

body than exposure to fresh air. The exercise itself will very soon warm the body, though perhaps at first those unaccustomed to exposure will find it wiser to take their hot bath or hot and cold bath before exercise, so as to start already warmed. But all those who are accustomed to have a cold bath, and feel no chill afterwards, may safely begin with the exercises, and reserve the delightful thrill of the water for afterwards, when they are even warmer from the exercise than they would have been on getting out of bed.

Be sure also that there is plenty of air in the room, for you will use more when you are exercising by reason of the quickened respiration. Your window, it is to be hoped, has been open all night. It is really a pity to shut it. Then stand before a looking-glass, so that you may, by the sight of the reflected movement in front of you, be sure you are doing it fully and correctly, and may the more easily fix your attention wholly and entirely on what you are doing. For it is by attention that you will acquire ease and facility till, as in learning a thing by heart, the movements eventually become, if not automatic, at least extremely easy.

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#### THE VALUE AND NECESSITY OF PHYSICAL TRAINING.

BY CHARLES PELTON HUTCHINS, M. D., PROFESSOR OF PHYSICAL TRAINING, UNIVERSITY OF WISCONSIN.

**P**HYSICAL training is preventive medicine. It is often a matter of comment why the semi-civilized peoples have such magnificent bodies. The future of the tribe depends upon the powerful arms and the tireless legs. The daily hunt for food makes the exercise necessary to life itself.

Among the civilized nations, and especially in the cities, all the necessities of life and most of the things commonly desired are to be obtained in the neighborhood or near the car line. As we are always in haste we take the quickest and least laborious way to secure it. This all means that our heads save our heels. But at what cost? The answer so often comes that it is known before it is uttered: "Yes, I know I need exercise, but I have no time for it." How near-sighted is such a view. Of what avail are scholarship and affluence if one is to be constantly interrupted by the illness that overtakes most inopportunely. Yet, what precautions are we taking to avoid illness and give our minds a strong habitation?

The body is akin to a piece of machinery operated by a boiler and engine. Our mental training is the delicate mechanism that turns out the finished goods: the nervous impulses running through the lesser or sympathetic nervous system in conjunction with our voluntary thoughts are the belts for the transmission of power; our engine



is made of bone and muscle; our boiler is the digestive tract into which fuel in the form of food is introduced, burned, and converted into power.

We acquire the skill; our machine engine and boiler were in order when they were turned over to us; we put in coal enough, but *after* a while it does not burn properly, and our power gives out. The medical repairer is called in. He says combustion is not efficient, and orders the one relief—regular and graded exercise.

Exercise; yes, but of what sort and in what manner? This depends upon many things. In the first place it should not be in the form of work. Particularly is this true of the school girl or boy. Together with the physical exercise should go mental relaxation or change. Games will always take the mind from tasks; therefore, the outdoor or gymnastic games are admirably adapted for growing boys and girls. And those games and exercises are best which develop the three physical attributes: speed, endurance, and muscular skill. The physically proficient man is he who can make his body muscles respond accurately to his volition. Treat the muscles with as much consideration as the stomach, and those muscles will send a steady vigorous flow of aerated blood leaping to all those organs by which we live and are of value to ourselves and mankind.

BY J. G. SCHURMAN, LL. D., PRESIDENT OF CORNELL UNIVERSITY.

**I**N the physical training of the youth, outdoor sports take the place in this country of the military service required in Germany.

When an intelligent man recalls the variety of our outdoor sports, and the number of youth who participate in them, he cannot fail to be impressed with their high value both as an innocent amusement and as an effective factor in the physical development of the rising generation. And, speaking for the colleges and universities, I am sure they have been an effective antidote for effeminate weakness, for low vice, and for foolish disorder and rowdyism. However strange it may sound to the critics, it is nevertheless true that athletics have made it possible to govern—because athletics have developed an esprit de corps—hundreds, yes thousands of students in a single university, year after year, without the help of jury, court, or policeman. If the critics abolished baseball or football we should explore them, in the interest of academic discipline, to devise suitable substitutes or restore these games themselves.

