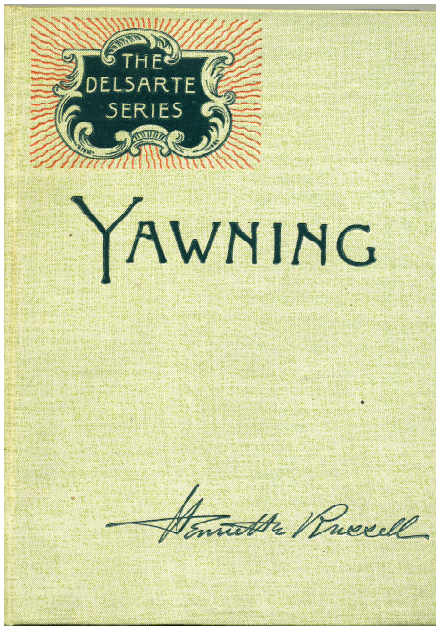

Yawning

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NATURE'S GYMNASTIC

Rubbing their sleepy eyes with lacy wrists,
And doubling overhead their little fists
In backward yawns. KEATS.

DELICIOUS, isn't it ? The rosy little fellows, doubling up their tiny fists and stretching out their little arms and legs, one this way, one that, as gracefully said unconsciously as gods or animals. Enjoying it, too, no doubt, as the sympathetic poet must have felt, to put such a sense of simple delight into the lines. We also enjoy it, when we are willing to yield ourselves lazily to the impulse, making no effort to hurry through with it or to choke it in its inception.

Nothing man does in life is more perfectly instinctive and natural than yawning. Although but a temporary tendency, the impulse is, for the time being, almost as irresistible as the desire to breathe. Yet in the economy of nature it has but one use and one purpose: it is a gymnastic. When the body has lain motionless for some time, as in sleep, or when the powers are at low ebb through fatigue, drowsiness, or ennui, and something is required to restore the system to a state of general activity, nature provides this involuntary inclination, with its graduated series of movements, called yawning. Nature's gymnastic, it embodies all the laws of growth needed for movements that are to give physical growth and refreshment, and some of the laws which are necessary to the higher growth, so-called, of the emotions and the intellect.

A good yawn is always slow, and the best uses every articulation in the body probably every muscle-possibly refreshes every nerve. Not all at once or in jerks, but slowly, in perfect successions and rhythms, with the best possible breathing. Certainly no gymnast, with the single exception of Francois Delsarte, ever so arranged the same expenditure of force, nervous and muscular, as to result in an equal amount of invigorating effect upon the system.

Succession, opposition, and parallelism these are the three orders of motion used in yawning. The primary motion is probably that moving or pulling against the motionless, which results in the stimulation of the motionless and its consequent antagonistic action. This we call opposition. But since this primary activity takes place in the internal organs, and is thus concealed from the casual or unpractised observer, we can best begin in the present study with those successions which it generates.

Now, what does the ordinary onlooker see in the progress of a yawn?

At the same time that the muscles of the throat are stretched, the upper eyelid begins to droop, but not as in sleep, for the eyeball wishes to roll upward, rousing the lower lid to action and making it present some opposition to the downward pull of the muscles of the cheek when the jaw drops. Similarly, the contracted eyebrow presents something for the upper lid to pull against when it begins to close upon the eye. The whole face seems now to be struggling to prevent the shutting of the eyes, one set of muscles acting in opposition to another. In this way a perfect means of refreshment has been supplied to the face by the muscular activities passing over it in succession. The

blood has been brought to the surface, and a reactionary stimulant sent back to that intimate friend of the face, the brain.

So far, at least, the movement has conformed to the definition of a perfect gymnastic, viz., the greatest motion with the least motive. For the better the gymnastic, the more perfectly at rest are the higher orders of nervous activity, and the motive force the more completely supplied by the automatic processes of the mind, rather than the voluntary.

All parts of the body axe alike refreshed by a perfect gymnastic. We have seen the face moving one muscle alter another ; previous to this, however, the throat was stretched, and even before this all the breathing muscles, especially the internal ones; and, now the increased activity of the circulation furnishes a stimulant to the brain, making the automatic impulse still stronger than before and the yawn is either repeated or continued.

If continued, we notice that the head begins to roll on its most habituai and instinctive lines of motion, sometimes pulled back in opposition to the opening of the jaw. The muscles of the neck having by this means been used, another stimulating wave of circulation is sent back to the brain, and the ganglia that govern the muscles of the neck and chest are aroused. And now the chest muscles contract and we see the ribs raised, sometimes to such an extent as to stimulate the diaphragm and other interior muscles of breathing, which are so attached as to fix or move alternately the ribs or arms. By this time still further automatic stimulus has arisen by means of increased circulation, and motion is communicated to the entire frame. The arms rise slowly and rhythmically and are stretched above the head, or sometimes waved in the air. At this point we must have readied the "going-on-all-fours" stage of nervous excitation, for legs and arms now stretch and pull, first in succession (the legs last), then in opposition, each pulling against the other. A tendency to do as one's neighbors do causes each new muscle to combine in action with one of those already moving, and then another with this, and so on over the whole body.

Observe that the external manifestation of this succession of motion originates always in the face and extends itself over the whole body like a wave, reaching the feet last. We shall afterward find that this law of sequence is trie of all natural and beautiful on.

Observe also that the time is always slow and soothing, and without having a positive recurrent beat, there is still something rhythmic in the action. There is never anything that in the remotest degree resembles a jerk. On the contrary, the time is measured (metre), and the motion of all the parts harmonic. Contrast the restful movement of the yawn with the ungraceful and fatiguing jerkiness of the mind-directed motions often used in work, gesture, and gymnastics. The order of succession in which each muscle takes up its part of the work, is one element in the perfect harmony which should prevail. Another is that the work be proportionally di vicled among all the muscles, so that each has only a pleasurable amount and knows just when to begin, and acts only in its own turn and in its own time.

How does each muscle know its own time?

For the purpose of the present paper, it may be sufficient to say that the laws of vibration are common to all physical objects that the wave current which incites the muscle to activity, and the chemical changes in the nerves that transmit that current, are vibratory. The application of force from the muscles to tue bones, making each bone a lever or a pendulum, is still all in obedience to the laws of gravitation.

Hence, every bone and muscle has a time ratio peculiar to itself. This is the natural, automatic period of motion most easy, most expressive, and most economical. And wonderful as it makes the structure of the human body appear (though it may readily be shown how by natural selection this state of things would come about), all the different time-ratios are harmonic that is to say, so intricately inter-dependent that each (when in automatic or other perfect use) is in relation to every other. All breaks in this harmony are caused by the interference of ignorant mentality or of abnormal (sinful) motives. Unnatural habits, produced in the first place by a false social environment, cause injury to some organs by over action, while others sink into decay through idleness or ennui.

One of the simplest, because most purely physical and automatic, of the harmonies of the body is seen in the yawn. If the step from its simplicity of purpose to the complexity of the possible mental and emotional uses of the body, appears a great one, the construction of an intermediary scientific gymnastic may prove the existent connection.

Why not adopt yawning itself as our gymnastic, since it so perfectly illustrates the laws of the body? There are several reasons why other movements are better. For one, the yawn is too catching; it would too readily become a it, and might appear on inconvenient occasions. Doubtless, within limits, it could be encouraged usefully. It would be funny, at least, to see fifty boys in a school, or a thousand soldiers in a regiment, all taking exer-

cise in this manner!

