. Deliberately sit in them, day and night, asleep or awake. Teach yourself to *breathe deeply, through the nostrils only,* wrapping yourself up well if your vitality is lowered, or better still, getting up occasionally and exercising until the body is in a glow, and you will soon discover, to your joy, how much life, health, vim, vigor and delight are stored in that draft of which you were so much afraid. It is indeed a "draft" drawn by the God of Nature in your favor, ready to be cashed daily, hourly, almost anywhere and everywhere, *out of doors* (*and indoors,* if your windows are open), whenever you are ready to take it and enjoy its benefits.

And not only in the daytime should this be done. It is equally important that you secure an abundance of fresh air in your sleeping room. Forever banish from your mind the idea that a draft over your bed is injurious. You can allow a gale to blow right over you, provided you are wrapped up sufficiently to keep warm. The Arctic explorers, who often have to sleep out of doors in all weathers and at fearful temperatures, assert that they never "take cold" under these circumstances, whereas when they come into civilization and have to be shut up in badly ventilated rooms the mucous membranes at once become inflamed and all kinds of annoying catarrhal troubles begin.

Consumptives and all kinds of invalids are now being made to sleep out of doors, even in winter, with the most beneficial effects. So that it is self-evident, if you would keep yourself from disease, you cannot overestimate the value of pure air, *day and night.* Open your windows to the fullest extent possible. Secure outside air and ventilate your bedroom in such a manner as to gain the same advantages in the way of pure air as if you were out of doors. Do not be satisfied unless you can feel a breeze playing over your face when you

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go to bed. In other words, *sleep in a draft,* and if you once cultivate this habit, you will never get away from it thereafter, for then you will secure real pleasure and rest from sleep. You will arise in the morning full of life and vigor and enthusiasm. You will feel rested and able to cope with the duties of the day. But when you sleep with closed windows, you often get up in the morning more tired than when you went to bed at night, and through a habit of this kind your vitality is sure to to be greatly lowered.

The death of Emile Zola, the great French novelist, was caused through his ignorance of the necessity of fresh air in his sleeping room.

The facts are: He had just returned from his summer residence. The weather was cold. He had built a fire in his bedroom. He and his wife retired without apparently giving a thought to the necessity for open windows through which the life-giving oxygen must come. The fire did not draw properly. It filled the room with gas. His wife awoke and realized the danger, though she was partially stupefied. She aroused her husband. He arose and started to open the windows, but dropped to the floor in a faint before he had reached them. His wife rushed out for assistance, and when the assistance arrived, Emile Zola, the great novelist, was dead.

At that time we commented editorially in the *Physical Culture* Magazine, as follows: "Was there ever a truth more paradoxical than this? Here was this profoundly intelligent man in his sleeping room with windows tightly closed, and with a fire in the room. Could any human mind imagine an intelligent man familiar with the simplest laws of hygiene committing such an outrageous error? It is bad enough to be in a room with closed windows when there is no fire to eat up all the available oxygen; but when a fire, in addition to the lungs, must be fed with oxygen, then indeed must the poor lungs of stupefied human beings suffer. And when the lungs suffer, when you are not able to properly purify the blood, the vile portions carried to the lungs for elimination must circulate and recirculate through the body until they stupefy the brain,

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and fill every part of the body with vile poisons. Under such circumstances, it is but a short step into the eternal sleep called death.

"The lesson taught by the death of this famous man should be of far more value than any taught by him during his life. It should show the thousands, who are daily committing similar errors, the great danger of breathing and rebreathing the foul air of tightly enclosed rooms. May the sacrifice of a life so important convey a lesson that shall save thousands from committing similar errors.

"Keep a fire in your room if you must; BUT KEEP YOUR WINDOWS OPEN. LIVING ROOMS MUST BE VENTILATED.

"DON'T BREATHE STAGNATED ENCLOSED AIR. WHEN IT HAS BEEN BREATHED AND REBREATHED IT IS FOUL WITH POISON."

The need for proper supply of oxygen cannot be too strongly emphasized. It is necessary to ward off disease. It is still more necessary to cure disease. It is therefore the duty of every one to cultivate the fresh air habit until the average person may regard you as a fresh air crank. Fresh air cranks are a great source of annoyance to those who insist on closed windows. Yet it is well to secure fresh air at all reasonable hazards in the way of annoying or offending others. Health is a matter of primary importance, and in no way is health more surely gained and regained than by the continuous breathing of pure, sun-laden, vivifying, moving, fresh, out-of-door air, and in no way more quickly lost than by breathing shut in, poison-laden, dead, fetid, heavy, indoor air.

While it is only a general term, we believe that a note of warning should be sounded to the effect that *excess is a great cause of disease.*

With prosperity come all sorts of evil influences. By far the worst of these may be termed our excesses. The science of life, to the average individual, is a closed book. He knows little, cares less, of himself and his scientific requirements. Civil-

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ization has largely destroyed our instinct which, when followed, saves us from excesses, and having provided for us no other guide, we are left without safeguard, a prey to the unnatural and abnormal desires that civilization has fostered in us. Everywhere, in every department of life, we find excesses. We eat too much, we drink too much, we ride too fast, we work too hard, we sit up to late, we overheat our rooms, we dance too much, we make too much money, or strive too hard to make it. Temperance is taught everywhere *in words,* but *in fact* few of the teachers themselves demonstrate in their own lives that they know the meaning of the word. With all our advance in science and knowledge, with all our increased wealth, with all our increased opportunities, it is doubtful if we get one-fourth as much real happiness out of life as our forefathers did who lived without our advantages, but equally without our excesses. The ordinary human being today wears out half of his life by his excessive striving for enjoyment the other half. The human machine is worn out before it has lived half its life and in the excessive race for pleasure a large part of the power to enjoy life is destroyed.

As a nation, we are rolling in wealth, we are revelling in luxury. Those families that even consider themselves poor often have many times more than they really need. They have more food than is good for them, they usually wear more clothing than is healthful, and they are superabundantly supplied with what are supposed to be the necessities of life.

Nothing is known of the value of abstinence in this age. Fasting and prayer as a combination have not been handed down to us by our forefathers. Dissipations of every kind stare us in the face at every turn. The victim of excesses knows nothing of life from its most magnificent viewpoint. He is usually jaded, worked out; and there are very few moments in his existence that he really feels that exhilaration, that buoyancy, that comes with superb health.

Intemperance is a terrible sin. Alcohol has ruined millions of lives and has shortened the lives of millions more. But it is not by any means the only evil. Over-eating is a sin that

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exists in practically every home. It is not here and there—it is everywhere. How many years of your life are you spending for the privilege of stuffing your stomach? Some give twenty or twenty-five years, others from forty to sixty years. Have you figured out, dear reader, how many years of your life you are expending in this manner? There are excesses everywhere in life, but there is no evil or no combination of evils that has such a terrible effect upon bodily vigor, upon nervous energies, as a continuous habit of eating beyond the needs of the body. You simply wear out the human machine years and years before there is really any need of its showing the slightest sign of weakness.

Eating three or more meals daily that are not intensely enjoyed, as a habit, is criminal. It is worse than criminal, because as a rule you sit down to a meal before the previous meal has been fully digested. The crazy idea that food is needed merely to keep up your strength has filled thousands of graves.

Learn to eat what you need. Learn to scientifically feed the human machine. Don't dissipate in work. Don't be excessive in anything. Take care of your body. It is the only one you have and you are liable to need it next year and the year after, and in fact, for many years to come. Don't wear out the vital organs by compelling them to handle from two to four times as much food as is needed to fully nourish your body.

Any attention that is given to these important subjects will be repaid over and over again, hundreds, yes, thousands of times, not only in increased physical health, but your earning power, financially, will be vastly increased. You will be a better man, a stronger woman, and life will open up opportunities under these changed conditions that will amaze you.

There is a healthy expenditure of energy that is beneficial to all concerned, but the great trouble with the American race is that it shirks this healthy expenditure and then goes to excess in those things where excess ultimately produces disease, unhappiness, misery and death.

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8. Chemical Causes.—A child drinks carbolic acid, men and women are partially suffocated by the escape of illuminating or sewer gas, painters and paper hangers are poisoned by chemicals used in their profession, whole communities are poisoned by impure water. In this category belongs the use of tobacco, drugs and alcoholic liquors. I might also add highly seasoned foods, etc.

There are many professions whose followers have our heartiest sympathies. In their struggles to gain a livelihood they seem compelled to engage in industries which are direct producers of disease. Glass blowers, hat makers, rag sorters, coal miners, coal weighers, cement makers, and all those employed where dust and other small particles are being inhaled either through the mouth or nostrils, are oftentimes in danger of disease. Such workers are to be pitied. They are deserving our deepest sympathy, and we should gladly urge the adoption of all methods that would ameliorate their lot. We hail all legislation that seeks to benefit or improve the hard conditions under which they labor.

But what shall be said of those men who wilfully, deliberately and habitually take into their bodies, for a mere temporary pleasure, those substances that the experiences of the ages have taught are great and awful producers of disease? I refer to the use of alcohol, tobacco and drugs.

Alcohol. That alcohol in its various forms is one of the greatest causes of disease, we think no physician can deny and no careful observer will dispute. We regard it as one of the greatest curses of our civilization. We believe it would have been infinitely better had its use never been discovered. The world would have been a thousandfold better off had alcoholic beverages never been known. Without them we would have been centuries further advanced in civilization, art and peaceful progress. We believe with Gladstone that they have caused more deaths than war, famine and pestilence combined. They are the curse of our civilization, and the curse that our civilization takes wherever it goes. We have debased and degraded the Indians we found on this continent when we ar-

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rived here, as we are now debasing the Hawaiian, Filipino and Porto Rican and other aborigines whose land we have taken in "benevolent assimilation." Every ship loaded with our civilizing soldiers is accompanied by other shiploads of civilizing beers, wines and spirits. In our own land, it has caused more disease, misery, insanity and death than all other causes combined. It has ruined more promising lives of both men and women than any other cause. It has cut short more promising careers; dragged down more intellectual giants; stifled more sweet-voiced orators and singers; silenced more effective statesmen; destroyed more marital happiness; cursed more children's joys, and damned more infants, born and unborn, than all other causes combined.

Yet we doubt whether there is a greater difference of opinion upon any subject that could be presented than appears to exist on this subject of the use of alcoholic beverages. Their use has become incorporated into every feature of our life from the cradle to the grave. We drink at births, christenings, marriages, funerals, and every day between. We make special drinking bouts at the launching of great vessels; the completion of stately structures of architecture; meetings of eminent dignitaries and statesmen, and at every social function. We drink when we meet our friends; we drink when we part with them. We drink when we are doleful and when we are boisterous. We drink when we are depressed and when we are glad. We drink when we are hot and when we are cold. We drink when we are distressed and when we are happy. The fact is, we drink because we like to drink.

This seems to have been the experience of mankind of all ages. The Old Testament gives many horrible accounts of the use of alcoholic liquors. We know from Tacitus that the Huns, Goths and Vandals all used some form of alcoholic beverage. And while its form has been diverse, the effects it produces have been sought in some way or another by almost every people of whom we have any cognizance.

Some people have argued from this general usage that it was a natural yielding to a universal and legitimate demand,

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but it seems to us that it would be as reasonable to argue the usefulness of lying, theft, adultery, murder and all kinds of evil because they have prevailed among all people of all ages. The prevalence of the use of alcohol must be judged by reason, and our reason convinces us of its horrible and damnable effects as already stated.

Not the least of its evils is that it comes upon its victims so insidiously. It seems to be so friendly, so kindly, so genial. It is often proffered by the hands of the fairest of maidens who lure to its use with their sweetest of smiles. It deceives under the guise of a friendly, social custom, and *millions*—we repeat, millions, and we might say, hundreds of millions—have awakened to its real, damnable nature only after the habit of its use has been fastened upon them and they found themselves incapable of breaking the chain.