Baseball and football are the best outdoor sports we have for the American youth, and football is the most popular, not only among the youth, but among the American people themselves. It is a rough game; but taking account of the large number of people who play it—comparing them, for example, with the more luxurious motorists—the number of serious accidents and of fatalities is small. The game is



so stirring, it challenges so potently the play-impulse of young Americans, it appeals so strongly to the popular love of vigorous competition, it has in it so many elements of military discipline and moral training, it affords such a voluminous vent for huge masses of superfluous feeling and energy in players and spectators alike, which otherwise would seek and find an outlet in more dubious channels,—there is, I say, so much to be adduced in favor of the game that the criticism which has of late been hailed upon it will on impartial consideration be found to be, if not hysterical and frenzied, at least one-sided and unfair.

The game is rough; but roughness is no bad ordeal; even the Scriptures enjoin us to “endure hardness.” The game is attended with accidents; so is every game, so is every form of human activity, and every form of idleness. Is the game unduly rough or unduly dangerous? Then let us remove the extra hazards by a modification of the rules. In my own judgment, the two greatest objections to football as now played are “slugging” and other intentional evasions of the rules for the purpose of weakening opponents, and the commercialism which grows out of gate receipts and the handling by young men of enormous sums of money for athletic purposes.

The first of these evils can be remedied by the enforcement of severe penalties for foul playing; not only disqualifying the offender, but penalizing his side. To that end the positions of the umpires must be rendered more independent, so that they will not scruple to do their duty, even when the stands are filled with the friends and supporters of the offending team. A few changes in the rules and in the provisions for their enforcement would accomplish all these reforms, except the elimination of commercialism. And that, I suppose, we must endure till the colleges and universities agree to abolish gate receipts. And gate receipts will not be abolished until some less objectionable way is devised of supporting athletics.

By THOMAS ANDREW STOREY, PH. D., M. D., ASSOCIATE PROFESSOR  
PHYSICAL INSTRUCTION, COLLEGE OF THE CITY OF NEW YORK.

**I**N physical instruction now-a-days we plan to teach each individual how to secure and how to keep a healthy body. Physical training is then nothing less than personal hygiene, and if the best results are to be obtained, must necessarily bring the individual at intervals into more or less intimate relationship with expert medical advice. The modern gymnasium is organized on this plan. Each member is given a critical medical examination. His “weak points” are found and reexamined from time to time. He is then given appropriate exercise, and is told why he does the work given him and what it will do for him. He is taught the importance of proper habits of eating, drinking, breathing, elimination, sleeping, bathing, rest,



and recreation. And his work is made interesting so that he does it not only because it is good for him, but also because he likes to do it. For this very reason it is of much greater benefit. Such work to be beneficial must be interesting.

In such a widely planned scheme of physical education each individual may expect to secure for himself the best development which is possible for his particular body to attain. All may expect better digestion and elimination, stronger hearts, better circulation, stronger and usually bigger muscles, stronger bones and joints, and deeper chests. Such people feel better. They are most likely happier. A strong, active, energetic young man or woman is usually of good appearance, with clean skin, bright eyes, and manly or womanly bearing. In addition the competitive games and sports that enter into the curriculum of physical education should develop courage, self-reliance, and an appreciation of "team work" in its larger sense.

Now it is a fact well known to medical men that persons who have secured the good results that I have enumerated, are not only more healthy, but they are far less liable to be sick than are those people who have taken no such care of their bodies. Teachers know that physical training makes better students—they think better, they think clearer and more quickly. Generals know that they make better soldiers, for they are stronger and have more endurance. Business men know that they make better employees. And all thinking men realize that they make better men, better women, better husbands and wives, better fathers and mothers, and better citizens. For these reasons public schools, preparatory schools, colleges, universities, factories, and cities build, equip, and carefully organize gymnasiums; for they appreciate more and more the inestimable value of healthy men and healthy women.

BY C. F. E. SCHURTZ, DIRECTOR OF PHYSICAL TRAINING, PUBLIC SCHOOLS, BALTIMORE, MD.