If we examine many accepted systems of gymnastics, we shall find in most that the rhythms of the body are wholly disregarded, and the conventionalized rhythm of a musical instrument is substituted. Further, that the orderly and graceful arrangements, successions, and oppositions of the movements and attitudes of the members, are either neglected or subordinated to the relations of individuals to each other, and of all the class to the floor!

For example, in teaching walking to our boys or soldiers, all must, for the sake of the uniformity of the whole, take steps of the same length, regardless of the different development of the inchvidual leg-pendulums; so that while the mass moves well, only a few individuals are able to do so. This may be a necessity in armies; but it is a poor standard for personal culture. Yet the teaching of marching is about the only teaching that exists, of that superb gymnastic and accomplishment graceful walking.

A gymnastic, while stimulative and developing to the body, might also be educational. Then why spend time and effort merely to accelerate the circulation and increase the bulk, when at the same time bulk of better shape could be obtained by means of a gymnastic that, starting with the laws of the body's growth, would end in those of the soul's, including development in all forms of grace and charm, of motion and expression, through all the varied acts and relations of social existence.

THE LIMITS OF THE YAWN

And every neighboring cottager
Stupidly yawned upon the other. SHELLEY.

A YAWN, though an automatic impulse, can be induced at will. The very thought of it is enough with some people, but anybody can yawn deliberately by slowly drooping the eyelids as if sleepy, at the same time rolling the eyeballs slightly upward, and, without shutting the eyes, repeating the action several times. Before the movement has been made half a dozen times most people will yawn and those who do not, wifi do so after the experiment has been repeated occasionally during a few days. This is only mentioned because it would be ridiculous to discuss whether yawning should be directly used as a gymnastic, if there were any question as to whether it could be so used.

Dropping the lids slowly and sleepily is a common accompaniment of one of the conditions which most frequently induce yawning. The sympathetic relations between the act of yawning and the act of closing the eyes in this fashion, cause the two movements to be mutually suggestive. From similar sympathetic relations we sometimes yawn at the sight of others, or even at the mere thought of the action.

It has already been suggested that this catchingness is one reason why the yawn itself would not make a satisfactory gymnastic. Why is the yawn catching? Because it is at once so entirely and hereditarily automatic, and so universal. Seen so often as it is, the unconscious memory will, without any direction of the mind, excite its repetition as a direct instinctive action, just as a sharp sound or a sudden turn causes an involuntary start.

On one occasion at the theatre, when La Tosca was waiting for the execution of her lover to take place outside the ramparts, the silence was suddenly and sharply broken by the simultaneous discharge of the rifles. Half the people in the theatre jumped from their seats and many unconsciously uttered a cry.

It was not applause, and certainly no one had any idea of interfering with a sham execution in a mimic scene. The conscious attention of the people was fixed upon the actress who was holding the stage, and it was the unconscious, automatic nerve systems that gave orders for the muscles to move. Deep in the instinct of the human race, developed there long before plays were invented, were the automatic memory that noise means danger, and the accompanying motive of defence.

So, in the experience of the race, sleepiness at night and drowsiness on waking, have been common to all men. While yawning sleepily, man has often seen somebody else yawning sleepily, so that the sight of another's yawn at once suggests automatic or sensational memory of his own former sluggishness, and the sensory ganglia and motor nerves immediately act as has become a habit with them under like circumstances, and give orders for the customary relief; for the mere thought of a sensation is itself a weak sensation. Man has a habit of yawning when sleepy, tired, or dull; man has also long since contracted a habit of yawning at sight of other people's yawns, until one habit is nearly as strong as the other.

We all have this tendency to do what others are doing. A good laugh is very catching; so are tears. I knew a girl once who used to lean against the wall and sob until everybody in the room sobbed too, although they began by laughing at her. The yawn is only more unconsciously catching than any other sympathetic action, and this entirely because it is so automatic.

Another reason why yawning is unsui-

table for a complete gymnastic, is that it has neither intellectual nor emotional use or function. It is a model gymnastic for the physical being, but for that only. It falls short of the complete rest and stimulation that is needful for the best preservation and growth of the entire being, and which an educational gymnastic ought to provide.

A yawn is generated when one has been breathing badly. It is a reflex action caused by bad air in the lungs, and it is the gymnastic chosen by nature to awaken the respiratory organs into activity. It occurs when one has been sleeping, for during sleep the breathlug is very light. It occurs also when one wishes to sleep, for then the body is tired, and hence the automatic actions, such as breathing, digesting, etc., go on sluggishly. Or it may be caused by fatigue of the mind, which occasions a need of larger amounts of oxygen than usual. Intellectual labor uses up a great deal of pure blood and converts it into a corresponding amount of bad blood, which calls for aeration.

Long and intent listening is another cause of yawning. The best example of this that I can remember, is a reminiscence of a class of students learning to teach the deaf to talk. The teacher was Graham Bell, a most fascinating speaker, and the interest was simply intense; consequently I could not understand why we all felt such an uncontrollable desire to yawn.

The exercise often consisted of long practice in writing symbols for sounds made by the lecturer. This required the most acute and sensitive ear, for we were required to distinguish by sound thirty-six vowel positions of the mouth.

Let the reader stop here and, before reading the next sentence, listen intently to an imaginary sound in the next room. You observe that you held your breath.

When we had listened for an hour to these delicate shadings of sound, holding our breath at each one till we could determine its position in the scale, what wonder we yawned!

Holding the breath simply means retaining the bad gas which should have been allowed to escape, and a yawn is a stretching of all the breathing cavities, thus rousing the circulation in the respiratory organs. There are occasions for holding the breath while listening intently, that do not cause yawning in themslves ; but they do not as has been suggested. such are the occasions when the feelngs are stirred to such an extent that there is great and exciting stimulus to ciculatory and muscular acyivity of a more powerful kind, for example, apllause, layghing, weeping, shouting, etc.

Of most habitual bodily acts we find the ideas embedded in the language and coined into a word. Yawning is no exception to this rile. To describe intent attention, we say "the gaping crowd," "breathless attention," "open-mouthed wonder," etc. Any of these acts, if long continued and unaccompanied by great emotion, causes yawning. In short, anything tending to retain the air unduly, always calls forth, unless accompanied by exhilarating emotions, the natural gymnastic necessary to restore the system to its normal activity.

The yawn seems to begin its action at the diaphragm, its sensation and visible motion at the back of the mouth. Its origin, then, is in. an ordinary automatic centre and a conscious physical centre.

Its meaning can, therefore, never rise above the physical plane, or its effect be other than physical. It can have no result in the mental and emotional natures, except in a very indirect and negative manner. Now, this is just the old stumbling-block in-gymnastics. Still, it may be observed in passing that the effect of the yawn gymnastic is not hurtful to either the moral nature or to the higher nervous system, as the fist thrusting, dumb bell swinging, tramping, kicking, and straddling, so common in our schools and gymnasiums, certainly is. Nevertheless, we fall short of the ideala gymnastic that shall produce at once (1) growth of the physical powers, (2) culture of movement of the physical organs, and (3) stimulating reaction upon the moral or emotional and the mental natures.