Do we put the matter too strongly? There is not a jurist in any civilized country in the world but that will acknowledge that the largest proportion of crimes that are tried before him are directly or indirectly the result of the use of alcoholic liquors. There is scarcely a superintendent of a penitentiary, prison, insane asylum or poor farm but will honestly state that the major part of the inmates of these establishments came there directly or indirectly as the result of the inordinate use of alcoholic liquors. There is not a teacher in the civilized world, who has kept track of his pupils, but will confess that more have been debased and degraded by alcohol and nicotine combined than by all other sources of evil put together. There is no clergyman in the world, even though he may himself use alcoholic liquors, but will acknowledge that their excessive use is more injurious to Christian living, morals and progress of the people than all other causes combined.

While many physicians use alcoholic liquors, all authorities agree with Prof. Church, of Oxford, that "to many constitutions it is decidedly injurious, even when consumed in very moderate quantities and in the weakest or most dilute liquors. Its use throughout the day is almost always fraught with danger." As to its scientific value, the eminent chemist, Letheby,

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Medical Officer of Health and Food Analyst for the City of London, states: "The functions of alcohol are manifestly of a complicated nature; in fact, the whole subject is remarkably obscure and requires the light of science to illuminate." And the eminent chemist, physician and surgeon, Sir Benjamin Ward Richardson, who studied this question of the scientific value of alcohol at the special request of the Society of Arts, and various learned medical societies of Great Britain, and who himself, prior to his experiment, was a moderate and habitual user of alcoholic liquors, unequivocally declared that, as the result of his long-continued scientific experiments, he was convinced of the danger of all alcoholic liquors as beverages; of their absolute valuelessness as foods, and of their doubtful helpfulness as medicines.

As the learned editors, Doctors Reissig and Jelliffe, comprehensively state in their Standard Family Physician: "If indulgence in alcohol is continued, paralytic conditions become more and more marked. The flushed face becomes pale, the eyes lusterless, the loquaciousness diminishes, the speech is indistinct, the general activity subsides. Unconsciousness more or less marked, accompanied by a cold, clammy condition of the skin and slow noisy breathing, follows, and the intoxicated individual recovers from his exuberance of spirits and deeds in a resting place often involuntarily selected. Not uncommonly, twitchings and convulsions may result from alcoholic indulgence, and in some persons the narcotic state may come on without any preliminary period of excitement. Sudden death may ensue, and this has been observed where persons have taken large amounts of alcohol within a short time, as on a wager.

"Repeated intoxication, or even the long-continued, apparently moderate indulgence in alcohol which in time exceeds certain limits, can gradually bring about an insidious poisoning of the system, which may be designated as chronic alcoholism. The stomach, being constantly exposed to the irritating effects of the alcohol, is the first organ to suffer and it soon becomes the seat of chronic catarrh. As a result of this

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the appetite diminishes, nutrition is interfered with, and the entire system is thereby weakened. Morning vomiting is very common, the vomited material consisting largely of saliva swallowed during sleep, and of the excess of the mucus due to the catarrhal process. The liver becomes the seat of a slow degeneration; it becomes fatty, or more often new connective-tissue growth causes it to contract; the kidneys do not function-ate as well, and also become cirrhotic; the heart enlarges, particularly in beer drinkers, on account of the increased amount of fluid which it is compelled to propel through the body; it undergoes fatty degeneration, and gets gradually weaker. Men who drink a great deal without any apparent ill effects often die very suddenly from cardiac weakness. In addition to the symptoms enumerated, there are also developed various chronic catarrhs of the throat, larynx, and intestine; and the arteries undergo hardening which may go on to chalky hardening, or calcification. Of great moment is the involvement of the blood-vessels of the brain and nervous system. An ordinary trembling of the hands is a common symptom of over-indulgence. There may be sensory disturbances, such as pains in the arms and legs. These may gradually lead to inflammation of the nerves (neuritis), with a loss of power to raise the wrist, or raise the toes; or the brain itself may give out, and epilepsy and insanity develop.

"In short, there is scarcely an organ of the body which is not influenced by alcohol sooner or later, and to some extent permanently damaged. In time the higher mental faculties becomes affected, and the individual becomes dull, awkward, careless and thick-witted. Character and self-control are lost, and the longer the habit has been present, the more difficult it becomes to overcome it. The drunkard's sense of obligation to his family, to decency, and to custom, disappear, and soon he does not even realize the disgrace of his condition, having become wrecked both in mind and body. As the habit gradually diminishes the resisting powers of the organism, the alcoholic readily succumbs to diseases which the ordinary person withstands."

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They also continue: "A great deal can be said concerning the close relation of alcoholism to crime, but it will be sufficient to call attention here to the fact that a large percentage of the cases of murder, assault, resistance to the law, burglary, etc., can be attributed to the effects of this habit. Suicide, primarily or secondarily, may often be traced to alcoholic indulgence. Venereal diseases are frequently contracted by men during a debauch and transmitted to their wives. How much more dangerous than the ordinary deadly poison, is, therefore, this substance, which not only affects the one who imbibes it, but also numerous innocent persons, destroys families, and even manifests its evil influence in succeeding generations. Sympathy must be extended to those unfortunates who are weak-minded or insane because their fathers were drunkards, and to those who are predisposed to nervous or mental diseases, to which they sooner or later must succumb. Disease, asylums, prisons, early death and suicide can all be laid at the door of this enemy of mankind, which, in the guise of banishing pain, has falsely been called one of the benefactors of the human race. It would be possible to abandon many prisons and asylums if the continual poisoning of the nations by alcohol could be stopped."

These authorities, representing the very highest wisdom and experience of the medical profession and backed up by a corps of assistants representing thirty-three of the most eminent physicians and surgeons of Germany and ten of similar position in America, in the main endorse the position we have taken, that total abstinence is the only wise and safe procedure to break up the drinking habit. Indeed, here are their words: "Until very recently, the drinking habit was looked upon as an incurable evil. Efforts were confined to exhortations which usually went unheeded. A great advance was made when it came to be realized that complete abstinence could alone free the individual from his desire for alcoholic beverages. The damage done to the various organs cannot be rectified, but the drinker can be warned of further inroads on his health which are liable to occur."

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Year by year faith in drugging wanes and the number of patients who regain health and happiness through outdoor treatment increases.

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But, immeasurably better than the cure of diseases induced by alcohol is the healthful life that abstains from them. We urge absolute and life-long abstinence upon all who seek to be free from disease and to live in perfect health.

Do not touch, taste or handle the dangerous stuff, for then, and then only, is one safe.

The tobacco habit manifests itself in five different ways, all harmful, all disgusting and all equally deserving the strenuous opposition of every advocate of perfect health. These five forms are cigarette smoking, cigar smoking, pipe smoking, chewing and taking of snuff.

Cigarette Smoking. Independent of the moral aspect of this question, we will discuss cigarette smoking purely from the physical standpoint. The testimony of chemists, physicians, criminal experts and athletes is absolutely unanimous in regard to the physical injuries that follow the formation of this habit. It generally begins with an effort to be smart. It soon becomes a pleasure and a means to tide over a moment of nervousness or embarrassment. Next it becomes a necessity of life. When it has attained this stage, its victim loses physical, mental and moral control. As Dr. Orison Swett Marden, formerly editor of *Success,* forcefully says:

"I denounce it simply because of its blighting, blasting effect upon one's success in life; because it draws off the energy, saps the vitality and force which ought to be made to tell in one's career; because it blunts the sensibilities and deadens the thinking faculties; because it kills the ambition and the finer instincts, and the more delicate aspirations and perceptions; because it destroys the ability to concentrate the mind, which is the secret of all achievement.

"The whole tendency of the cigarette nicotine poison in the youth is to arrest development. It is fatal to all normal functions. It blights and blasts both health and morals. It not only ruins the faculties, but it unbalances the mind, as well. Many of the most pitiable cases of insanity in our asylums are cigarette fiends. It creates abnormal appetites, strange, undefined longings, discontent, uneasiness, nervousness, irrita-

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bility, and in many, an almost irresistible inclination to crime. In fact, the moral depravity which follows the cigarette habit is something frightful. Lying, cheating, impurity, loss of moral courage and manhood, a complete dropping of life's standards all along the line, are its general results.

"Magistrate Crane, of New York City, says: 'Ninety-nine out of a hundred boys between the ages of ten and seventeen years who come before me charged with crime have their fingers disfigured by yellow cigarette stains. I am not a crank on this subject, I do not care to pose as a reformer, but it is my opinion that cigarettes will do more than liquor to ruin boys. When you have arraigned before you boys hopelessly deaf through the excessive use of cigarettes, boys who have stolen their sisters' earnings, boys who absolutely refuse to work, who do nothing but gamble and steal, you cannot help seeing that there is some direct cause, and a great deal of this boyhood crime is, to my mind, easy to trace to the deadly cigarette. There is something in the poison of the cigarette that seems to get into the system of the boy and to destroy all moral fiber.'

"Not long ago a boy in New York robbed his mother and actually beat her because she would not give him money with which to buy cigarettes. Every little while we see accounts in newspapers all over the country of all kinds of petty thefts and misdemeanors which boys commit in order to satisfy the cigarette mania.

"Another New York City magistrate says: 'Yesterday I had before me thirty-five boy prisoners. Thirty-three of them were confirmed cigarette smokers. Today, from a reliable source, I have made the gruesome discovery that two of the largest cigarette manufacturers soak their product in a weak solution of opium. The fact that out of thirty-five prisoners thirty-three smoked cigarettes might seem to indicate some direct connection between cigarettes and crime. And when it is announced on authority that most cigarettes are doped with opium, this connection is not hard to understand. Opium is like whiskey—it creates an increasing appetite that grows with

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what it feeds upon. A growing boy who lets tobacco and opium get a hold upon his senses is never long in coming under the domination of whiskey, too. Tobacco is the boy's easiest and most direct road to whiskey. When opium is added, the young man's chance of resisting the combined forces and escaping physical, moral, and mental harm is slim, indeed.'

"Young men of great natural ability, everywhere, some of them in high positions, are constantly losing their grip, deteriorating, dropping back, losing their ambition, their push, their stamina, and their energy, because of its deadly hold upon them. If there is anything a young man should guard as divinely sacred, it is his ability to think clearly, forcefully, logically.

"Dr. J. J. Kellogg says: 'A few months ago I had all the nicotine removed from a cigarette, making a solution out of it. I injected half the quantity into a frog, with the effect that the frog died almost instantly. The rest was administered to another frog with like effect. Both frogs were full grown, and of average size. The conclusion is evident that a single cigarette contains poison enough to kill two frogs. A boy who smokes twenty cigarettes a day has inhaled enough poison to kill forty frogs. Why does the poison not kill the boy? It does kill him. If not immediately, he will die sooner or later of weak heart, Bright's disease, or some other malady which scientific physicians everywhere now recognize as a natural result of chronic nicotine poisoning.'

"A chemist, not long since, took the tobacco used in an average cigarette and soaked it in several teaspoonfuls of water and then injected a portion of it under the skin of a cat. The cat almost immediately went into convulsions and died in fifteen minutes. Dogs have been killed with a single drop of nicotine.

"A young man died in a Minnesota State institution not long ago, who, five years before, had been one of the most promising young physicians of the West. 'Still under thirty years at the time of his commitment to the institution,' says the newspaper account of his story, 'he had already made

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three discoveries in nervous diseases that had made him looked up to in his profession. But he smoked cigarettes—smoked incessantly. For a long time the effects of the habit were not apparent on him. In fact, it was not until a patient died on the operating table under his hands, and the young doctor went to pieces, that it became known that he was a victim of the paper pipes. But then he had gone too far. He was a wreck in mind as well as in body, and he ended his days in a maniac's cell.'