**P**HYSICAL training means the education of the body, which is just as essential as educating the mind. The mind should never be developed at expense of the body as the body is really of greater importance, for without a sound body we can never become useful members of society. It is important then that every one should not only know how to develop the body, but how to take care of it also. The human body is subject to many changes during life, and it depends entirely upon how well the body has been educated and what care has been given it, especially during childhood. The human body has five hundred and twenty-seven muscles. I may compare the human body with an engine of many different parts; if the different parts are not properly taken care of, something will go wrong and break down, and unless the broken down parts are speedily



repaired, the great engine with its many different parts becomes useless. So it is with the human body; if we do not give our different muscles the proper attention by exercising them regularly, the digestive organs will get out of order, some parts may break down and put the whole body out of use. So you see, my dear boys and girls, how necessary it is to properly and prudently take care of our muscles and develop them, so as to make them sufficiently strong to endure the use we expect of them, and fit us for life's work and duty. Our young people should know that all the intricate and delicate parts of this great human engine are in the upper body, and that we should, with the pride of the engineer, keep all parts well oiled to make them run easy and to the best advantage. They should also learn how easily these delicate parts can be abused. If the engineer does not understand how to take care of the many parts, his engine will not last long, however durably it may have been built. So it is with our body: we must study to know ourselves; we should know the use and abuse of all parts, and how to take care of the same to make them serve their purpose. We should know the functions of our muscles, so that we may know how to direct and divide the movements with a proper distribution over the whole body. We should learn that everything we grasp with the hands will develop the forearms, and the firmer we grasp the more beneficial the movement. When we bend our arms at the elbows, the muscles of the upper arms are brought into play, and if we grasp a horizontal bar, and try to pull ourselves up to look over the bar, which of course is quite difficult at first, but by repeated trying soon becomes easy, we at the same time develop about sixty different muscles. In raising the arms at full length, our shoulders are exercised, and by raising the arms in front, so that the hands are parallel with the shoulders, and swinging them quickly backward and forward, we are exercising the upper back and chest. To exercise the lower back and abdominal muscles we must bend the trunk backward and forward. Bending the trunk sidewise, right and left, and turning from one side to the other, we are exercising waist and hips. A very valuable and beneficial exercise is the holding of one's weight suspended by grasping a horizontal bar with a firm grip and trying to raise the legs to a horizontal position; to do this with both legs is very difficult and requires practice, so try one leg at first, right and left, and practice will bring perfection. Don't be afraid to run and jump with prudence; this will increase the lung power. Do all the exercises with proper precaution, as too much of anything is positively injurious; and last but not least, keep your body clean, as cleanliness is next to godliness.



BY WINFIELD C. TOWNE, A. B., INSTRUCTOR OF GYMNASTICS, MASS.  
INST. OF TECHNOLOGY.

PHYSICAL training is the systematic development of the motor powers of the human body by means of gymnastics and athletics. Although it is not universally recognized as such, it is a coördinate department of education itself, so great is the inter-dependence of the mind and the body. Excellent physical development is necessary for the highest mental activity. A mere glance at the history of education will suffice to show that those nations which have attained the highest intellectual development have been those that have stood foremost in physical achievements.

The object of physical training is primarily to develop a firm healthy body, strong muscle, and pure blood. In systematic exercise every function of the body is engaged. The circulation of the blood is quickened, and the brain is relieved from the congestive tendency, caused by prolonged mental strain. More oxygen is inhaled, and the impurities and waste matters which would otherwise clog up the body are quickly burned up and destroyed. The appetite is increased, and the digestive organs are regulated. Physical training develops the power of action and thus economizes the bodily energy. It not only acts immediately on the state of the body and renews its forces, but it also tempers the nervous system, and gives the mind more vigor. Many of the indirect benefits are quite as important as the direct benefits, for in systematic exercise alone can relief be obtained for stooped shoulders, spinal curvature, and flat chests. In short it changes the whole physical appearance of the body.