But in seeking this ideal gymnastic, we find that the laws of time and of order of motion which are employed in yawning, the simple physical gymnastic, are also the laws of expression of many of the higher faculties and conditions; and that through it also we may discover the knowable laws of growth in these higher forms of being.

Here, then, is the beginning of a safe and valuable gymnastic, one which makes even the purely physical stimulate, invite, and produce the purest and highest instincts of man, even up to the intuitions. And. Intuition holds a torch at the topmost summit whither Reason climbs.

THE HUMAN TRINITY

Art should interest by the true; Art should move by the beautiful; Art should persuade by the good. Art should interest by the true to illumine the intelligence; Art should move by the beautiful to regenerate the life; Art should persuade by the good to perfect the heart. DELSARTE.

EDUCATION is the development of all sides of man's nature harmoniously. Man is so constitu-

ted that a too exclusive indulgence in thought, or in emotion, or in sensation, is productive of decay or disorder. For a man has always three distinguishable natures, a nature that must think, a nature that must feel emotions, and a nature that must have sensations; and these natures are not separate nor, until death, separable, and their greatest health, growth, and usefulness is gained by their greatest co-activity.

Emotion, thought, and sensation so combine and modify each other that it is no wonder our scheme of education has been made without the ideal of a perfect harmony and equal development or balance among them; for it is not easy to see which is which, or how far each may influence the other. It has been supposed that the most intense thought prevented sensation or emotion, and therefore that those who elected to think, could ignore or neglect all forms of physical exercise with lui punity; or that a thinker could afford to dwarf his emotional life, reject all normal experiences of social existence, and yet expect to think well and judge correctly.

The new education, guiding itself by the laws of growth, assumes the developing of man as a whole-not the mere storing of the mind with useful knowledge, nor the exclusive training of the mental to the detriment of the physical and moral faculties. To this end the laws of harmony in the three natures must be properly understood.

True harmony or beauty must present sufficient suggestiveness to the mind to prevent the thoughts from turning upon the sensations and so destroying them. Perfect beauty or harmony should arouse thought, emotion, and sensation, each to its highest pitch, yet in no wise diminishing the others. This is to be intoxicated, but wholesomely so, for the division of the nervous energy prevents each activity from degenerating into its ultimate form, that of the physical being debauchery, that of the moral bigotry, and that of the mental madness. A mind overstimulated and worked to the exclusion of physical or emotional activity, ends either in insanity or in nervous prostration. Physical activity, deprived of moral impulse, thoughtful plan, or ambition, degenerates into some form of decay. The sole sway of the emotional nature ends no better, producing bigotry in religion, sentimentalism in life and hysteria in trouble. You might as well expect the half to make the whole, as thought, emotion, or sensation alone to make a man.

Through deeds, words, tones, and gestures we may learn the laws of man's growth, and by observing the laws of his natural growth we may obtain a guide for those who conduct his educational, i.e., artificial growth. The laws of physical growth, or increased quantity, may be the simplest to analyze, after which it will be easier to see the laws of increase in qualityas mental and moral growth may be called.

A large part of the work necessary before we can attain such an understanding of man as will enable us to construct a scheme of education, has recently been done for us by science. We know that man must have food and air of proper quality, and how they are used in the body. We know that every function and faculty must have exercise, if it is to grow-nay, if it is to live; for not to act is to die. But what we have not yet thought sufficiently about, is the manner and law of this exercise, and the extent of its realm. There seems to be no limit to the latter, and practically none to its power.

The result of certain ideas of education, generally received, is a mind weakened by artificial use, which must either rely upon books forever, or depend upon the thoughts and judgments of others.

The result of the system of education which might be substituted, is a selfand original intellect, a magnetic nature, a personality that knows-often without being conscious how it knows, a physique that is a walking library of experience and inspiration. The intoxicating delight of the senses in such a man, balanced and controlled by the equally intoxicating delight of original thought and poetical impulse, would be boundless an existence of the same order as that of poets, artists, and all men of genius.

In a state where this kind of education prevailed, men of great genius would stand a better chance of being understood, and would be less often sacrificed to an antagonistic environment. In fine, they would be used to infinitely better advantage. Of course, no system would always produce equal results or make everybody of the same pattern. It is only claimed that the natural method would, in a general way, level up rather than down. It was confided to me by a teacher, who drew a big salary at a big school in London, not long ago, that their method sacrificed all the best boys, and produced only comfortable small people of the dullest and most common place description.

All education should aim at the production of genius. Power which is developed, or found capable of development, has been called talent, but it does not differ in kind from that inheritance of power we call genius; and no education is worthy of the name which does not end in its production.

We judge a man by his ideal, though circumstances may modify his deeds. As his ideals are, so is he. Now, what is our ideal of education? We put boys and girls in schools, and afterward in col-

leges, where each is expected to attain precisely the standard set up for all. That standard must, of necessity, be mediocrity, and no result will ever be obtained but mediocrity so long as the exceptional is disregarded in the scheme of education. Let there be a school for geniuses, and the exceptional genius of each scholar will appear..

I once saw in a picture gallery in New York a wonderful painting of a Madonna, and Child. The Madonna I do not remember; she was like many another I had seen. But the Christ-child ! What a fane of infinite possibilities was there: "Ah," I said, "that man knows what the exceptional and ideal in manhood is; he knows what ideal children might be born." And then I thought: "Suppose such children should be born ; what could we do with them?" Their powers would all be set awry, all jangled into discord, so far as human teaching could do so. No, we could not educate such children.

And then I bethought me that in that Child the artist had painted one whom he knew that the world would crucify.

THE BEGINNING, INCLUDING THE WALK

Incessu patuit dea. Virgil.

MOTION with motive is work; motion without motive is gymnastic. Gymnastic becomes necessary when civilization has made it possible for a class of people to exist without work. Recreation of divers kinds, such as hunting, dancing, etc., provides a sufficient amount of exercise at first, but subsequent culture leads the heart and brain to find these forms distasteful, and to seek others of a different kind altogether. Society, art, literature, music, and theatres soon cause the mind and emotions to be wearied by action, and leave the body to be wearied by inaction. In certain classes the amount of necessary physical labor is steadily decreasing, while the mental and emotional activity is steadily increasing. Hence, it is time that science should provide us a gymnstio of the kind we have set up as our standard, i.e., one in which the greatest motion is gained with the least expenditure of will or fatigue of the higher activities of the nervous system. This science may do, as we have endeavored to show, by analyzing for us nature's model, the yawn.

We are a brain-weary and emotionweary generation : let us develop our muscles!

But there are many wasteful and injurions ways of developing our muscles. We may so move as to weary the mind and will beyond measure, while we hardly develop the muscles at all. This must be avoided. We may so move as to injure the body. We may so move as to destroy our natural grace of motion, and this is often seen in the case of professional athletes. Almost all fatigue and all ungracefulness can be traced to a violation of the laws of economy within which the body naturally moves. This is true even of a disagreeable tone of voice.

I was once asked to select the gymnastic apparatus for a large school. I ordered four hundred pairs of heelless, soft soled, canvas shoes, and engaged a teacher who knew the laws of motion and expression. The work of body building and bodily education could then begin.

The body need not be cultivated with the idea of shape, bulk, and strength alone. Let the experiment be tried anywhere and under any circumstances, and it will be found that shape, bulk, and strength are all far more easily attained when the nervous system entire is the object of education than when the muscular system is regarded as the end. It should be but a means, and infinitely greater results in mental, moral, and physical efficiency will follow. However difficult this nay seem to prove in theory, it is very easy to prove by trial.