"Anything which impairs his success capital, which cuts down his achievement and makes him a possible failure when he might have been a grand success, is a crime against himself. Anything which benumbs the senses, deadens the sensibilities, dulls the mental faculties, and takes the edge off one's ability, is a deadly enemy, and there is nothing else which effects all this so quickly as the cigarette. It is said that within the past fifty years not a student at Harvard University who used tobacco has been graduated at the head of his class, although, on the average, five out of six use tobacco.

"An investigation of all the students who entered Yale University during nine years shows that the cigarette smokers were the inferiors, both in weight and lung capacity, of the non-smokers, although they averaged fifteen months older.

"Dr. Fiske, of the Northwestern Academy, has asked all pupils who will not give up cigarettes to leave the academy. In one year, not one of the boys who used cigarettes stood in the front rank of scholarship.

" 'This is our experience in teaching more than fifty thousand young people,' says the principal of a great business college. 'Cigarettes bring shattered nerves, stunted growth, and general physical and mental degeneration. We refuse to receive users of tobacco in our institution.'

"Cigarette smoking is no longer simply a moral question. The great business world has taken it up as a deadly enemy of advancement, of achievement. Leading business firms all over the country have put the cigarette on the prohibited list. In Detroit alone, sixty-nine merchants have agreed not to

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employ the cigarette user. In Chicago, Montgomery Ward & Company, Hibbard, Spencer & Bartlett, and some of the other large concerns have prohibited cigarette smoking among all employees under eighteen years of age. Marshall Field & Company, and the Morgan & Wright Tire Company, have this rule: 'No cigarettes can be smoked by our employees.' One of the questions on the application blanks at Wanamaker's reads: 'Do you use tobacco or cigarettes?'

"The superintendent of the Lindell Street Railway, of St. Louis, says: 'Under no circumstances will I hire a man who smokes cigarettes. He is as dangerous on the front of a motor as a man who drinks. In fact, he is more dangerous; his nerves are apt to give way at any moment. If I find a car running badly, I immediately begin to investigate to find if the man smokes cigarettes. Nine times out of ten he does, and then he goes, for good.'

"E. H. Harriman, the head of the Union Pacific Railroad system, says that they 'might as well go to a lunatic asylum for their employees as to hire cigarette smokers.'

"The New York, New Haven and Hartford; the Chicago, Rock Island and Pacific; the Lehigh Valley; the Burlington, and many others of the leading railroad companies of this country have issued orders positively forbidding the use of cigarettes while on duty.

"If there is anything the youth should regard as sacred and should protect at all hazards, as it affects his future more than anything else, it is his will power, and this is affected very early in the cigarette smoker, so that he finds himself a slave of a practice which was once absolutely within his own volition.

"Cigarette smoking early impairs the digestive organs. It causes a gradual loss of appetite, and the wretched victim substitutes more cigarettes for food. In fact, he finally gets to a point where he becomes a slave to the cigarette that he cannot do without it.

"Herein lies one of the greatest dangers of the cigarette. It creates a longing which it cannot satisfy. Victims who

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have smoked from one hundred to one hundred and fifty cigarettes a day say that, while the smoking gives some temporary satisfaction, it creates a perpetual dissatisfaction, in that it never appeases the additional hunger it creates; hence the longing for other stimulants that will do what the cigarette promised but cannot fulfill.

"A physician in charge of a large sanitarium in the West says that three-fifths of all the men who came to the institution within a year, to be cured of the opium, morphine, or cocaine habit, have been cigarette smokers, and that sixty per cent. of these pleaded, as their only excuse, the need of a stronger stimulant than the cigarette.

"Excessive cigarette smoking increases the heart's action very materially, in some instances twenty-five or thirty beats a minute. Think of the enormous amount of extra work forced upon this delicate organ every twenty-four hours. The pulsations are not only greatly increased, but, also, very materially weakened, so that the blood is not forced to every part of the system, and hence the tissues are not nourished as they would be by means of fewer, but stronger, more vigorous pulsations."

Cigar and Pipe Smoking. It is hard to tell which is the more dangerous and more disgusting habit of the two. The time has gone by when the cigar can be said to be the rich man's refined method of taking nicotine. It is the nicotine poisoning that both kinds of smokers wish to enjoy. This nicotine is a volatile oil distributed through the tobacco plant. In its pure state, it is as deadly a poison as prussic acid. The great surgeon, Sir Benjamin Brodie, once administered a single drop hypodermically to a cat and the animal fell dead almost as quickly as if it had been struck by lightning. In the case of the smoker, the nicotine enters the system either through the tissues of the mouth, or if he "inhales," through those of the lungs. While the testimony of smokers cannot be ignored that the sensations produced by this process are sedative and agreeable, the constant and accumulative effects are injurious to a high degree. The immediate effects

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vary considerably according to the temperament of the smoker. In some cases it acts as a sedative or soothing influence. In others it acts as a stimulant and nerves up the smoker to renewed activity, but in all cases the injury to the body and mind is sure, and sooner or later the victim will feel its deadly influence. These statements are verified by the scientific assertions of scores of leading authorities of the world among whom are the following:

The late Sir Astley Cooper, one of the most brilliant physicians of the British islands, was a consistent opponent of tobacco on the score of its debilitating influence on mind and body. Sir Charles Bell, another English doctor of repute, has published a work in which he gives striking testimony to the power of the cigar or pipe to rob one of natural force and ambition.

Dr. C. P. Townsend, of New York, asserts that he has treated several patients for impotence, the result of nicotine poisoning, and his experiences in this respect are confirmed by a number of medical men. This is a sure sign that tobacco affects for ill the great nerve centres.

Monsieur Decaisne, in an address to the French Academy of Sciences, declares that in the case of 88 inveterate smokers he met with 32 marked symptoms of mental disturbance. The scientist also related many other instances of a like nature.

M. Bertillon, who made an exhaustive investigation of the effects of smoking on French students, obtained conclusions which were precisely the reverse of those allegedly secured by the American observer. Bertillon paid special attention to 102 students who were given to the use of the weed—devotees to it, in fact. All the young men were studying at the French Polytechnic School. It was found that in the highest series of the examinations only one-fourth of the successful ones smoked, while in the lower series three-fourths were addicted to the cigar or the cigarette, and in the lowest series of all not less than four-fifths of the "non-progressives" were slaves to the habit.

Dr. Allen Forbes, of the London Hospital, says: "Proof

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of the moral and mental disturbances wrought by tobacco are well known to every doctor. In this respect it is not many degrees removed, if at all, from the category of those other drugs with which humanity is accustomed to warp or kill its intellectuality; the allusion being to opium, alcohol and so forth."

Dr. William A. Alcott, an American author and physician of note, who has written at length on the subject of nicotine and its effects on the human system, says: "Tobacco affects unfavorably at least four of the five senses. Now, as it is through the medium of our senses that we receive our knowledge, it very reasonably follows that that which impairs our senses will also impair our mental faculties. And those who have had opportunities for noting the effect of tobacco on the brain will, I think, agree with me in that it mars the action of that delicate organ to a marked and progressive degree."

Dr. James Rush, of New York City, another author on the topic, avers: "Nothing is more certain than that the use of tobacco has a bad effect on the memory as well as on the mental powers in general."

Dr. W. J. Tyrell has this to say in regard to the action of tobacco on the nervous system: "Its most notable effect, however, is perhaps that in which the nerves are involved. This means that the mental powers are brought under its evil influence and in turn some of the organs—especially the heart—are induced to abnormal action. Some of the most important functions are in consequence thrown out of order, particularly the digestive. So we have poor nutrition, which in turn produces debility, lowering the tone of all the other functions and diminishing the vitality in general. The development of the entire body—mentally and physically—is hindered if not quite stopped, and the result is that the young man is never quite that which Nature intended him to be in the first place."

Dr. William Stephenson, a recognized authority on neurasthenics, in speaking of the effects of tobacco, declares that it "impairs the force and continuous powers of the brain, and so clouds the intellect and interferes with the action of the memory."

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Dr. C. L. Cullen, another authority on the subject, remarks in a paper which he has published on the subject, that "the conclusion of every unbiased student of the matter must be, that tobacco works harm to the memory, produces fatuity and other symptoms of a weakened and senile state of the nervous and mental systems."

In some of the posthumous papers of the late Governor Sullivan occurs this passage: "It (tobacco) has never failed to render me dull and heavy, to interrupt my alertness of thought and to weaken the powers of my mind in analyzing and defining ideas."

Professor James Hitchcock remarks: "Tobacco exerts a most pernicious influence on the mind. Its tendency is to weaken and debilitate our mentality. We cannot take a more effectual course to cloud the intellect, weaken the memory and confuse the mental operations than by smoking."

Professor Charles W. MacDonald, of the University of Edinburgh, in an address to the students of that educational institution, said: "One of the most insidious of the evils with which you will have to contend when the wholesome restrictions of the faculty are removed from you, will be found in the pipe. * * * And I would be derelict to my duty did I not warn you of the grave dangers which are inseparable from the use of tobacco."

In a book used in the German public schools there is given a brief but sufficient synopsis of the diseases which are the direct result of the use of tobacco, these including those of the teeth, throat, digestive organs and so forth. There is also a statement as to the effect of smoking on the intellect, morals, thrift, religion and so forth.

Chewing. Everything that has been said on the smoking habit can practically be said on the chewing habit, and in some respects, perhaps, with greater force. In chewing, the tobacco user absorbs more direct nicotine, although he generally falls into the disgusting habit of spitting out, every now and then, a large mouthful of tobacco juice. But while this seems to be ridding himself of the poisonous nicotine, he does not empty

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his mouth until the effect he desires has been produced by the absorption of a sufficient quantity through the tissues into the system. Another great injury induced by the chewer of tobacco is the undue increase of the flow of saliva. Any unnatural, habitual excitation of this flow is sure to produce serious derangement of the salivary glands, and to chemically injure the saliva produced. Consequently, in addition to the nicotine poisoning induced by this habit, the tobacco chewer has to overcome in some way the inadequacy of the digestive processes brought about by the injury to the saliva.

Snuff Taking. This habit is on a par with the other nicotine poisoning habits, the only difference being in the method of the application of the nicotine. The tobacco is ground into a fine powder and then snuffed up the nostrils. It is thus brought into contact with the delicate mucous membranes of the nasal passages where it is moistened and the nicotine extracted, from whence it is conveyed by the breathing process, or by the flow of the mucus into the posterior part of the mouth and down the throat, thus entering the whole system. Though for a time it was considered a most elegant habit, even the dainty dames of the courts of England and France indulging in it, it is now justly considered equally as disgusting and filthy as chewing and all medical testimony is to the effect that it is just as harmful.

A cause of disease that I believe to be equally as perilous as that of alcohol or tobacco, and as prolific in its ultimate manifestations of suffering, is the drug habit. Thousands of persons annually form this habit innocently and ignorantly. They find themselves suffering from temporary inconvenience of the stomach, a headache, or something of the kind, and seeing the advertisements of *a sure cure* flaunting from billboards and placards in the most respectable drug stores of their home city, they innocently imagine that all they have to do is to take a few doses of this much advertised and lauded medicine to make themselves feel all right. The "cure all" probably contains alcohol, cocaine, chloral, morphine, opium, antikammia, acetanilid, or some other drug equally obnoxious and injurious.

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The first few doses soothe the suffering by drugging the nerves into insensibility, and the innocent drug-taker is so pleased with his experiment that he renews it, when, a few weeks later, he again suffers from overeating, late hours, overindulgence in a "glass with a friend," or finds himself "let down" with overwork or the constant strain of his nerve-wearing occupation.