Like all activities of man physical training has been most in vogue at those times when the conditions of life have demanded it. Present conditions, it seems, call for a more widespread interest than ever before. A hundred years ago less than four per cent. of the people of the United States lived in cities; while the rest lived in rural districts where everything is conducive to health. At the present time over sixty per cent. are crowded into cities, where the conditions as regards the maintenance of health are quite the opposite of those in the country. A century ago almost everything was done by manual labor, but now all this is changed, and steam and electricity have to a large extent taken the place of muscular energy. Transportation and communication are both rapid; in fact, all business is carried on at a whirlwind rate. This radical change from muscular activity to psychic activity makes a greater demand on the brain, and nervous expenditure is greatly increased. The advanced place that education has taken in modern life has emphasized the need of systematic physical training for the recluse. Clerks, students, and professional men live in a biologically abnormal atmosphere. They do their work in a sitting posture with the chest as a rule contracted. This position coupled with intense mental activity restricts circulation, respiration,



and assimilation, and it is difficult to remove the cause. Physical training is necessary, therefore, to neutralize this effect, and also counteract the enervating influence of city life.

Systematic gymnastics, athletic sports, and out-of-door games are the forms of physical training which yield the best results. The kind of exercise and the amount which an individual should take depends upon the varied and changing need of his health and strength. It should be taken regularly, and not spasmodically, in order to obtain the best results. It is true that gymnastics and athletics, however diligently practised, will not make every man an athlete or eradicate all the physical evils of which he is heir, but it will bring out the best physical qualities that are in him and give perfect harmony between his mind and body.

BY A. K. JONES, Y. M. C. A., INDIANAPOLIS, INDIANA.

THE stress of this age demands men of virility and physical power. Inheriting a sound body, not imbibing toxic nostrums, will maintain the integrity of this delicate machine. Men are not usually ignorant of the laws of physical health and growth, but the lack of conviction in the matter is alarming. There is a general disregard of nature's requirements of resting periods, recreation, and diet. Physical recreation, in a proper environment, refreshes and strengthens every tissue and organ, and makes the man bound with new life and energy. Physical exercise is just as essential for the man of seventy as the boy of seven—the amount and nature of the work must be different. The old man should engage in walking, horseback riding, golf, croquet, etc.; the boy in lively and competitive forms of sport. It should be borne in mind that physical training involves many objects, viz.: health, skill, recreation, grace, symmetry, strength, endurance, expression, etc.

BY CHAS. V. P. YOUNG, PHYSICAL DIRECTOR, CORNELL UNIVERSITY.

MAN, it has been well said, is adapted to self-improvement by means of exercise. From infancy to old age, there is never a period in which the efficiency of mind or body, or both, will not suffer if deprived of a suitable amount of muscular activity. It may be said in general, however, that the vital importance of such activity decreases with each year of one's life.

Sensations are carried to the brain through the medium of the senses, which in the infant are very imperfect. They are strengthened and developed by use, and mental growth thus becomes possible. If any one of the five senses is lacking or becomes atrophied by disuse, the number of perceptions is lessened. So the converse is true, that

by proper care and training of the physical organism, of which the organs of sense are a part, these organs become better fitted to perform their several functions, and the number of perceptions is thereby increased.

All that is needed by the infant in the way of physical training, aside from the care that is essential, is opportunity. Freed as much as possible from the restraints of clothing, and placed upon his back, he will work his arms and legs about in sheer delight, apparently, at the power of movement. Soon, as the tiny limbs develop, he will begin to creep and crawl, and pull himself up to objects, tumbling about in delight, again, at the power of locomotion. As the novelty of movement from one place to another wears off, the handling of objects seems to furnish the incentive, and he experiments with them in all possible ways.

During the first six or seven years of the child's life, he should be allowed to grow and develop without any artificial aids, or hindrances, whatever. Simply furnished with instruments upon which to exercise his constructive instincts and unhampered in his play, no possible scheme of physical training is called for, and none should be attempted.