It maybe objected that I use the word "gymnastic" in a new sense, that the be-all and end-all of a gymnastic is to increase bulk and promote physical activity. A criminal would hardly be pardoned, because he said, "Oh, I never intended to be good, I expected no such thing of myself." No more, if a gymnastic may be made one of the greatest means of education, may we pardon its. practice as a mere method of increasing the bulk. Indeed, such procedure may properly be called criminal.

When a man is tired, he has, either by inactivity or over-activity, committed a chemical, physiological, and psychological violation of the laws of economy. Nature, instead of leaving him in a condition approaching stagnation, immediately sets to work to restore him to a pleasurable state by a light stimulative gymnastic called a yawn, which at once restores the habit of obedience to the harmonic laws of his system. Now, there are actions which obey these laws of growth and rest which we have discovered in the yawn, that are more beautiful and ennobling in their reactions, and which are free from the objections there would be to cultivating the yawn itself as a gymnastic, and thus perpetuating as a habit that which is already an almost uncontrollable tendency.

Every motion has a creative or developing reactionary influence upon the mental and moral natures, as well as a direct action in physi-

cal growth and in the creation of physical habits. Growth and education, indeed, should be synonymous terms. A gymnastic exercise should be arranged according to the laws óf physical growth. It will then be also in accordance with the laws of grace, and tend to develop the better emotions.

The discovery of a law is of great use, if only as an economy of labor. It is so much easier to see which way all the little twigs are waving, after one has looked up at the weather-cock and found out which way the wind was blowing.

We must distinguish between a law and a rule. Men often make rules and call them laws to give them more dignity.

Once certain laws of growth are found, all the jumble of possible things resolve themselves into a few lines of related things. It is relation that brings order out of chaos. In educational efforts it is the knowledge of the laws of growth that out of the possible can bring into orderly array the useful and economical. The physical nature is fundamental to the mental and moral. Hence, it must be in a high state of development before either mind or emotions can reach a very high condition.

A dog, by what we are pleased to call his instinct, can perform feats which are quite out of the reach of our intellectualized wifis. Why not take a lesson of the dogs, the birds, and the bees, and develop by use or scientific gymnastic our instincts? It is a false standard to think that the mental, emotional, and physical can be well developed or educated without relation to one anothermore, without harmony with one another. The Indian of the American plains is beaten in a running race with the white man, because the will force or nervestimulant is so much greater in the latter. His merely physical training fails of even physical success.

The artistic criterion, that those things are most beautiful which have the most complex and complete harmony of parts, is equally applicable to man. Physical development should always be an educational development. We must seek quality along with quantity-both for the sake of economy and because it is necessary in order to get the greatest quantity. Strength should be sought in harmony with other forces, or its discordant action will soon destroy or dissipate itself.

Because life does so much for the education of our physical faculties, we have given most of our educational aid to the intellect. Besides, storing the intellect with useful knowledge seemed so easy because of the mass of material at hand. This is a case of the supply influencing the demand.

But the defect in our method arises chiefly from the accidental but fatal practice of putting the intellectual requirements first in order in the educational system. The laws of the mind do not include the laws of the whole body, but are superimposed upon them. The laws of the body do include, and in a comprehensible manner, the laws of the mind. On this rock let us build our gymnasium.

Our gymnastic must be progressive. The beginnings must be so arranged as not to put any hindrances in the way of the higher combinations where physical acquisition is to include useful habit; and these, in turn, must not be allowed in any way to prejudice the future of the highest actions of all, those which at once express and develop the loftiest emotion and the most powerful thought. This can be done by beginning education in the physical realm with the natural gymnastic, but is otherwise impracticable, as centuries of failure have shown.

Let us try to come at the laws of the mind and soul through the laws of the body. It has been done by a great student hereafter to be more fully presented to the world than in this book, which must be taken chiefly as a hint at what might be said when those who know, know better how to speak.

Were it not for the education which we have got through work, through the necessities of practical life, through the purely utilitarian side of existence, where should we be now? Subtract all the growth of individuality, all the man-making, except what we obtained through the schools, and see what a nothing, what a worse than barbarian man would be. In this way we may realize how slight are the results of our greatest efforts.

Why not leave the arbitrary and conventional, and first do that in which inherited instinct will help the most. We have very little instinct for thrusting our fists in the air, with or without dumbbells; but we have a great deal of instinct for walking, running, and jumping. Why not practise walking well as a gymnastic? Or running in the most graceful manner, because that would be the most economical and fastest way? Far better circulation can thus be induced, and plenty of oxygen put into the system.

But in the distribution of these good effects the lower part of the body has had more than its share-someone will object. True, but the upper part of the body has had some good education too. The arms have been taught to relax, and not to try to help the legs except when really needed; and simply by this much awkwardness, feebleness, and effort have been suppressed. Then it is also found that this relaxation can be greatly facilitated by the frequently repeated dropping of the arms, together

with certain shakings; and so altogether the arms have had a lot of special exercise.

For good walking the eye must be trained to go first, to go firmly, with alertness and a strong pose. This demanda courage and quick observation, and the head must be taught its erect poise, as few heads are carried in a normal manner. In this again we lay the foundation of the practice of the fundamental law of expression, that all normal and expressive use of the body begins with the eye and extends like a wave over the whole frame.

But most important of all to the good walk (and most helpful to the individual) is the raised, firm chest. This is often obtained only after long practice of a series of exercises designed for this purpose, in the process of which this part of the body is largely developed. The breathing must be made long and steady, and this usually involves a breathing practice which is equally valuable to the voice, nerves, and general health. So that before the exercises to attain a good step and strong rhythmical movements in the legs are begun at all, the body has had better gymnastic than by any of the jerky, artificially timed movements taught in the schools. Best of all, once the correct habit of motion in a graceful wall becomes fixed, the act being such a constant one, the slightest attention or occasional practice of the old exercises will make the walking of every day as enjoyable and exhilarating a gymnastic as can be wished. How much better than thrusting lists or dumb-bells, or waving wands in the air, which nobody ever does after leaving school.

To explain the time and rhythm in which these movements must be executed by the several pendulums and levers in use, would require a mathematical treatise; but in actual practice this part of the work can be got over by instinct. For movements in different rhythms will, if sufficiently repeated, give such definite sensations as to enable the pupil to know when he has struck those which he has been taught are valuable.

It is not until the gymnastic is complex and harmonious enough to mean something beautiful, that any soothing or restful sensations are aroused. There is a perfect correspondence between the meanings of rhythms in music and rhythms in the complex motions of man's body; and there is also a perfect correspondence between meanings or expressions of timbre or quality of sound in music, and the shapes of motion in gesture-or in gymnastic if it be worthy of its name, Only the gesture rhythms and shapes are infinite, while the music rhythms and shapes are limited and simplified by conventionalization.

But the walk which is so beautiful and easy and strong and soothing and altogether pleasant (at its best), has taken much time. And how can we spare so much time from the book lessons?