Another great danger lurks here. The fact that he can so soon "cure" himself, has the tendency to render him reckless to the cause of his trouble. Why shouldn't he *enjoy himself,* he asks, if he can so easily remove the effects. It only needs a glass of this, or a dose of that, or a few pills or powders and he will be all right. Thus the drug has lured its victim the more quickly to his destruction.

A few months of this course of procedure and the end is certain. The drug habit is formed. Everything else gives way to the gratification of this new appetite, and the victim now enters upon the open pathway to disgrace and death—ruined, slain by drugs. This is no fanciful picture. Millions have gone this road to destruction in America alone, and there is not a city in our land today that does not have its army of men, women—aye, and youths and maidens, whose lives are wrecked and who are dragging out a living death owing to the curse of these pernicious drug habits having become fastened upon them.

But not only are habits thus formed by the sufferers prescribing (by constantly flaunted suggestion) for themselves. A recent editorial writer asserts his belief "that at least ninety per cent. of the victims of opium, chloral, cocaine and other brain and nerve-destroying drugs contract these habits through prescriptions given by regular doctors, and in a large number of cases the patients are entirely ignorant of the nature of the drug that is administered or of the fact that they are taking any habit-forming poison."

Here then is need for a loud note of warning. Beware of patent medicines of any and every kind, and especially of those the contents of which you do not know, and even more cautiously beware of a prescription from a physician, the con-

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tents of which he does not inform you of. For, in our age of stress, business excitement, rush and worry, a large proportion of people have little reserve or resisting power, and stimulants and habit-forming drugs soon play havoc with their victims. We hold that under no circumstances whatever should any habit-forming drug be dispensed without the consumer's full knowledge as to what he is taking, and if such drugs are to be dispensed in any way, we hold that there should be legal requirements compelling every manufacturer of any preparation containing any poison or habit-forming drug to put a red label on every bottle or package, on which should be printed in plain English the name of the drug and the amount of the same used in the preparation. And this should apply to a physician's prescription, as well as to a proprietary or patent medicine. Yet even this safeguard will affect the people very little, for without greater knowledge, a great mass of them will continue blindly to swallow the medicines of package and prescription until they wake up too late and find themselves in the bondage of the deathly drug habit. Hence the chief safeguard is in the campaign of education we have begun and intend to continue until knowledge of these deadly and dangerous drugs and the evil and insidious methods by which their use is foisted upon innocent victims, is scattered broadcast throughout the land.

It is becoming more and more necessary to warn the people of these things as the greed for wealth makes manufacturers more unscrupulous. Take the great increase in headache powders, for instance. Their sale is now something frightfully enormous. Not only are they sold, but samples are distributed by the wholesale, and Uncle Sam's mails are sometimes used to convey deadly poisons without a word of warning on the wrappers.

The reason that so many headache powders and pain killers are sold is that the public as a whole has no idea as to what the powders or tablets contain. They simply look at the box and trust implicitly the words, "Absolutely Harmless," or "No Heart-Effect."

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Now the vital question is: what do these powders contain? Picking up a package we see across the cover, "These powders contain . . . grains of *Acetanilid.*" The law compels the manufacturers to put that word there but they have made it as inconspicuous as possible. But what is acetanilid? Acetanilid is a poisonous drug. More than that, it is a drug that depraves. It belongs to the same class as opium, morphine, or cocaine, and the habit is as easily formed. Acetanilid will not cure a headache, neither will it cure nervousness or colds. What acetanilid really does is to suppress the action of the heart. Its effects are never permanent, though they may be fatal. It will only aggravate troubles of the body unless the user keeps himself constantly drugged. Two other classes of "quick cures" is equally dangerous, as they all contain this deadly drug.

The first class consists of several different brands of "Bromo-Quinines," which are guaranteed to cure a cold in twenty-four hours, but which would be better appreciated by humanity if they were guaranteed to kill the patient in twenty-four minutes, if he should get over-zealous and take an extra pill or two. The coroner's verdict would be: "Death due to acetanilid poisoning."

The second takes the form of effervescent salts commonly sold in drug stores, both by the bottle and at the soda fountain. It is advertised as a bracer, a cure for headaches, neuralgia, that tired feeling, etc. The dose is a heaping teaspoonful in a glass of water. A heaping teaspoonful contains about ten grains of acetanilid, along with other less potent drugs. Acetanilid is given on rare occasions by the medical fraternity. The United States Pharmacopœia dose is four grains. Five grains has been known to produce fatal results.

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CHAPTER IX.

THE LIMITATIONS AND SHORTCOMINGS OF SURGERY.

OUTRAGES against health and strength, manhood and womanhood, the integrity of the race, its peace and happiness, are being committed every day in all civilized lands by what we term *commercial surgery*.

At the outset I do not wish it to be supposed that we are opposed to all surgery, or that we think there is nothing good in surgery. We are assured, on the other hand, that surgery has its great use and that it has saved thousands of lives. We regard surgery as one of the most necessary branches of the healing art, and the true and upright surgeon's calling as one of the most noble. We have seen incalculable good come from the knowledge and skill of the surgeon; his dexterity in setting dislocated bones; his skill revealed in scientific treatments of accidents demonstrating that it is a far more advanced science than ordinary medicine.

We know there are many honest surgeons; men who are honest and upright in spite of the influences that surround them and the temptations that beset them on every hand.

Some of these men are moral heroes. They stand for the honor and integrity of their noble profession; for it is indeed a truly noble profession when honorably and sympathetically conducted for the benefit of the suffering. Surrounded as they are by those who have debased their calling; compelled by upright consciences to be honest and true when their compeers are dishonest and selfish; battling for science and skill to be used only when the condition of the patient demands it, and as earnestly advising against an unnecessary, ill-advised, or improper operation or one which is unduly dangerous or inopportune, as they would advise for one that they deemed necessary and wise; men like these stand as beacon lights among the shoals of ordinary surgical darkness. I bow in reverence before these men, and though I may sometimes honestly and honorably differ from them I esteem and regard them as men of

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high character as well as scientific knowledge and skill. Such surgeons I never condemn, though I may condemn their conclusions and methods. But I do condemn in terms that cannot be mistaken the surgeon who is working solely for dollars, who is reckless of human life, who cares nothing for the suffering of his victims, but whose constant inclination is to cut, cut, cut, all the time. Such men have caused untold misery to thousands of victims, have filled thousands of graves, have broken up thousands of homes, have prevented thousands of women from enjoying the blessings of motherhood, have wrecked many a husband's happiness, and deprived thousands of children of their parents' love and care.

These are the commercial surgeons—the professional butchers of men and women to whom we refer. These are the black sheep of an otherwise noble,—though, we believe, often mistaken,—profession. These are the buccaneers of science, the pirates of human life, the men who hoist the black flag of piracy under guise of the healing art, and who ravage human bodies for the lust of slaughter and the greed of unholy pelf.

This is essentially a commercial age, and it is all too true that in every business, every profession, every department of life, commercialism has entered and in many cases has dominated. The result is that the honorable profession of the surgeon has been invaded by these commercial ghouls and jackals, who, without conscience, prey upon all classes of society that they think will yield money to their purse. They are less respectable than highwaymen, more ravenous than wolves, more treacherous than the Apache Indian, and as stealthy and as cowardly as the midnight assassin.

To those who have given no thought to the question it may seem incredible that there are members of an honored profession who are so conscienceless, pitiless, cruel, heartless and mercenary as deliberately to fool rich patients, or those whom they know they can extract rich fees from, by making them believe that surgical operations are necessary. Yet such is the case. Though this statement seems foolish and absurd, we repeat it—such, alas! is the case. Some men value money more

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than they value anything else in life. Money and the appearance of possessing it are strong motives to conscienceless men, and such men find in the profession of surgery as it is today a rich and profitable field.

I believe that the healing art can never be commercialized. A true surgeon can never regard the commercial side of his profession as the important side. True, he must be properly paid for the service he performs, and a good surgeon is entitled to the highest return commercially for the work he performs. But I believe when any man enters any profession solely because he can make of it a "good business proposition," without due regard to the highest moralities of his work, that he has degraded and debased a noble profession by his ignoble presence.

Go into any surgical ward in any hospital in the civilized world and talk with the nurses, or with the surgeons, and if they are honest, they will tell you that there is a large amount of guesswork in all the cases then before you. Pick up any surgical journal of the world and you will find evidences enough of the truth of this charge, openly confessed by the surgeons themselves, that are enough to make the ordinary layman dread the thought of an operation. These men are gambling in the happiness, the health, and the life of other people. This point should never be forgotten. It is seldom that they gamble upon themselves. Very few surgeons are willing to submit to the knives of other men.

I would also call attention to the absolute lack of responsibility to anyone, except his own conscience,—which may be *nil*—of the operating surgeon of today. He alone decides when, where and how he shall operate. There is no reviewing board to determine whether he operated properly or improperly, whether the operation was needed or not, and whether the patient is being or was properly attended or not after the operation. If the patient dies, the surgeon himself gives the death certificate and the victim is buried out of sight, and the relatives of the victim are compelled in law to pay whatever fee the surgeon may charge. There is absolutely no way by

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means of which they can gain information, from unprejudiced sources, as to whether the operation was imperative, as to whether their loved one was murdered under the guise of the surgical operation, and no means of gaining redress, without an expensive lawsuit, for the fee unnecessarily expended and the loss of the one upon whose life perhaps their happiness depended.

The majority of people do not consider these things. They do not realize how absolutely they have placed themselves in the hands of this profession; how helpless they are; and what frightful temptations are thus offered to the unscrupulous surgeon.

The surgeon, perhaps, more than any other man should be the very embodiment of integrity, honesty, honor and candor, The reasons for this statement will be readily observed from a careful reading of the following:

1. The surgeon is essentially a man of authority. His whole training is that of a specialist. He devotes months and years of his life to the gaining of knowledge of the human anatomy, and dexterity in the handling of the implements of his profession. The ordinary man has neither the time nor the opportunity for the gaining of knowledge in these lines, and the result is he yields, perforce, to the superior knowledge of the surgeon. This naturally gives to the latter a strong sense of authority. Consequently, when he is consulted by one of these laymen, unless he is exceedingly conscientious, there is a temptation to use his authority to carry out any operation—even though it be only an experiment—that he may wish to make. We have known of many surgeons who became exceedingly angry because sufferers who consulted them refused to yield to their authoritative dictations and submit to expensive, painful and dangerous operations. Such men become so arrogant in the exercise of this authority that they regard it as an insult and offense for a patient to consult them and then refuse to abide by their decision.

2. The surgeon knows that there is in the minds of most

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patients so great an ignorance, and at the same time so dreadful a fear of disease and death, that they are incapable of wise judgment even though thoroughly informed of all the phases of their own individual cases. To the unscrupulous surgeon this is an incitement to take matters into his own hands and to do just as he chooses regardless of the highest welfare of the patient.

3. Trading upon this ignorance and fear of the sufferer, the unscrupulous surgeon sees in it an opportunity, especially with those who have money, or from whom it can be squeezed, to perform unnecessary operations, purely for the purpose of collecting the fee.

4. It is the natural desire of all men in all professions to gain added knowledge and skill in their respective lines. The surgeon is no more exempt from this desire than any other person. When properly controlled, this is as laudable as is honorable ambition in any walk of life. But, unfortunately, in the practice of surgery, the ignorance of the ordinary layman is so colossal as to offer vast temptations to the unscrupulous surgeon to operate either where it is unnecessary, or far more extensively than is necessary, for the pure purpose of securing further knowledge and gaining larger digital and manual dexterity. That this is not an unreasonable charge is proved by the fact that it has been made, again and again, by eminent and honorable physicians and surgeons, against some of the most eminent surgeons in the profession. Even the great Lawson Tait, one of the greatest authorities of the world on the diseases of women, has been subject to this charge. He was a great opposer of vivisection, and his critics have asserted, and given statistics of his operations to prove their assertions, that there was no need for him to vivisect the lower animals, as he used the advantages of his position to operate upon thousands of helpless women, thereby increasing both his knowledge and manual dexterity at their expense.