After seven years, play still occupies the most important place in child development,—more important by far than the formal school gymnastics that sometimes are made to serve as a substitute. During this period, games come to be of predominant interest, and take the form largely, evolutionists tell us, of stages represented in the earlier history of the race, stages in which the individual depended upon strength of arm or fleetness of foot, and upon ability as huntsman or fisherman, for his very existence. The boy or girl who has opportunity to indulge this instinct, reflective of earlier racial conditions and achievements, will be found to develop suitably. That they should do so is more important and will do more to insure a life of usefulness than any amount of book learning that may be acquired during the period, and parents should see to it that school work is not allowed to encroach upon play hours. Time seemingly lost, by observance of this rule, is in the long run time gained, for it means vigor of heart and lungs, and bodily skill, which are the foundation for future attainment.

After twelve, play need not occupy so large a place, and in case of defects of posture or carriage, prescribed exercises may more fittingly be substituted. However, every adolescent should engage in some form of muscular activity of considerable severity each day, in order to maintain a proper equilibrium between growth and development. Out-of-door exercise, if at all practicable, is always the best. It is interesting to note, again, that the games of this period are reflective of the combats of savage tribal life, so that the tremendous interest of the youth in athletic sports is more or less the result of instinct.

After the body has once attained its growth, and the larger part of



life is confined to the more purely intellectual sphere, exercise, while important, serves more particularly as a means of stimulating body and mind to a high degree of efficiency. Very little change of an organic nature is likely to result. The man or woman, however, who by reason of occupation, or for other causes, ignores nature's demand for relaxation and recreation, at stated periods, cannot maintain life, either as regards its mental or physical aspect, in the highest state of intensity. The organs of respiration and circulation are the agents of supply and distribution, and their natural stimulation is physical exercise. In an active life, there is constant breaking down of tissue in brain and muscle, which, if not carried away, accumulates and gradually poisons the system. The inevitable result is that the mind's aptitude for work is decreased, the power of concentration is lost, the memory deteriorates, and a feeling of dulness and lassitude takes possession, all of which can be largely overcome by spending an hour each day, or even less, in enjoyable outdoor exercise.

In general, it may be said that all forms of exercise which furnish unrestrained and easy motions are preferable to feats of strength or endurance; that extreme specialization in any form, in the young, is to be avoided, because it overdevelops the parts exercised, and hinders rather than helps in the harmonious working of part with part; likewise excess of bodily exercise is a detriment rather than a help to mental efficiency.

BY JAS. NAISMITH, PROFESSOR OF PHYSICAL EDUCATION, UNIVERSITY OF KANSAS.

THE saying, that the educated man is one who knows something about everything and everything about something, might be changed so as to read, the physically educated man is one who can take part in every form of sport and who excels in one. The perfectly developed body is one in which all the structures are normally developed, and all the functions are working harmoniously.

The powers of the body do not come to us ready-made, but develop slowly, some early and some later in life; and they usually follow a definite order. Nature has given us incentives, which are almost instincts, to physical exercise in childhood and youth, that too at the time when each would do the most good. The best results in bones, muscle, and brain power can be attained by following the normal order of development.

The general order is in childhood the physical, and in adult life the intellectual, with a gradual dropping of the former and taking up of the latter. It is true that in many cases there is a tendency to remain interested in the things that pertain to childhood, neglecting to go on to those things that pertain to manhood. But this is not the fault of nature nor of exercise, but the fault of our civilization,



which allows many of the youth of the country to grow up without any sense of responsibility for their future maintenance. In the animal world, the stern necessities of life compel the individual to use those powers, developed by play, in the struggle for existence. And the one who had made most progress in play was better fitted for actual life than the one who had waited for this time to come, without the proper training. Too often in our educational systems this order is reversed, and the individual spends his childhood in drudgery, seeking intellectual development before he is prepared for it; and spending his life making a drudgery of recreation in the endeavor to acquire that health which should have been his from the start, and which would have made his whole life one of pleasure to himself and his associates.

But, by following the natural order, the greatest gain would have been achieved, both physically and intellectually; for the powers developed at the proper time are more lasting and more serviceable than those acquired at the wrong time.