One object of the book lessons is storing the mind; another is the development of mental power. The walking lesson has materially helped on this last. A habit of getting results with little expenditure of nerve force and will, is one of the peculiarities of genius, and all over the body, even up to the mind, a beginning of this method has been established. The habit of physical relaxation, as most economical and helpful to effort, leads naturally to the thought and habit of mental relaxation, brought about through the medium of the instincts rather than by an expensive but feeble and probably incorrect action of the will. Out of our walking gymnastic we thus get a suggestion of the laws of thought, a help to obtaining instruction which is always cheap and good; and out of the clumsy paths of mere mentality we find ourselves stumbling grandly into the method of the genius.

A genius is a genius because his methods of making thoughts and actions are better than yours; he is a genius because his machine is a better one than yours. If you have cliscovered his way of working his machine, copy it, and your machine will grow to be more like his. For the human machine differs in this from all others-its use makes it. It is usual to say its use develops it, but so great may be the development that there is a temptation to use the other word.

HABIT

For use almost can change the stamp of nature and master the devil, or throw him out with wondrous potency. SHAKESPEARE.

FACULTIES grow by use, and use implies habit. We may have the habit of doing a thing well or the habit of doing it ill, but habit of some sort we must have, if we are to have any activity. Habits are formed by repetition of arts, and are often referred to as "second nature." And when habit is made strong by very many repetitions, it is often quite indistinguishable from first nature. Can we change our nature by creating habits? Certainly.

Children repeat their lessons like parrots, thoughtlessly. It is not considered a good method, but they at least acquire the habit of using words instinctively. Who would be a good talker, if he had consciously to think of each word before he used it? Is it not the true mastery of language when the right word springs automatically to the lips as the idea is born in the brain?

Action which has been made automatic by repetition, has been called by Hartley "secondary automatic action," and many scientists have accepted the term. But, as such automatic actions once acquired differ in no way from those which are inherited, or those which were learned in infancy, the distinction of " secondary automatic" seems of little advantage, while it directly implies that the acquired movements are not after all natural, not an inherent quality in the man. Now, there is a strong prejudice in favor of nature whenever the realm of the emotions and their education or expression is approached, and it is important that we should recognize that intelligence in no way conflicts with nature, and that what is acquired may become as much ourselves as what is inherited. But in order that acquired nature should be as good and useful as inherited nature, the acquisition must become actually automatic and instinctive.

To develop reflex automatic action, then, should be a part of the new education. To enlarge the sphere of this action, to relieve the overworked brain by educating the scattered ganglia to do part of its work, to reduce the necessity of using will and increase the possibility of using impulse this seems the true use to which we should put our gymnastic and our gymnasium.

In the gymnasium of the clay the boy has repeated some meaningless, conventional, or ugly movements to the point of facility. Fortunately, the time allotted to such work is not usually sufficient to make the motions habitual. Then, too, they are so conventional that there never arises an occasion for their use. So the pupil has simply wasted time that, well employed, might have given him a useful habit strong enough to be called "second nature." For a good habit is more quickly and more easily formed than a bad one, and the chief labor is frequently not to develop the good one, but to eradicate the bad. In order to create habit rapidly, we must choose such actions as should have been originally natural, for then the habit, being a structural tendency, will of itself form more quickly.

This gymnastic education, then, this creation of new habits, resolves itself into a search for means of awakening dormant or weak tendencies. The weaker the tendencies, the longer must be the time employed to revive them into habits, and the more perfect must be the knowledge of the laws of growth of the mental, moral, and physical nature to which they belong.

The habit of doing a definite useful thing is insignificant beside a habit of obedience to a physiological or psychological law. The habit of doing anything naturally and lawfully is a plant that will increase in size and bear fruit; a forced and conventionalized habit is merely a stick cut from a tree, useful but dead.

The reactionary effects of such normal habits as we may form, are incalculable; for even the character may be transformed thereby. A rigid motional prison-discipline would reform (re-form) the criminals.

The education of acquisition still goes on, although the greatest authorities, from Comenius down, have both written and spoken in favor of the education of development, which is slowly but surely supplanting its predecessor. The old educational schemes are based upon observation of the mind, and only a part of that; but in the new method, the physical nature is to form the basis, for this is the root; and its proper nurture will tend most effectively and healthily to arouse mental activity, not on one side but all sides.

Education by means of gymnastic consists in forming habits of two kinds: (1) of doing well all such acts as will be constantly repeated through life, and (2) of practising all such acts as involve reactions upon the emotions and instincts, as well as increased growth and health of a physical kind.

To walk gracefully is to walk well and, other things being equal, to be able to walk a great distance without exhaustion. Here, as usual in the construction of man, real use and real beauty go hand in hand. Utility and beauty are often opposed to each other in the world of things, particularly in the world of manmade things; but in all that appertains to the physiological machinery of the body, the greatest beauty is the greatest utility. Any act of work, to be well done and with comparatively little fatigue, must employ a harmonious working together of all the organs. The movements of work, so done, will be graceful.

The value of a gymnastic lies in the repetition of that which can be done with ease, not in the learning of new orders of motion or the use of new appliances. Neither is it found in movements symmetrical with those of other people, nor is its usefulness in proportion to the amount of fatigue; on the contrary, the use of each organ and of the whole body should stop short of this point. This result is best obtained by the concerted action of a large number of organs; by this means the labor is so divided that none are fatigued, while all are exercised. The motions should also observe the law of succession, for then the muscles will act in relays, some resting while the others are active.

Since the value of a gymnastic is found in the repetition of familiar movements, the time employed in learning many movements would be wasted, unless other ends were to be attained thereby. But the movements must not be too few, or

the organs used will become tired; and they must be varied enough to prevent the exercises from becoming irksome and uninteresting to the pupil.

Now, it takes a great deal of time to learn to execute such varieties of movements as military manoeuvres or complicated combinations of many pupils in one pretty figure. All these wastes and difficulties may be overcome by the simple means of following out the hints supplied by nature's gymnastic. By establishing the order, time, and means of complicating movements upon a correct physiological basis, by the study of the yawn, we may set our feet in the right way to combine growth and repose with useful habits of motion.

Why should we not go further and say useful and beautiful habits of motion such movements of every day life, for instance, as standing, walking, bowing, running, sitting, rising, etc., all performed in obedience to the laws of time and rhythm, succession, opposition, and parallelism. Almost all these actions are performed in obedience to the laws of discord instead of harmony except that discord has no laws. Why not substitute harmony for discord and order for chaos, especially as we will get greater practical usefulness at the same time?

When pedagogical science is based on physiological law, we shall know how to develop muscle, reason, instinct, and intuition all together, and not till then will any one of these ever be seen at its best. Harmony of all powers for the benefit and perfecting of each, must be the standard. The boy who leads at games is not expected to lead at lessons. He would do so, however, if his lessons were as well related to the laws of his mental growth as the rowing and racing are to his physical development.

Let us, then, found a "School of Genius." Let us have the highest ideal; let us write over the gates, "No education is worthy of the name that does not aim at the production of genius." Let the faculty of memory be placed where it properly belongs, very low in the scale of merit. Let the creative faculties be well placed. Let us rename the institution, and, copying our thoughtful German neighbors a little, call our school a "gymnasium."

A LESSON FROM AN IDIOT

The catholic man who hath mightily won
God out of knowledge, and good out of infinite pain,
And sight out of darkness, and purity out of a stain. SIDNEY LANIER.

NOT infrequently the study of disease teaches the law and means of health.