Now, we claim, that if such an eminent and really honorable surgeon as Lawson Tait is open to such a charge as this,

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the temptation is much greater to the unscrupulous surgeon whose actions are far less liable to be known and criticised.

5. The possibility of error in diagnosis and consequent operation is often great, and owing to the ignorance of the patient and his friends, and the opportunity of covering up mistakes so easy, that, if such mistakes are made, the surgeon should needs be a most honorable man in order that he make, as far as possible, honest amends for his errors, instead of covering them up and allowing his victims to innocently continue to suffer. We do not hesitate to say that thousands of people have been operated upon under a false diagnosis and that they have died and been buried, without a solitary soul being any the wiser. Some time ago a case in point came under our own notice. A gentleman came to us and told the story. His wife was ill and her illness for a long time baffled their family physician. He called in a surgeon for consultation and between them they decided that the whole of the woman's organs of sex were diseased and that the only way to save her life was to remove them. In their ignorance and fear the poor couple submitted to the dictates of the surgeon. The victim was placed upon the operating table, the incision into the abdomen made and it was then discovered that all the indications were that the organs that were supposed to be diseased were in an absolutely normal and healthy condition. The woman's ailment was caused from a severely diseased kidney. While this investigation was going on the woman died upon the operating table.

In most cases of this kind the error would never have been made known to the husband, but the family physician, some time later, in a remorseful mood, explained the whole matter to the bereaved husband. But what could be done? His poor wife was dead and buried, and had he wished to bring the culpable surgeon before the bar of justice, it would have been practically impossible to do anything.

Another case of mistaken diagnosis was recently commented on in the newspapers throughout the country. A farmer

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in California one day woke up with a peculiar sensation in his stomach. He was in the habit of putting his false teeth on a nearby shelf before he went to bed. On this particular occasion, not being able to find them and being somewhat disturbed by the pain in his stomach, he came to the conclusion that he must have forgotten to take them out the night before and have swallowed them in his sleep. In his pain and fear, he consulted a physician, and this physician called in other physicians for professional consultation. An X-ray photograph was made, which revealed some solid substance in the stomach. An immediate operation was decided upon, but when the stomach was opened the substance supposed to be the false teeth was found to be nothing but the undigested supper of the night before. The farmer died under the operation and that afternoon his false teeth were found near where he had placed them, but overlooked by him in his haste and physical distress.

Cases like this might be multiplied, we are assured, by countless numbers. Hence, who does not see the tremendous responsibility of the man of authority, the surgeon, whose natural impulse is to say "operate"?

6. That the surgeon should essentially be a man of strict sobriety is self-evident, for too often most awful blunders have been made when surgeons have been rendered reckless and unobservant while under the influence of liquor. Some time ago we heard of the case of a young man who had a diseased eye. The surgeon examined it and decided that it must be removed. The youth went to the hospital, the operation was performed, but to the horror of the operators and the life-long agony of the operated, it was found, soon after the operation, that the healthy eye had been removed. No man who uses alcoholic liquors should ever be allowed to enter the operating room. The responsibilities are too great, the dangers too manifold and the issues too serious to allow them to be placed in the hands of any but the most honorable and upright of men, with all their faculties alert and at their very best.

7. Another reason why surgeons should be exceptional

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men is that they are often subject to subtle temptations to which even an honest surgeon unless his conscience is peculiarly alert and sensitive may allow himself to succumb. He has a case surrounded with considerable difficulties. In consultation with other surgeons there is great latitude in diagnosis. His own best judgment assures him that a *trivial operation* is the one needed. The patient, of course, is entirely in his hands. Another and *more extensive operation* is suggested by his fellow surgeons, which means a very much larger fee, though with no more certainty of success than in the minor operation. Surgeons are human and too often they "need the money" as much as ordinary mortals, and the result in the case of an unscrupulous surgeon can well be imagined.

8. Another reason why surgeons should be exceptionally upright and honorable is found in the fact that surgical operations have a peculiar fascination for a great many women. It seems to some kinds of people to have all the attraction of a fashionable fad. When a group of this kind of women assembles, they begin to boast of the operations they have undergone. They dwell upon every minute detail, how they were prepared for the operation, the manner of their nurses, how they were wheeled into the operating room, how many physicians and nurses were present, how they felt, how long before they were under the influence of the anesthetic, how they felt when they revived, how long it took them to recover, and how they have felt ever since. And, unfortunately, the effect of this kind of talk upon some of the poor, foolish, feminine minds that hear it is to make them desire to undergo similar operations. Sometimes they are persuaded into it by ignorant, foolish women with wicked minds who seek to prevail upon them to have an operation performed to keep them from bearing children. I know of one case in which a mother-in-law sought to prevail upon her son's wife to undergo an unsexing operation simply that she might not bear children. When such cases as these come to the surgeon, he should be ready manfully and honestly not only to refuse to perform the opera-

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tion but to point out its criminality to the person most concerned.

9. That surgeons should be of the most upright character is further evidenced from the ease with which they can help cover up each other's mistakes, blunders, or errors. It is regarded as professional treachery to tell the truth if any error or blunder has been made. But how can a man of honor be constrained by any professional consideration to keep the knowledge from those who are entitled to know the facts in regard to mistakes or blunders of which they have been the victims, especially when such knowledge is necessary to protect them from much suffering in the future?

10. The last consideration that we have to present which shows the imperative need of integrity in the surgeon is that, under our laws, he, or his fellows, alone have the power to sign a death certificate. It may be that the deceased has been the victim of the most abominable malpractice, yet the surgeon who performed the operation has the power to sign the certificate and thus to hurry under six feet of earth all evidence of his culpability or criminality. This power in the hands of unscrupulous men is an incitement to both recklessness, and, in extreme cases, criminality, and it shows how much the public are under the dominion of the medical profession when such outrageous powers and possibilities are turned over to them.

I venture the assertion that many a surgical operation is advised by the family physician because he is at "his wit's end" with his ordinary drug treatment; his patient does not respond to it, and is growing worse instead of better, and through a surgical operation he sees the possibility of relief both to the patient and himself, of relief from pain to the patient and of responsibility to himself.

It is human to shift responsibility at such a time, and he suggests to the patient and his or her friends that a specialist be consulted. This specialist, a surgeon, is duly called in. Surgery is his business. He knows surgery and practically *nothing else.* He looks at everything from this one standpoint.

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He is trained to regard surgery as you and I regard eating the food we like best. It has neither horrors nor terrors to him. He enjoys it. It is his specialty, his hobby, his profession, his means of gaining a livelihood.

Now, is it reasonable to suppose that when you come to such a one that he will do any other than advise an operation? If he be the most honest and sincere man in the world he will naturally advise surgery if there seems any reasonable supposition that it will do good; but if, on the other hand, he be one of these commercial surgeons we have described, he will certainly urge an operation, willy nilly, and then seek for a justification of his advice. And if none exists he is a man of small capacity if he cannot make one.

It is the greatest mistake in the world to expect disinterested advice from the majority of men in such cases, and where life and death are the issues it does seem to us that sufferers should move cautiously, knowing well every step they take, and when, finally, they go to the surgeon *as a last desperate resort,* let them be absolutely convinced, after thorough investigation of simple and natural methods, that there is no possible hope for any other relief than by an operation.

I do not wish unduly to rail against surgeons, but my experience has demonstrated that thousands of them cut without any real knowledge of what they are doing. The patient is suffering from pain; there is undue inflammation of a certain part, a lump, a tumor, a swelling, a growth. The surgeon sees that lump or growth or swelling and its consequent irritation. It is his business, and he has been taught one thing, and one thing chiefly and mainly, namely, how to cut the wrongful growth away. It is not his business to determine how the trouble originated, nor how to prevent it. His profession is surgery. So he advises cutting. The patient, not knowing any better, acquiesces. The surgeon operates, and, *regardless of consequences,* takes his fee.

This is one of the remarkable things about surgery, that the operation is regarded as successful or otherwise no matter what result it has upon the patient. How often we hear the

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remark, or read it, that so-and-so has performed a most successful operation. "It was a beautiful operation. Everything was done so artistically."

"But how is the patient?"

"Oh, he died!"

How an operation can be successful when the patient dies is beyond my comprehension. Does not that very conception prove beyond a shadow of a doubt that in the surgeon's mind *the operation is of greater importance than the patient?* And if this be the case, why was the operation performed? For the operation's sake, or that of the patient, or because of the fee? I do not wish to be unjust, but I am compelled to the conclusion, knowing mankind for what it is, that in a large majority of cases the fee is the great attraction.

I should like to see a law passed in all our States making it impossible for the surgeon to collect his fee in case the person operated upon dies, unless the operation is confessedly the last desperate resort. If such a law were active it would immediately lessen the number of surgical operations by fifty per cent.

Make the surgeon responsible for his patient, and make it a responsibility that touches his pocket, and you would at once see the effect in lessening the number of operations. For, as I have elsewhere shown, the law, as it now stands, places the whole matter entirely in the hands of the surgeon. He is responsible to no one: to the patient; to his friends; to his own society; to the city; to the State; to the nation. No one oversees him; no one checks up the results of his work; no one criticises his errors. His mistakes are in his own hands, or in those of his professional brethren (who have errors of their own to cover up), he or they issue the death certificate, *with no one to exercise any check whatever upon them,* and within a few hours of the death of the patient, who—to put it in plain English—has been ruthlessly and ignorantly murdered under the guise of an operation, the destroying flames of the crematory, or the six feet of earth of the grave have covered up all evidence of the crime.

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I insist that no profession, no man or body of men, ought to be given such awful power over life and death, even were they the most noble and disinterested men that ever lived. But when among their numbers are found unprincipled scoundrels who have commercialized a noble profession and will do anything "legal," for money, so long as they are free from detection, we say that they should be so hampered, so watched, so *supervised,* by disinterested persons, in the interest of the home, the city, the State, that such unnecessary and awful butcheries would cease.

I am convinced that the principles upon which much of this commercial surgery is based are unscientific and indefensible. To illustrate our meaning we will use a very common experience. You have sprained a ligament or muscle and that sprain becomes permanent. The soreness or inflammation does not disappear as it ought to do. Why? In most cases it is because there is in your blood a certain amount of poison (the poison of rheumatism, perhaps, or uric acid), and this poison, seeking an outlet, finds this sprained ligament, and through this enfeebled and inflamed member seeks to be eliminated. Thus is generated a chronic ailment unless the blood be purified and the inflammation reduced.

It is the same with the inflammation of a chronic running sore. Only those who are in an enfeebled physical condition acquire these sores and they find that a certain amount of poison discharges day after day, week after week, and year after year. There is but one cure for such a sore, and its consequent inflammation, and that is to purify the blood. There would then be no poisons to be eliminated through this inflamed sore, and as a natural consequence the inflammation would subside and the sore heal. But, were a surgeon to come along and cut out the diseased ligament, or cut out the running sore, your own reason would tell you that it would be a mistake, for the poisons to be eliminated would still remain in the body. Yet it would be just as reasonable to do this, as is the work of the surgeon who cuts out an organ of the body because it is inflamed or diseased. You know, even though you

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have no scientific knowledge, that if the surgeon were to cut out the sore, the pus would continue to be generated and would accumulate until it found an outlet in some other part of the body, unless it killed the patient in the meanwhile by driving the poisonous materials to some vital organ. The only way to cure the sore would be, not to cut it out, but to so purify the blood from the poisons that are being eliminated through this open channel that the sore would slowly but surely begin to heal.