It is necessary, then, that at the very earliest stage in the development of the child the greatest care should be exercised in the selection of his play and exercise. The parent or teacher should realize that athletics and sport form a temporary part of a man's equipment, a means to an end, rather than an end in itself. And that he should be developed, not for the purpose of making an athlete, but that he may be efficient in life, that he may enjoy his recreation and get benefit from his exercise, rather than the glory that comes with victory. Were this observed, we would find fewer weaklings in the grand stand, and a greater proportion of our population active participants in the games. There would be less tendency to specialize in some particular sport to such a degree as we find to-day, and we would more nearly measure up to the standard laid down at the beginning. The interest of the individual should be as wide as is consistent with the true aim of education, and with expertness in some one line. The young man who can take part in any form of athletics is more likely to have an evenly balanced ability, and feel himself at home in any company of athletes, while the specialist, in some one form of sport, is apt to have some one side of his nature developed at the expense of another, and feel sadly out of place when the company wish to take part in something with which he is not familiar. It is a sad sight to see some great husky fellow casting sneering remarks at some sport with which he is not familiar, and in which, by reason of his specialization, he is not qualified to take even a respectable part. At the same time, if there is no sport in which he excels, he is always following some one else, instead of being at some time a leader. He is apt to be lacking in a proper respect for his own powers and a proper amount of initiative. As he grows older, if he has chosen wisely, he will be more likely to devote some time to that sport in which he is interested.



Our interest in a sport is something which is capable of being cultivated, and in the great majority is not inherent, but dependent on environment. We see again and again an individual who takes no interest in a subject, while he has no knowledge of it, becoming interested, to the point of being a crank, when he becomes an authority on that subject. It is no uncommon sight to see a boy becoming fascinated with a game that at first he despised, simply because, by some means, he became proficient in that particular sport. The majority of boys can be interested in any form of sport in which they can be induced to perfect themselves, regardless of the method by which this skill was acquired. Then if we wish our boys to be interested in any sport, or if there is any sport which would be the most beneficial to them, let us see to it that they become expert in that; and the interest will follow, so surely as effect follows cause. Therefore we should *choose* this event rather than trust to luck or environment to determine what shall be our future form of recreation. It is well worth while for a boy to stop to consider which sport shall be his specialty; and any father should count it a privilege to spend time helping his boy to decide this question.

In order to settle this question properly it is necessary to have some standard by which to judge the value of a sport, and the following seems to me to aid in this matter:

1. It should be a sport which develops the right type of man, not the heavy slow type, nor yet the excessively nervous, but that which, along with health, develops skill, agility, erect carriage, physical judgment, self-control, concentration, and courage.

2. It should be such that it can be played by a few, for then we are not dependent on a crowd, and a few can enjoy a game. The older we get the harder it is to get some one to enjoy our sport with us.

3. It should require little apparatus, for, when there is too much equipment, there are few who will go to the trouble to prepare for the sport; and our sphere will be limited, and our opportunities few.

4. It should be such as will attract us after our business occupies our time and attention, for it is then that we especially need the recreation which comes from a good game.

5. It should have the element of sport in it, and this should not be entirely dependent upon competition, else when competition ceases, or we reach the class of the "also rans," the attraction of the game is gone, and we care little for it.

6. It should have the minimum of danger to life or limb which is consistent with the development of courage.

7. It should not make too great a strain on the endurance, nor demand too great an amount of training, for when the real business of life is upon us we cannot take the time to train, nor stand the strain which is placed on our vital organs.

No one fulfils all these conditions, or is alone sufficient for the full development of the individual. But some come nearer doing this



than others, while sometimes a combination of two or more rounds out the individual.

The more common games might be graded as follows: volley ball, handball, golf, tennis, rackets, boxing, and fencing. The more strenuous might be graded thus: field athletics, basketball, association football, lacrosse, baseball, football, track athletics, and rowing.