By endeavoring to teach deaf-mutes to speak, we learned how to teach those who can hear to speak beautifully. We discovered a scientific method capable of correcting all the faults of bad speaking, and of developing all the limitless possibilities of beautiful speech, up to the highest reaches of oratory and dramatic art. In teaching the blind, the deaf, and the weak-minded, men have been forced to study methods, or as some say, to invent them. Perhaps, it would be more accurate to say, to discover methods (that is, nature's methods) and imitate and modify them.

Thus, sometimes even nature's failures may be made man's successes.

I was once in an institution for the weak-minded. I only remained there two hours; but in that time I saw them strengthen a boy's mind, and I found the experience of the greatest aid in the development of my own mind. I have since tried the same method on myself and others always with good results. The boy was an idiot a great fellow who did not know how to walk and who needed his mind strengthened so that he might learn how. Merely telling him bow to walk would hardly have answered, the purpose. Yet this is how most people teach.

But the wise man who taught the idiots at Syracuse, got a large stick. No, he did not strike with it with him that was an obsolete method of teaching. The stick was about two feet long, and one or two inches in diameter. He put this on the ground and stood the boy near, facing it; then he pushed him from behind. The boy stumbled and fell; he had forgotten yesterday's lesson with the slick. But there was another such stick before him, and he was again set on his feet facing it, and pushed as before; this time he stumbled, but did not fall down. Again the process was repeated, and again, till at last he clumsily lifted his foot over the stick. Then on he went over more and more sticks, stepping better and better each time. I was told that he would one day walk well, and I saw many other weak-minded children who had been taught to walk by this means. Almost all walked well, much better than many people one sees in the streets. Some even walked gracefully.

The boy we saw learning was quite strong enough to walk. He simply did not know how. His mind had to be made to warn him that if he did not raise his feet, he would stumble and fall. Had he been sent to the typical school, he would probably have been given a book in which he might read that "all men who walk must lift their feet one after another." But this boy's mind was developed through his legs, his sensesnature's method.

Did it ever occur to you that a long time

ago you did not know how to walk? Your mother taught you to walk. She did not simply tell you how to do it, nor give you a learned treatise on the subject. She taught you through your legs, just as the wise man did the idiot boy. She stood you on your feet at her knee and jumped you up and down, letting you feel your feet strike. You liked that, and laughed and crowed. Then she dangled your feet on the floor and jumped you along, sometimes lifting one foot after another for you with her hand. And so you learned to walk. You had the same experience as the idiot boy. Your mind was educated in the art of walking chiefly through the sense of your legs. In this way your mind was strengthened, only you were happier than he, because you were little and could be lifted and kissed and cuddled all through the lesson by your mother, instead of being gently pushed over a stick by the sweetfaced old man who had some hundreds of these unhappy children to love and care for.

When will sickness and deafness and blindness and weakness have taught us that nature's teachings are always through the physical? When will we learn that books are only valuable to those who have reached the mental stature to comprehend them? Some of the current notions about education are strikingly like those of old Aunt Charlotte, a negro woman in Alabama, who had the most exalted opinion of her own individuality and originality, not without some justification, as the story will show. Whenever a subject was under discussion in the family, Charlotte would be sure to state her own superior method of proceeding in such matters. On one occasion her mistress was talking of sending some of the children to school, when Charlotte put in her oar as usual: "Lor', Mistis," she said, "what mek you pey money for to sen' de chile to school? I got one smart boy name Jonus, but I lama him myse'f." "But, Aunt Charlotte," replied the lady, "how can you teach your child when you don't know one letter from another?" "How I teach him? I jis mek him tek de book an' set down on de fib', an' den I say: 'Jonus, you tek yo' eye fum dat book, much less leggo him, an' I skins you alive.'"

Emerson says "Nothing can be given." In the same sense we might say that neither can anything be told. The knowledge we can really call our own we had to find out for ourselves. Things told are useful in proportion as they are suggestive or inspiring. I have alway observed that the best things I have taught my pupils, they have told to me again months or even years afterward, along with other things I had not told them, as brilliant discoveries of their own. Then I knew my teaching was successful.

So our future gymnastic is to be an education, a strengthening of our own weak minds, as that very simple beginning of gymnastic was to the utterly weak mind of the poor idiot. It is to be something more than a mere thrustjug of fists, or lifting of weights, or learning to stand in a straight row with other boys, or stamping of heels in rhythm. How is it that we have not sooner observed that the stamping of heels is the most vulgar, uneconomical, and ungraceful manner of walking, and so prevented its teaching? It has been systematically trained into nearly all the students in nearly all the schools of, the world. Why should school-children be set to march at all? Why not teach them to walk instead? To march is to accent one step; to walk is to float along with as little accent as possible. To walk well is so to move as not to attract attention to the feet at all, or even to the fact that a step is taken, or to force it upon our minds that somebody is coming or going. To march is to walk with steps of equal length, the length chosen being one that suits the pendulum-length of the average leg-not your leg.

In our Gymnasium of Genius each student must walk in rhythms in economic harmony with the length of his own legs and his own nature and his own mind. So shall he exercise and express his own most gracious feelings, cal strength for mental and moral uses, this too has been attained.

Neither the unnatural stamping nor shambling nor striding, resulting from stiff and clumsy soles, high heels, fashionable fads, or the marching of the schools, have ever favored, but always hindered these desirable results.

Marching is a means of moving a thousand men without disorder. The individual is sacrificed to the mass. It is one of those cases where nature, or human intelligence (which is a part of nature) needs a machine and sacrifices a man to get one. Some soldiers walk well the cause being personal genius, out-of-door exercise, a finely trained carriage of the chest, or perhaps esprit de corps. Most soldiers, however, when walking alone, are ridiculous. They are stiff and "strutty." Their particular walk was arranged with special reference to the other nine hundred and ninety-nine.

Why, then, should schools teach marching? Are we making soldiers of all our boys-and our girls too? It would be much better to teach dancing, for that would be, at least, a gymnastic of elasticity and harmony, favorable to good walking.

Clearly, in our gymnasium, where a high order of individuality is the ideal, where everything must favor the development of automatic powers, instinct and intuition, each student must in

his walking exercises take beautiful motions, entirely in harmony with all the laws of his own physique. The gymnasium in most schools is given over to the charge of some girl, who, not being bright at books and having a knack of grace, has learned in what order to repeat a few silly movements with wands or dumb-bells to a "one, two, three, four," or a "one, two" count; or, if it be a boys' school, the exercises are directed by some old soldier, whose knowledge of education begins and ends in military manoeuvres. Such persons must be supplanted in the model gymnasium by those who are well versed in physiology, psychology, and pedagogy-in a word, by those who know something of man and his powers and his means of growth, and of the world and what kind of men and women it needs.

The gymnasium must be the principal place, the master the greatest man attainable, and his assistants men who can help him intelligently to develop mental, moral, and physical alike, till each nature acts at once as stimulant and counterbalance for the others. In this way even the exceptional and inexplicable, which we call genius, might be attained.

A GYMNASIUM OF GENIUS

For the best conceptions cannot be save where sience and genius are.DANTE.

A MAN always feels inspired when he as thought or done what he cannot himseif explain or understand, when he cannot remember how he thought or spoke or sang or acted or painted or wrote or played. In truth, it is only when he cannot say how he did it that he really feels he has a genius for his work, or is inspired.

His fellows call him a genius when he does anything so unexpected or exceptional that they cannot understand how he has done it.