I have seen hundreds of sores of this nature, as well as inflammations that seemed to call for an immediate operation, cured in an incredibly short space of time through the aid of fasting and the various simple and natural cleansing methods that are used in Physcultopathy.

There are several reasons in addition to the ones already given why we are opposed to so much general and promiscuous surgery.

1. I believe it should be resorted to only when every reasonable and natural remedy has failed. I do not believe that every sufferer, and especially women, should run to the surgeon for every ache or pain which is a little more severe than usual. At least wait awhile and try methods that cannot possibly do you any harm, even if they fail to bring relief.

2. I am opposed to surgery because it reveals a lamentable ignorance of the healing and curative powers of one's own body. I believe that the great mysterious force that planned and made possible this human body of ours was greater than all the experimental scientists that ever lived, and that Nature's guidance is immeasurably better for the body than the mechanical interference of the surgeon who removes some part of the body that can never be replaced. Try to get this thought thoroughly in mind: That Nature and your own body are working for your welfare, and not against you, and that if you give them the slightest chance to work together in harmony they will assuredly do so. Give your body a chance, *simply* and *naturally,* to eliminate the evils that distress you.

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It is too marvellous, too wonderful an organism to allow anyone to tamper with it. In case of accident, where surgery is the alternative to death, by all means call in the surgeon at once. But this is very different from tampering with the beautiful and perfect organism because through inattention, want of knowledge, want of care, it has been allowed to become diseased. Your body is a self-acting, self-working organism. Once set in motion by Nature it needs no interference, no improvement from man. Given food, water, air and care, it will continue to run its allotted time. This fact is of the greatest importance. It is fundamental. It changes all the theories of all the medicine-givers, and demonstrates the falsities of the premises upon which most surgical operations are based. Hence, in all diseases *give your body a chance.* Remove the obstacles to its own self-acting, self-remedial power. Give it a rest, give it fresh, pure air in abundance, pure water *ad libitum,* and when hungry, simple, easily-digested food. I have a confidence as high as heaven, as deep as the ocean and as wide as the horizon in the native ability of the body to care for itself if but given a fair opportunity. So in case of disease be willing to deny yourself a little and to make an extra exertion to gain this harmony for yourself, rather than put yourself in the hands of the surgeon who may, by an operation, do you an injury that nothing can ever remedy.

3. I have elsewhere commented upon the ignorance and possibility of error of even the most learned surgeons, and no person, however ignorant, can be altogether blind to the dangers of surgery. Why risk these dangers until every other method has been tried, and especially why run the risk of putting yourself into the hands of a merciless and unconscientious man, when it is well known that so many of them disgrace the surgical calling?

4. I am opposed to surgery because I have demonstrated in thousands of cases that this interference is altogether unnecessary. There are exceptional cases, I confess, where the surgeon's aid may be of benefit, and where, with our

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present knowledge, it seems to be the only help. But I have found that in all ordinary cases, simple Physcultopathic methods eliminate the poisons from the system. The inflammations and abnormal growths disappear, and perfect, or nearly perfect, health is the result. Why, then, indulge in the expensive and dangerous luxury of a surgical operation?

5. I am opposed to surgery because I believe that no part of the body can be removed, and especially some organ of the body, without the body being decidedly changed as a result. We have been told that the vermiform appendage is useless and that it can do no possible harm to have it removed in so-called cases of appendicitis. In scores of cases that have come under our notice, we have found habitual constipation has followed this operation. This leads us to believe what some noted anatomists have declared, namely, that the vermiform appendage is a generator of a natural lubricator which aids in the passing of the feces through the lower bowel. If this be the case, and we see no reason to deny it, what a monstrous evil has been done to the hundreds of thousands of people who have accepted the dictum of the surgeon that no harm could possibly accrue from its removal?

Again, take the turbinates of the nose which are so often removed in nasal catarrh. One has but to study the anatomy of the nose to realize how delicately balanced a thing breathing really is, yet the nasal surgeon, never seeking to reduce the inflammation that disturbs proper breathing in nasal catarrh, proceeds to cut and slash without the slightest regard to the wonderful mechanism of the nose, and thus brings about further complications which all his surgical knowledge is unable to cope with. Reduce the inflammation and let the parts heal themselves. This is our advice. This is our practice. And this is what we would urge upon every sufferer.

Again, take the operation for the removal of the ovaries. It is almost incredible the number of women upon whom this operation has been performed in America during the last ten years. If the figures could be given to the public they would

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arouse a feeling of resentment that it is impossible to estimate. Women are told when their ovaries are inflamed that it cannot possibly hurt them to have them removed, except that it will render them incapable of bearing children. It seems incredible to human belief that a man can be found who will so wilfully and deliberately deceive himself, stultify his own intelligence, or mercilessly and ruthlessly deceive his confiding patients, as does the surgeon when he makes such assertions. We are meeting with cases constantly where *women's natures* have been entirely changed as a result of this unsexing operation. Just as the dehorning of fierce cattle results in rendering them tame and gentle, so in thousands of cases does the unsexing of women pervert their whole sexual nature, depriving them of all reasonable marital happiness, thereby provoking divorce, as well as depriving themselves of the chief crown of womanhood, motherhood; thus deliberately flinging away from themselves the most natural and powerful source of marital happiness.

Let us now consider some of the operations which we especially condemn, as coming under the category, "Commercial Surgery."

Appendicitis. First in the list is the very popular operation for appendicitis. We believe that, almost without exception, this operation is not only unnecessary, but absolutely criminal. We do not believe with the theorists that any part of the human anatomy is useless and can be dispensed with without injury. It is perfectly possible that the appendix, which the medical profession generally regards as useless, serves a useful purpose in chemically preparing the feces for their proper evacuation. In no ordinary case do we believe the operation necessary. What is the reason commonly given for removing the appendix? You suffer from a severe pain in the stomachic region. It used to be called stomach-ache. But now, when the terrible griping pain seizes you, you begin to be afraid; your friends are afraid; you look, and all in vain, for something to stop the pain. You send for your physician; he comes and stops the pain. But how? Generally with mor-

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phine. What does that morphine do? Practically paralyzes the alimentary canal, thus stopping the processes of digestion and assimilation, arresting the functional processes of the intestines and bowels and giving the undigested mass of fecal matter every possible opportunity for the generation of ptomaine poisons. If the appendix be in a perfectly healthy condition, it is dangerous in the extreme to produce such a condition in the bowels of any person, and in scores of such cases an operation is decided upon as the only means of relief—*not from the diseased appendix,* but from the overloaded and poisoned lower bowel.

Yet there are times when the appendix is diseased. There has been some improper action of the digestive processes, and inflammation has been set up in the appendix, just as it will be induced in any other part of an enfeebled body. Under such circumstances, unless the inflammation is reduced in time, a surgical operation may in a few cases be the best thing. I am willing to concede this much.

But I assert with the strongest emphasis of which I am capable that, with rational and natural methods of living, appendicitis will never appear, and that even if one has lived improperly and appendicitis has actually developed, *the same natural and rational methods will produce a cure in absolutely every instance,* so that an operation is unnecessary.

Several years ago a friend of mine, a young man, strong and sturdy, with whom I used to wrestle and who weighed one hundred and ninety pounds, was taken down with appendicitis. His brother telephoned to me and I at once urged that the natural process of cleaning out the lower bowel be followed. His physician said, "Wait." Later he called up again and in answer to my question as to whether my suggestion had been followed I was informed that the physician had refused, and had given the patient morphine to relieve the pain. This doctor was accounted one of the most intelligent physicians in New York City. It was four days before they finally carried out the suggestion and the fecal matter was removed—by that time a foul mass of the most de-

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structive ptomaine poisons. The patient was taken to the hospital in a critical condition, was operated upon *successfully* and a day or two later died. I claim that this death was as unnecessary as if he had but suffered from a scratch on his finger. Had my advice been followed and his lower bowel immediately washed out he would have been as well as ever in three or four days. The lower bowels are almost as easily accessible for washing as is the human face, and, as I shall show in another chapter, if they are washed out thoroughly and then treated to a teacupful of sweet or olive oil, preferably the latter, the appendicitis immediately disappears.

A short time ago I called attention in the editorial pages of the *Physical Culture* Magazine to the method adopted by a shrewd surgeon. He was eminently successful.

He had operated on a great number of occasions for appendicitis and had never lost a case. An intimate friend of his asked him how he was able to meet with such marked success in such a serious disease. He replied by stating that all operations for appendicitis were wrong. All such a case needs is a thorough evacuation of the bowels, but if one should give such advice to a patient who was seeking relief he would feel that one didn't understand his case, and he would search for another practitioner—that patients actually demanded operations.

This physician stated that he performed his operations without an attendant, because he didn't want to give his secret away. He placed his patients under the influence of ether and then kneaded the abdomen thoroughly and vigorously, giving especial attention to the appendix. This treatment would stir up all the impacted matter and cause a good peristalsis, which, with the enemas and the cathartic given just before putting the patient on the table, would surely remove all the contents of the bowels and the appendix before many hours. He stated that he did not cut out the appendix at all, but merely scratched the skin right over the appendix just about deep enough to put in three or four prominent stitches. Then he would awaken the patient and announce that a rotten appendix containing a pint of pus had been removed, and would insist on an absolute

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rest in bed for two weeks, prescribing a liquid diet. After the bowels had had a needed rest he would caution the patient against overeating. He would receive five hundred dollars for this operation, and naturally his reputation thrived.

I congratulate this surgeon on his sagacity and especially on his consideration for his patients. To those surgeons who must have the money I heartily commend this idea as a superior surgical method for remedying appendicitis. It is far more scientific than the real operation and for getting the money is certainly up to date, and, what is more important than all, the lives of the patients are saved.

I make this suggestion, leaving it to the individual conscience of the surgeon to reconcile the practice and his ethics. Personally I believe the deception of such a course of procedure immeasurably better than that practiced by those commercial surgeons who urge an operation whether needed or not.

Doctor A. B. Stockham is authority for the statement that she heard one of the most prominent surgeons of the East assert before a body of physicians and surgeons at one of their annual meetings in Boston that ninety per cent. of the cases that he had operated on for appendicitis proved not to be that disease at all. Yet, that man's reputation is built up on the successfulness of his operations for appendicitis which are said to exceed in number those of any other American surgeon.

Not long ago I read of a case where a man was occasionally taken with griping pains in the stomach which were so intense as to render him unconscious. His physician diagnosed his case as appendicitis and urged an operation. In due time this was performed successfully, but soon after he left the hospital the same old pains overtook him and he fell unconscious on the street. While in this unconscious condition, he was taken to a physician, who diagnosed his case as appendicitis, had him removed to the hospital and again operated upon him. Of course they found no appendix to remove. When the victim of this second operation came to himself, it is said that he had a sign painted and put upon his body which read as fol-

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lows: "I have been operated on twice for appendicitis." This may seem merely a funny story, invented to fill up vacant space in a newspaper, but I assure the reader that only a short time ago, I was in consultation with one of the leading physicians of one of the smaller towns of Illinois who informed me that although he had recently had an operation for appendicitis, the pains, for the cure of which he had had his appendix removed, were still there and as keen as ever.

That I am not alone in my position as to the wrongfulness of operations in many cases of appendicitis is proven not only by the experiences of many professional surgeons similar to the one I have already recorded, but by the experiences of physicians and others who, having reasoned the thing out for themselves, have arrived at the same conclusions as myself. I am acquainted with one well-known specialist who has had between sixty and seventy cases of appendicitis, all of which have been absolutely and permanently cured by natural and simple methods similar to our own, and not one of which has he lost.