In early life we might select one from the first group, which would develop, principally, skill, agility, and physical judgment; in the heyday of youth we might choose, from the second group, one that would tax our self-control, concentration, and courage; while in later life we could return to one that uses the skill acquired early, thus getting a maximum of recreation with a maximum of intellectual effort.

BY CHAS. B. LEWIS, PHYSICAL DIRECTOR, TUFTS COLLEGE, MASS.

**P**HYSICAL training is another important item in the process of strengthening the body, and is indispensable to health. It is a well-known principle in physiology that the reasonable and regular exercise of any part of the human body will give strength and power of endurance; for instance the muscular system, which depends greatly upon regular exercise for its power to perform the work assigned it. A good muscular development not only gives strength and rapidity of motion, but promotes the circulation of the blood, which is essential to a healthy body. If the body is inactive without muscular power induced by exercise, the muscular system becomes flabby and powerless. The vital processes are weakened, the person becomes pale, the flesh soft, energy fails, and excretory organs cease to perform their proper functions.

Health is the result of harmonious action of the processes of respiration, circulation, digestion, assimilation, and elimination. Consequently it will vary with the degrees of vigor and harmony with which these processes are carried on. It is the condition of the involuntary muscles that determines the degree of health.

If these muscles are strong and active, vigorous health is assured to their possessor. This strength and activity will not continue of itself; it requires frequent reinforcement, and nature has wisely arranged that it shall be supplied by action of the voluntary muscles. Therefore every voluntary act in any part of the body, whether it be work or play, intentional or unintentional, contributes to this end.

The object of taking physical exercise is to develop the lacking functional power of one or more of the vital organs and functions which are deficient in this respect, and this deficiency varies in different individuals both in regard to its location and its degree of variation from the normal. It is impossible to form a schedule suitable for universal use. Both the selection and order of arrangement of



exercises must be decided by individual needs, otherwise they will not prove especially helpful, and may be productive of harm.

What these individual needs are depends upon the defective conditions of the system which have either been inherited or acquired. But whether inherited or acquired, there are forms of remedial exercises, which if begun in time and intelligently used, are able to correct and improve them.

A fault in physical training is overexercise. This exerts the muscles beyond their power, and finally causes their destruction. Thus the muscle, instead of growing through exercise and increasing in strength, dwindles away, and finally loses all its power. Moderate and regular exercise, with proper nutrition, strengthens the body. Deficient exercise, or none at all, prevents natural development of the organs, depriving them of their ability to perform their functions; overexertion, too violent exercise wears out the tissues too rapidly, not giving nature time to repair the waste.

"Health is the vital principle of bliss, as is exercise of health."

Therefore it is evident that physical training is one of the essentials for maintaining and promoting health of the human body, without which the other means heretofore mentioned would fail, or at least produce only a partial result.

BY J. B. FITZGERALD, M. D., PHYSICAL DIRECTOR, BOSTON PUBLIC SCHOOLS.

ONCE in this world, long, long ago, there lived a people who did not think of mind and body as separate facts to be treated separately, but as one fact, one entity, always to be considered together. They believed that mental processes were physical processes, and the reverse. They believed that the physical was first in point of time, of importance, and was the foundation. They expressed this idea in their system of education, and they lived it in their lives, and the results all men know.

In spite of this, their ideal shared the common fate, and went down in the blackness that followed the fall of the Roman Empire. How far it fell may be judged by the fact that in the Middle Ages and later, exactly the opposite conception of education and of life was held. Life was not something to be lived nobly, to be enjoyed wisely, and what education there was, or came afterwards to be, concerned itself wholly with the mind.

It will be admitted some day, I think, that one of the glories of the nineteenth century was the rebirth of the ancient idea, or ideal, of education. It still has far to go. It will be long before it will win back the old esteem it has held. It is sneered at still in many high places. It is accepted only half-heartedly, or less, in many others. Its converts, after the manner of converts, have committed excesses,



but the conception is so noble, the results so great, that men will never consent to give it up again.

How far we are from the ideal is well illustrated by a very popular book published a few years ago.