The crushing stone a-top of all educational systems is the idea that there is a difference in kind between talent and genius. We are sure never to attain by our education that which our ideal does not even suggest that we should try for, namely, genius.

This paucity of effort and of attainment is a natural result of the idea of division instead of combination with regard to the three natures of man. It has been supposed that the development of the mind must be at the expense of the body, of the emotions at the expense of the mind, of the physical at the expense of the intellectual. There are a few exceptions, but this is the general drift of thought upon which the main lines of education have had their growth.

It is easy to see how this would be the earliest view of the subject. Primitive and feeble as it is, it is based upon certain aspects of the truth; but it must sooner or later give way before the idea of a harmony in the interaction of all three natures.

To reach this perfect harmony, we must study the interaction of powers in the ideal man, that is, the genius. The idea once removed that genius is a thing apart, its mode of action becomes a natural field of observation to those who look for the laws of action and growth in mind, body, soul, feeling, individuality, etc.

The rule of education is no longer "how we can," but "how we should." We begin to ask why we ought not to seek to develop the best, the harmony of the three natures. The evolution in the body of such activities as would rouse physical and mental instincts, would lead the pupil to do by impulse what others do by rule, or reasoning, or preconceived plan. This may be accomplished by the employment of repetition to create habitual actions, mental, moral, and physical, like those of the genius or most perfect man. The laws, by obedience to which this result may be reached, were discovered and experimentally established by François Delsarte.

He and his son, Gustave Delsarte, made use of these discoveries chiefly for the development of ability in certain arts. Any application of the method to general education, however, was not advanced until long afterward; but the utility of such application has forcibly struck the minds of all the great educators, before whom the Delsartean method of teaching Art has been presented.

Experiments in this method of development of all the faculties (as well as the poetical ones, chiefly used in Art) are making at the present time. Besuits thus far more than satisfactory have been achieved, but these results are not yet up to the ideal, owing sometimes to an insufficient knowledge on the part of the teachers, and sometimes to the inadequate time and work given by the pupils. The best experiments are made in Boston, New York, Chicago, Oswego, and Pittsburgh, and by private teachers chiefly in America.

The gymnastic for the development of instinct, unlike the study of books, furnishes little increase of knowledge, but it does furnish an increase of ability to get knowledge, and that in the quickest and surest way.

A theory of education based only upon the acquiring of facts develops an instinctive desire and ability to acquire facts, but no corresponding instinct for utilizing those facts when once acquired. All the world knew that apples fell to the

ground, but only one man saw the great utility of the fact in pointing to the discovery of the law of gravitation. This instinct for utilizing facts we call genius. Why should not education foster this as well as the lower faculties?

Delsarte's method was presented by him empirically and experimentally. But, so great was he that nothing which he taught empirically fails to stand the test of the latest scientific discoveries. Indeed, the more complete our knowledge becomes, the more clearly we perceive that his teaching is rooted in the essential nature of things. Nor is it only the theory which is thus fortified by time and wider experience; the practice also is verified daily.

As Delsarte developed his ideas through and for the study of Art, for the training of painters, orators, musicians, and especially of actors, a thorough application of the Delsarte system requires a knowledge of Art, which unfortunately few professed Delsarteans have had. The essential principles, however, should be dissociated from any particular department of study and made applicable to all man-making. Yet when we see more distinctly that life itself is an art and Art the deepest criticism of life, we shall find in the artistic foundation of Delsartean pedagogics not an obstacle but their chiefest recommendation for the most comprehensive uses. Their principles should be put in the hands of every teacher of anything throughout the world. To that end this essay is written, the author hoping it may be suggestive to the minds of all who are interested in education, especially to teachers and students of pedagogy.

THE BREATH AND ITS DERIVATIVES

Breath or spirit.

ORDINARY breathing is through the nose; exceptional breathing through the mouth.

The soft palate is the back door of the mouth. In speech it is generally raised, closing the nasal passages. In a few sounds, such as the English "m," "n," and "ng," the palate is dropped, leaving the space into the nose open. This is also the case with the Sanskrit nasal vowels. In the nasalized French vowel, the door into the nose is left slightly ajar.

In the sob, gasp, and other expressions of emotion or weakness, the breath enters by the mouth alone. To catch the breath in speaking or singing the palate is commonly placed in such a position that then also the breath will enter through the mouth, frequently with a noise. But for physiological reasons as well as for reasons of beauty a quick breath should be taken through the nose in the manner of all natural breathing.

A possible action, but one very difficult of attainment, is to suspend the palate half way, leaving both the mouth and the nose open. This requires great skill and is rarely accomplished even by singers. It is the best means of obtaining the most breath in the shortest time, which is, under some circumstances, a distinct vocal advantage.

In yawning only is the breath drawn easily and naturally through the nose and mouth at once. Hence yawning and the throat positions acquired by its practice are useful to singers.

Among the various differentiations of breathing, just as we found in the yawn the natural basis for a purely physical gymnastic, so we will also find a beginning for a gymnastic of the emotional nature. In emotion it is the sigh instead of the yawn that is nature's means of ease and refreshment, whether for an excess of joy or sorrow. In a passionate or hysterical degree of the same sad or happy emotions, the sob or gasp succeeds the sigh; the soft, slow, subsiding expiration is changed for the opposite extreme in time, and a convulsive action replaces the undulatory one. The sob or gasp uses great force and quick time; the sigh little or no force and slow time. By the laws of physics (and physiology) the sob must be a great waste of nervous vitality; it is the greatest expenditure of force in the least time, and it causes great exhaustion. The sigh, on the contrary, is to the emotional nature what the yawn is to the physical, comfort and relief. It also promotes healthy moral and physical growth.

Delsarte taught that breath going in expressed increasing emotion; breath held, self-control; and breath going out, emotion relieved. This will be more apparent in the case of a seriss of sighs, sobs, etc., for, if all the ingoing breaths are long and the outgoing breaths short, the motion will become very visibly intense, while if the ingoing breaths are short and the out-going breaths long, the emotion expresses itself, and is relieved. In case the breath is held between the, two processes, self - command is increased and the mind gains control of the emotion.

Every emotion is an impulse to some action, but before the impulse can become a deed, it must pass to the motor or physical machinery, and thence to the mental nature. If the mind inhibit the action, this expresses itself through the controlled breath. When the mentality itself becomes emotional and the held breath spasmodic, we may expect the inspired action of a hero.

Retaining force is a measure, in a way, of will power. I knew a lady who said her success in

society was due to the fact that she could retain her breath longer than anyone with whom she conversed. This may seem ridiculous to some people, but the physiologist and psychologist will regard it as a highly suggestive fact.

THE SOB AND OTHER EXPLOSIVES

Damn braces; bless relaxes.
WLLIAM BLAKE.

YAWNING, especially when it extends into a stretching of the whole body, is an instinctive action of nearly all the extensor muscles. All concentric mental actions contract the body generally, but leave the extensor muscles idle. They sigh for action, and this sigh is the yawn.

Not only mental fatigue, however, and sleepiness, but also cold, hunger, indigestion, and convalescence are causes of yawning. Invalids who are very ill never yawn. Nurses recognize the yawn as a sign of returning normal conditions, the beginning of recovery.