Not long ago the following case came to our attention: "A tall, strong man was taken to the hospital to be operated upon the next morning for appendicitis. The next forenoon, the operating room was prepared and the nurse went to the room of the patient, but the bird had quietly flown. He had had a natural evacuation during the night and felt so good that he had quietly sneaked out of the hospital and gone home."

While our institution was at Battle Creek, a girl of seven was taken with a severe attack which her physician diagnosed as appendicitis. Her fever was 105 Fahr., and in consultation with another physician and a surgeon, the mother had been persuaded to have her daughter immediately operated upon. The father was called home urgently and when he arrived he found the hospital ambulance waiting in front of his house. In spite of the urgings of the physicians, surgeon and his wife, he refused to allow his daughter to be taken to the hospital, and, instead, carried her in his arms to our institution. We treated her with the simple methods of Physcultopathy. She

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was relieved in a few hours and in four days returned home absolutely well.

Is it not worth while to try these natural methods rather than risk one's self to the mistakes, rashnesses and incompetencies of surgeons who may be perfectly honorable, or to the unprincipled and mercenary class, who are nothing but human butchers?

That surgeons are often rash is proven in numbers of cases, such as the following which was an item that went the rounds of the newspapers:

"Eight-year-old Rosie Cohen and her brother, Joseph, aged eleven years, were sent to the Harrisburg hospital Sunday, suffering from enlarged tonsils. The girl was etherized, but by mistake was sent to the operating room with several other patients and was operated on for appendicitis. The surgeons say they found her appendix somewhat inflamed, and, therefore, were not aware that a mistake had been made until the parents called and found that the operation had been performed. The operation was 'successful' and the child is resting easily."

That surgeons are also careless is proven by the following well-known case: A lady, Miss Donovan, was operated on in the year 1898. Owing to carelessness the surgeon sewed up the incision leaving inside a pair of forceps. The operation was performed by a noted surgeon, and some time afterwards he died. For a short time subsequent to the operation, the patient appeared to improve, but later she complained of shooting pains and periods of intense agony, while many other strange symptoms appeared. For years afterwards she spent her time in traveling from one health resort to another to find relief. Many specialists were consulted, but none could diagnose the strange disease. A surgeon advised an operation two years ago, but consent was refused. Since then Miss Donovan's health rapidly declined. She finally submitted to an X-ray examination, and then, to everyone's surprise, the presence of the forceps was disclosed. An operation was immedi-

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ately performed, but the injury caused was too severe, and she died.

The following is an amusing illustration which shows that, in the most simple cases, accomplished physicians and surgeons are sometimes unable to make a rational diagnosis. The wife of a prominent and wealthy citizen of Denver consulted her physician because of a peculiar pain in her abdominal region. After an examination he confessed to being somewhat baffled, but suggested that they call in a surgeon. The surgeon came, and had no hesitancy in recommending an operation. (Of course not! Why should he? That was his business, but strange to say he failed to make clear what the operation was for.) The husband, in further consultation with the family physician, being hardly satisfied, decided to send his wife to a well-known Chicago specialist. This specialist, acknowledging there was something the matter, still refused to operate and sent her on to New York. Each surgeon gave vague diagnoses of tumors, abnormal growths, etc., but each refused to operate. Imagine the surprise of these wiseacres, when a few months after the lady returned to her own home, she gave birth to a healthy child.

In this case the patient happened to be in the hands of conscientious men. Had she fallen into the clutches of such a surgeon as the one her family physician first consulted, it is not an unreasonable supposition to say that she might have been operated upon, the blunder discovered, and had the patient recovered, some plausible account would have been given to the husband, or had she died, it would have been another of the mysterious cases which six feet of earth would have effectually covered up.

Ovariotomy, or the Unsexing of Women.—There is, perhaps, no operation more to be condemned than this, which is far more common than most people believe. Diseases of the ovaries are very prevalent among women. They generally arise from inflammation of the uterus and Fallopian tubes, thus denoting an unhealthy condition in the chief organs of sex.

In many parts of this work on health and disease, I shall

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have occasion to refer to the causes of these inflammations, such as the murderous corset, the unhealthy habits of men and women, all the wicked prudery and ignorance in regard to sex functions which are largely blamable for this lamentable condition.

When the uterus and ovaries become so diseased that they begin to suppurate, a surgeon will tell you that unless the patient be operated upon and the organs removed she will speedily die. Until very recently the operation has required the removing of the ovaries, and oftentimes the uterus, thus completely extirpating the special organs of sex and depriving the patient of all the possibilities and joys of happy marital existence and of sweet motherhood.

We will not deny that in an extreme case, where rational treatment has been delayed, a surgical operation may be the only possible chance to save the life of the patient. But in our experience, which has extended over many thousands of cases, we most positively affirm that if Physcultopathic methods are followed, early or late in the case, the inflammation can be totally reduced and the organs restored to a perfectly healthy condition. When surgery is resorted to, few surgeons stop until, as they say, "they have made a good job of it." While the advances in modern gynecology have rendered it unnecessary to totally extirpate both ovaries, it is only the conscientious surgeon who will take the trouble and infinite pains that are required to retain to the patient her sexual characteristics, her menstrual functions and the ability to conceive. It is so much easier to remove them all. And while this may seem to be beyond belief, it is true that hundreds of young, unmarried maidens, who have no right to even think it possible that they can suffer from sexual disorders, have been led by commercial surgeons to submit to these unsexing operations. Their grandmothers and great grandmothers lived to a ripe old age, healthy and vigorous, never having heard of such an operation in their days, and little dreaming that descendants of theirs could ever be made the victims of the surgical craze and the greed for wealth so prevalent in this commercial age.

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Unless a woman feels that she is close upon the gates of death, she should strenuously refuse to submit to any such operation until she has tried to their fullest extent the simple and practical methods of cure that we advocate. Better by far that the unprincipled surgeon should plunge his villainous knife into her heart and end her life than thus take from her the glory of her womanhood.

The unsexed woman, like the unsexed man, is an anomaly, finding no proper place in this world, which is increasingly demanding of its men and women that they live up to the utmost to the high privileges with which God has endowed them.

Our experience demonstrates that nearly every one of these cases can be restored to health by the simple processes of fasting, pure air, moderate exercise, and hydrotherapy.

Not long ago a young woman came to one of our institutions who was suffering from inflammation of the uterus and ovaries which had already passed into the severe, suppurating stage. She had been condemned to die. Her physician had told here there was no possible hope. Even the surgeon had refused to operate on account of her depleted vitality. He knew that she could not recover from an operation. (We might state that both the physician and surgeon had discovered that the poor girl had no money left and no means of getting any, her illness having lasted so long that she had exhausted her means and those of her friends.)

When she came to us she was almost helpless, emaciated to a marked degree, and apparently with one foot in the grave. She was gifted, however, with an extraordinary will and having just read enough of our literature to understand our principles of cure, she determined to fast. Day after day she refused any and all forms of nourishment, saying she might as well die this way as any other, but the principles of Physcultopathy seemed so reasonable to her that she knew she would recover. Her fast lasted for three weeks. She then began to take nourishment very moderately, and we put her through a simple course of Physcultopathic treatment. It was not long before she was perfectly recovered with every function of her

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body in its normal condition and she full of buoyant happiness as a result.

This case we could duplicate with the detailed statements of thousands of others, but as our methods are confessedly so simple and natural, the details of individual cases are practically the same. The differences that the surgeon would note are comparatively of no importance to us for the methods of cure, with trifling variations, are essentially the same.

Consumption. There have been many cases in which incisions have been made into the lungs, either in the back or side, in which silver tubes were placed to allow the drainage of pus from the lungs. In some cases these consumptive conditions have been brought about in one way, and sometimes in another. Consumption may be acquired in a variety of ways, nearly all of which, however, are traceable to impure blood, impure air, or improper food. We had a case of this character some time ago in which a young man, after a severe attack of typhoid-pneumonia, was operated upon by a surgeon and a tube inserted to allow the drainage of pus from the lungs. For a time the tube seemed to work well, but ultimately the patient's condition became worse and he came to us in a dying condition. What did we do? There was nothing strange or mysterious about it. It was the most simple and natural thing in the world. We merely ceased feeding the trouble; in other words, we shut off his food supply and compelled him to fast.

This was in accordance with the habit of the lower animals. Immediately they find themselves suffering from an acute disease they begin to fast. The body is then left free to devote all its energy to eliminating the poisons that caused the disease. It is just so with the human body. As soon as you cease to give food to the sick body, the poisons are eliminated with great rapidity and natural healing results.

We shall be told that in this and other cases food is essential to keep up the strength of the body. This is, as we have elsewhere shown, one of the most wicked and cruel superstitions of the medical profession; wicked and cruel in its injurious effect upon the minds and bodies of the masses. That it has no

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foundation in fact has been proven in millions of cases. And why such an injurious superstition should persist to the perpetual injury of the human race is one of the mysteries of the human mind.

Removal of the Great Intestine. Some years ago the eminent scientist, Metchnikoff, after making a number of experiments and analyses of the contents of the colon, or large intestine, came to the conclusion that it was an unnecessary appendage and a breeding place for millions of germs that poison the body and thus caused a great number of diseases. He went so far as to suggest that if it were removed life would be prolonged. Now, while we have the highest regard for Doctor Metchnikoff's scientific attainments and believe he has done much good for humanity, we cannot conceive of science going to more absurd, ridiculous and absolutely dangerous lengths than this. Is it to be supposed for one moment, as we have elsewhere urged, that Doctor Metchnikoff knows more of the working of the internal organs of mankind than the Great Creator who designed them? If there be such a crime as blasphemy, we believe that this is one of its most flagrant manifestations, for mere man—ignorant, groping, blind as he confessedly is, even with all the accumulation of all the knowledge of all the ages—to have the audacity to assert his judgment against the Creative Force of the Universe. Can it be possible for human pride and audacity to extend further?

The misfortune that lies in the propagation of such ideas as that of the great scientist, Metchnikoff, is that they often appeal to other minds and lead to disastrous results. We have often claimed that guessing physicians and surgeons refuse to take their own medicine. It is a well-known fact that many prominent surgeons refuse to operate on members of their own families. They are not so sure of their conclusions when the lives of their own flesh and blood are at stake.

Occasionally we are compelled to note an exception. Dr. Herman G. Neirman, a young and wealthy physician of Fort Wayne, Indiana, read of this new theory of Metchnikoff's and believed in it.

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He was conscientious. He wanted to be able to say to those who might be interested in his conclusions: "Look at me." If he had followed the usual custom and applied his theories in the treatment of others, no doubt the cemeteries would have had a large number of acquisitions as a result of his reasoning. As it is, only one grave has been dug in consequence of his lack of faith in the intelligence of the Omnipotent Power, who must bear the responsibility for the construction of the human body.

He accepted Metchnikoff's conclusions that the colon or large intestine was not only unnecessary to health, but served as a breeding ground for disease, and, was, therefore, harmful. He honestly believed in his contention. He believed in it so thoroughly that he desired to have the operation performed upon himself for the elimination of this portion of his alimentary canal. He found great difficulty in securing a surgeon to undertake the operation. He finally persuaded one to do so, however, and his colon was removed. A day or so thereafter his life came to a full stop. A daily paper in commenting upon the incident says: "Medical learning is a fine thing, and a certain degree of latitude and speculation has its use, but physicians who think they can improve upon Nature are immensely conceited. It would be well if their revolutionary operations could always be confined to themselves."

To these sentiments we doubt not our readers will say, "Amen." Physicians who feel that their intelligence is greater than that of the Creator Himself are worse than conceited; they are egotistical fools, and the public really ought to be protected from such fanatical egotists.