In the first story, "Beside the Bonnie Brier Bush," George How is permitted to realize his ambition to go to college. Education to George, and apparently to every one about him, meant books, books and only books. To such good purpose did he study them that he, the child of poverty from the glen, carried off the prizes in both the classics and the humanities from the sons of some of the oldest and proudest families in the land. Having performed this wonderful feat, and having, of course, neglected his poor body while doing it, George went, strange to say, not forth to conquer the world as well, but home to die.

It is a fact that the writer, in all the discussions he heard regarding the story, heard much of its beauty and pathos but absolutely nothing of the supreme folly of the whole performance on the part of all concerned. And yet, that seems the most obvious thing about it.—Literally, to educate a man to death.

However, just as the blood of the martyrs was the seed of the church, the spectacle of the failure of those who do not recognize the primary importance of bodily exercise, of physical education, has been and will be the most potent factor in the spreading of this new and old gospel.

What, in a word, are the results of the harmonious development of the body, including the brain?

Health.—Not the dull, negative feeling which is the lot of most, which is perhaps merely freedom from pain which lies on the borderland of disease with more or less frequent incursions therein, but the positive, sparkling, overflowing health which laughs at germs and maladies, which is a blessing to its possessor and every one else, because by its radiating power it is, in the best sense, contagious.

Happiness.—Above the door of the Brookline Public Baths is the inscription, "The health of the people is the beginning of happiness." How can one be happy unless he is well, and how can one be utterly miserable if he *is* well? Certain it is that perfect health enables us to bear sorrow and misfortune with dignity and fortitude.

Power.—How many men and women have failed in reaching the goal of their ambition because at the critical time, sometimes at the very outset of their careers, as in the case of "Geordie How," not will, not longing, but heart or brain, stomach or nerve, fail them. How many?

Beauty.—So far have we fallen that nakedness, the human body as God made it, has in the minds of many become synonymous with nastiness, with shame. It is true, of course, that poets and painters, who are in a sense prophets, and a few others, do not believe this. They believe in the dignity, the beauty, and the glory of the human



form divine. I must admit that the Philistines have the best of it to this extent that the majority of human bodies are not things of beauty. They are shameful things, which the owners of them do well to keep covered. It is probable that a more general diffusion of physical beauty among mankind must precede the general acceptance of the poets' and painters' ideal.

The chief ends then, of physical education, are Health, Happiness, Power, and Beauty.

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### DIET AND STIMULANTS.

BY

E. F. BENSON AND EUSTACE H. MILES.

**D**OGMATISM on any subject is dangerous; in matters of food it is fatal. One man's meat is literally another man's poison, and because one of the writers knows that personally he can digest without the slightest discomfort a heavy supper, sleep the sleep of the just, and rise cheerful and hungry for breakfast, he would be making a great mistake in recommending such a course for a dyspeptic person, with a view to the strengthening of his digestive processes. In fact, if a naturally dyspeptic person persevered in such a system, this unfortunate scribe would probably be summoned to attend—with shame and dishonor—a coroner's inquest. On the other hand, should the dyspeptic so far win him over as to make him give what he would call a "fair trial" to a simple diet, "the only diet," he would say, "on which it is possible to keep fairly well," he would, if it was persevered with, be probably asked in a public place what he knew about this suicide. But the moral of these gloomy reflections is clear enough: namely, that in questions of eating, and drinking, and smoking, what is to be ascertained is the diet which will keep A or B in good health for the proper performance of a citizen's duties. Whatever diet (or absence of diet) continues to give good results after a protracted trial is almost certainly good for the individual in question. Whether it would be good for another individual it is impossible to say, but if any one person, even though he lived exclusively on green cigars and Egyptian mummies, continued to be in his most excellent health on such a diet, it would be foolish to urge him, except on the score of expense in the way of import duties, to change it.

*But the majority of people are not at their best, and know it.* When they are in hard work which, as far as we can see in the present highly competitive state of the world, is becoming the normal condition for man, their bodily health, and in particular their bodily activity, sensibly declines. Then perhaps there comes a lull, and they