In England, another *eminent surgeon* (!!), carried away with this theory, went so far as to openly advocate the removal of the large intestine from every child as soon as he reached the age of two or three years. Him we would hastily place in a lunatic asylum. We have no use whatever for any of these unnatural theories or for their propagators. We believe that the intelligence of the power responsible for the construction of a human body, whether you call it God or Nature, is greater than that of a thousand of the greatest scientists, medical or

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otherwise, that ever existed or ever will exist, and with this conclusion as a foundation, one cannot go very far wrong in trying to solve the problems of cure that are presented by weakness, sickness and disease.

Dilated or Prolapsed Stomach. Many people suffer from this distressing disease. The stomach is distended and a portion of it sinks and makes a pouch below the navel—the level of the normal and healthy stomach. In this pouch the food accumulates and the muscles of the stomach do not have the power to discharge the contents of the stomach, through the pylorus into the intestine. This accumulation putrifies, causing gases and acids which the patient emits. But worse than all, there are poisons caused in this way that find their way into the blood and often create serious trouble. The surgeon seeking for a remedy naturally finds one in the realm of his profession, and the operation later to be described—named gastro-enterostomy—has been performed upon many a hapless victim who has paid large sums for it. For it can be pretty safely affirmed that only the rich can afford to pay the large fee that is necessarily charged for this operation.

The surgeon closes up the pyloric orifice. It must be remembered that the pylorus is, as it were, on the side. Now what does the surgeon do? After closing up the pylorus, he makes an incision in the bottom of the pouched part of the stomach and connects this with the intestine, so that the food, by its own weight, passes through into the intestines without being retained for any length of time in the stomach. Think of the manifest distortion of the functions of the stomach by means of this operation. Can you imagine anything more unreasonable and unnatural? The Omnipotent Creative Power of the Universe did not understand his business when he arranged the pyloric opening at the side of the stomach. It should have been at the bottom, says our wise and modern surgeon, and he is willing to improve upon the plan of the Almighty, provided you will pay him a liberal fee.

We are aware that the reason he gives for this perversion of the natural function of the stomach is that there is no other

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way of making life possible to the unhappy patient. This "reason" is one of the reasons why we so strongly condemn the science of the man who gives it. It reveals so dense an ignorance of the actual workings of the stomach, and such a colossal prejudice against simple and natural methods that cannot possibly harm, and may do much good, that we are unable to understand the mental workings of those who give it. The reasons for our severe strictures will appear as we further discuss the subject.

We have had a number of patients who have come to us after this operation had been performed. In every case it has been unsatisfactory, and we assert without any hesitation whatever that each and all of these cases could have been practically cured by the simple processes of Physcultopathy. A prolonged fast in every case contracts the stomach. Even where the dilated condition has existed for many years and the surgeon will contend that the muscles have lost all power of contraction, and no matter how bad the prolapsus may be, a seven to fourteen days' fast (or even longer) will invariably bring it back to its normal size and tone. Prolapsus is to be expected in long-continued disease of the stomach. The muscles become unduly distended because they are incapable of normal contraction, and with an undue weight of undigested food in the stomach, it can readily be seen that it can do nothing but "fall down." A child can see that the first thing to be done in such a case is to empty the stomach and *keep it empty*. The longer the fast, the more normal the condition of the muscles becomes. During this process of toning up the muscles the blood is also being purified, for the experience of all fasting demonstrates that when the organs of digestion are receiving no food they reverse their functions. Instead of assimilating—taking up nourishment—they are eliminating poisons, cleansing the body, making it purer, so that in the case of prolapsed stomach, a ten days' or two weeks' fast will often cause a complete cure.

If, on the other hand, the trouble is what is called an ordinary operative case, such as a growth, a swelling, or a tumor,

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the poisons that cause this swelling are being absorbed and eliminated.

Cancers, Tumors, etc. There is a great deal of popular misapprehension in regard to this subject of cancers and tumors. The latest and best authorities generally class them under two heads, namely, malignant and benign tumors. The malignant tumors are those which have the power of attacking and breaking down all the tissues of the body as they are reached by the progress of the disease. Wherever they are located, they will in time destroy whatever organ, no matter how important, that is in that location. They are liable to spread through the lymphatic glands and the blood to different parts of the body and lodge in various locations where they set up dangerous eating inflammations, similar to the parent one.

These malignant tumors may arise in all parts of the body as, for instance, in the breasts, ovaries, uterus, etc., of women, in the stomach, intestines, liver, spleen, kidneys, brain, spinal cord, bones, etc. These are all generally termed in popular parlance, cancer, but the term cancer has practically no standing in scientific phraseology.

It is generally conceded that medical science has as yet discovered no remedy for malignant tumors. Some surgeons claim that if the disease is taken in time, life may be saved. Others contend that neither surgical nor any other medical aid is of any service. Nearly all operations demonstrate that, within a short period, the disease recurs; then it is almost invariably fatal.

Benign tumors, on the other hand, as their name implies, are not of a dangerous character. They may attain monstrous size, and cause great distress, uneasiness and pain, as well as facial and bodily blemishes, but there is nothing in their nature of a destroying character which need cause the frightful dread that so many people feel in their presence.

While we have the utmost repugnance to be classified with those mercenary quacks who, for a consideration, claim to be able to cure cancer without the knife, and who financially bleed

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their victims to a greater extent than mercenary surgeons, the truth that we believe in impels us to be very clear and emphatic in our statement as to what we are sure can be accomplished under the simple principles of Physcultopathy by those who are suffering from either malignant or benign tumors.

In all that we have hitherto said, therefore, it will be apparent that we do not believe in operations for tumors. The only exceptions that we will allow are in the case of fibroid tumors, where the vitality is so depleted that the patient has no recuperative power, and a surgical operation is regarded as the last resort.

The inflammations that produce tumor are fed by the poisons of the blood, and if this is properly vitalized and cleansed by the simple methods we have expatiated upon, these poisons may be eliminated and all necessity for an operation removed. We have had thousands of cases either pass directly through our own hands in our health institutions, or that have been guided by our advice at home, and, practically, in every case with a complete cure or a considerable reduction of the diseased condition.

We cannot leave this subject, however, without a word of encouragement and hope for those whose cases have been diagnosed by experts as of malignant character. To such we say with all emphasis: According to the statements of your own physicians, you are doomed. Therefore, our methods cannot possibly harm you. They are simple and natural and can be carried out in your own home, if necessary. They merely imply self-denial, as in the case of fasting, and the exertion necessary to carry out the aids for the elimination of poisons from the blood. Is it not worth while to study and try these simple principles? We have cured and are curing cases of malignant tumor, but the uncertainty of diagnosis renders us diffident about making such assertions.

Nasal Catarrh. Very few people have any idea of the number of operations that are being performed in every large American city today for cases of nasal catarrh. Look over the directory of any city in the United States and see the number.

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of specialists whose operations are confined to the nose, ear, eye and throat. These men are constantly operating. There is scarcely a day that passes by that they do not have one or more operations. Their surgical instruments are many and complicated, and we know of scores of cases where repeated operations have been performed for a course of several years without apparently the slightest benefit accruing. We have talked with these nasal surgeons and they speak with perfect indifference of removing the turbinates, and of cutting off large slices of cartilage, and in cases of polypus they expect to have to repeat the operation of removing them, again and again, almost as long as the patient lives.

We are convinced that all this nasal butchery and consequent torture is almost entirely unnecessary. There may be nasal obstructions caused by accident that nothing but a surgical operation can remove, but in the majority of cases the inflammation is purely catarrhal, and as soon as one operation is performed, the cause of the inflammation not having been removed, the tissues swell up again and the patient is as badly off as before. This is not a fanciful picture. We know, by painful experience and careful observation of many cases, of the truth of what we assert.

Now, the simple Physcultopathic method of treatment at once seeks to reduce the inflammation by eliminating the catarrhal poisons from the system. The fast, or partial fast, speedily accomplishes this. And we have cured numbers of cases of catarrh by our perfectly simple method of treatment.

Let us here, in brief outline, suggest the methods of Physcultopathy that would do away with this commercial surgery. As we have shown, we believe that almost all inflammations and growths come from an impure condition of the blood. The body is incapable of eliminating the poisons that accumulate owing to bad habits of some kind. There may be some little weakness in a given spot and the impurities begin to accumulate there, causing inflammation or abnormal growth. How could this inflammation or swelling get there if it were not brought there by the blood? (Of course we are entirely ignor-

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ing any accident, such as a fall or bruise, which might be the predisposing cause of location of inflammation or abnormal growth at a given spot.) What would a reasonable intelligence lead one to assume from this fact? Would it not be that as impure blood caused the difficulty, it should be removed by purifying the blood? Our experience has confirmed our belief in this regard. In thousands of cases the simple process of fasting and purifying the blood by natural methods, *without a particle of medicine,* has entirely removed the disease. We first of all put the patient upon a fast, or partial fast, regulating the diet (where food is given) to meet the conditions. We add to this by simple and natural treatments, such as deep breathing, the application of hot and cold water to the body, massage and Physcultopathic manipulations, all of which have for their object the aiding of the body in its effort to eliminate the harmful poisons. Seldom, if ever, do these methods fail.

Were justification for our method of fasting required, we could easily find it in the habit of many of the most prominent surgeons, who require that their patients fast from one to four days prior to an operation. This, they say, lessens the liability to blood poisoning. If it be true that a short fast lessens the liability to blood poisoning under an operation, why not try the fast a little longer and see if it, and other simple eliminative treatments, will not remove the inflammations or growths that seem to make the operation necessary? As we have stated, our experience demonstrates that it does, and we assert with the utmost confidence that if every patient, before submitting to an operation, would absolutely fast for a period of two or three weeks he would then have conclusive evidence for himself that the expected operation was totally unnecessary.

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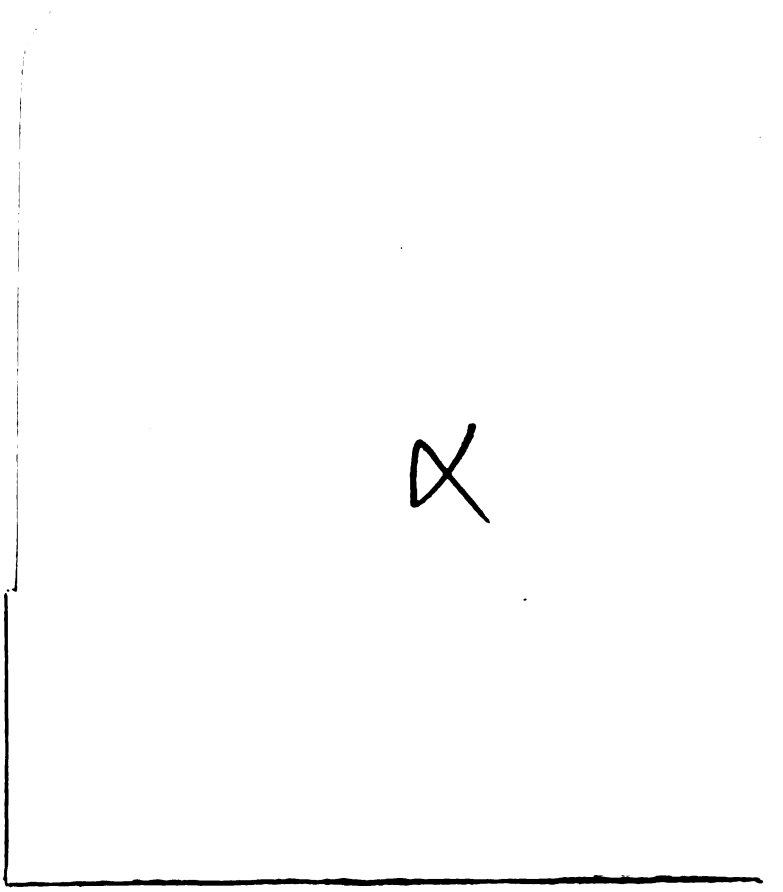

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