While all qualities of tone are differentiated forms of breathing, infinite in number-sighs, sobs, gasps, groans, all words, articulate and inarticulate cries, coughs, and sneezes the yawn differs from all these, except the sigh, in cause, action, and effect.

A sob, for example, is a convulsive action of the diaphragm, so quick in time that the nervous discharge is all expended upon the diaphragm itself, and is not much communicated to the other muscles. The yawn, by contrast, moves slowly, and therefore the discharge of nerve-force is communicated both by succession and reflex action to other and still other muscles, till sometimes all the body is moved.

The object of the sob is to get rid of nerve force which has been accumulated in the form of moral suffering, until it can no longer be contained. It is thus a relief, but not a refreshment.

Since yawning, on the contrary, gives both nervous rest and muscular growth, each harmonically, in it we are more likely than in the other automatic movementa to find the best model for an artificially constructed gymnastic.

The two great lessons it teaches us are slow time and succession of movement. The former, slow time, was taught by Ling, and it is for this reason that the Swedish exercises have been incorporated into the gymnastic systems of so many nations. But a gymnastic so elaborate as Ling's must involve obedience to other forms of the law of time than mere slowness. Nature shows us proportional slowness. The time of pendulums (including our own arms and legs) is proportional to their length; it is also proportional to their weight and the distance through which they must be moved. As the length of our limbs and the weights to be lifted are constantly varying, the time of motion should vary also. And, as we move different parts of the body under different circumstances, the rhythms should be proportionally fluctuating.

In nearly all the gymnastics of the past, the time and rhythms were fixed.

This became a greater and greater evil as the gymnastic was gradually elaborated; for there would be much greater liberty for natural automatic adjustments in an action which used the whole body, as the primitive gymnastic is apt to do, than in the specialized motions for single organs now so prevalentsuch as the thrusting movements so much used in all gymnasiums except the Swedish.

If you fire a bullet at a pane of glass, you can cut a round hole in it of the exact size of the bullet. If you throw, the same bullet at the same pane, you will shatter it into a thousand pieces. In the first case the force with which the ball struck was so great that it went through before the vibrations had been communicated to the adjacent parts of the glass.

The application of nerve-force to a muscle or set of muscles smites them in the same way. Thus, in a sob the nerve-force is expended on the diaphragm. In a yawn, the force is differently applied and many muscles are gently used, so that the nerves are rested by the absence of any great activity, the muscles by a gentle activity, and the circulation by the general diffusion of the activity.

The reason why the bullet does not shatter the glass when shot, yet does so when thrown, should be found in any good work on physics. The resaon why a sudden explosion of nerve-force moves few and a slow pouring out of the same force moves many muscles, should also be found in any good work on physiology.

The old gymnastic was used to increase the circulation, accelerate the breathing and develop the muscles, often to a very abnormal and unsightly extent. In some circumstances, however, a poor gymnastic was better than none at all. But the ends aimed at were all very imperfectly served, the muscle suffering especially, because growth in a muscle is in proportion to the diffusion of nervous excitation and the consequent chemical activity throughout its entire mass.

The jerking movements correspond also in the manner of chemical muscular activity to the firing of the bullet through the glass. The chemi-

cal action in some atoms of the muscle is overdone, and other atoms are not reached at all by the stimulating force. Consequently part of the muscle is injured by over-work and over-stimulation, while part is left inactive and dead, and very little growth of bulk or force results.

The experience of every athlete with whom I have conversed, shows that the results prove what science suggests, namely, that slow movement makes the best and most beautiful muscle. It is often stated to me that the hard muscle that comes from over-exercise does not produce such great power as the soft muscle which succeeds a continuous development.

It seems, then, that extreme efforts at force and bulk development fail to achieve their own ends, that the greatest bulk is opposed to the greatest force, and that those gymnastics which produce unsymmetrical lumps of muscle increase neither health nor strength. Still less do they produce beauty of form, grace of movement, or personal magnetism. Now as nature sometimes produces all three by her way of using the body, it seems as though we might adopt her methods with profit. The new system of education should aim at such an adoption of these methods, modifying them for special purposes. As an art, it could also improve upon them where nature had not yet adapted a means to the end required.

INHIBITION

Waste not your hour, nor in the vain pursuit
Of this and that endeavor and dispute;
Better be jocund with the fruitful grape
Than sadden after none, or bitter fruit. OMAR.

INHIBITION is the most costly of all nerve-processes. It is an action of direct wiling, and consequently most exhaustive and expensive.

When a nerve process has begun and it becomes desirable to stop or suppress the muscular motion which would follow if it were allowed to complete itself, another wave of nerve-motion must be set going, equal in force to the first and acting in an opposite direction. The new wave is quite equal to the first, at the least-probably even a little stronger; and both are wasted. The first has accomplished nothing except to necessitate the second, and the second nothing except to subdue or turn out of its natural channel the first. So, to prevent an act to which there is an impulse, costs just twice as much as to perform the act.

Nor has the nervous system been benefited by exercise. The discordant action of one force fighting another has left the habit of discordant motion in the nerve-substance just used. In consequence, the next motion passing either in the direction of the first impulse or in that of the inhibitory movement, finds a tendency to a discordant opposing motion confronting it, a tendency tô be overcome only by another waste of force, beginning another bad habit. "Don't" means "oppose tendency," and it is much better for education to provide a pleasant and harmonious "Do," whenever an existing tendency must be changed.

In some highly developed centre which can afford to pay the price, because it is already so strong and varied in its forms of motion that the discordant waves resulting from the contest can quickly be brought into accord with some of its own various parts, the inhibitory system may be less injurious. But it should never be resorted to without exterior motives of sufficient value to repay the wasted capital and the contracted debt. The education with which nature provides the infant while he gains coordination of motion at the beginning of his life, is good. The education which the mother gives when she says " Don't do tha" is bad. When the man entering society proceeds to suppress the expression of all his most natural and best emotions, he does a foolish and injurious thing. And just so far as polite society represents this standard of etiquette and prescribes its laws, just so far is polite society a curse.

This is not saying that the suppression of selfish acts does not gain in moral habit more than it costs the physical organism. It is only saying that unless the object be great, the inhibition is too expensive, that "Don't" costs more and gains less than "Do some better thing." Repression is almost always wasteful and dangerous, and generally leads to the suppression of the natural and good and the expression of the coarse and bad.

The best method of education is the one that needs to use the fewest inhibitions. The most liberal education is the one which stimulates the activities of all forms of thought, emotion, and passion in such a manner as to use inhibition only for the beginnings of the crude and unbeautiful.

Force with a physical motive or cause, physical execution and result, or thought having mental cause, action, and result, or emotion having emotional cause, action, and result, would be the three least desirable powers to cultivate. However useful these activities are for the accomplishment of some special results in the details of life, they stand last in the list of influences for the development of the man himself.

The generalization would seem to be that that is most useful which most easily awakens or is most intimately related to what is unlike itself.

Thought must be in relation to emotion before it possesses creative influence in the thinker and in those addressed. Emotion is weak and little and useless, unless it is related to thought and action. Physical acts are the best illustration of all, because it is accepted that indulgence of the senses leads to sin and destruction.

A point less habitually apparent is that the life of the senses themselves is wholly good when related to the emotional and reasonable phases of being. By wholly good. I mean good in its relation to the environment, social or otherwise, and good in its influence upon the other powers of man, emotion and thought, and good in its effects upon the individual's own sensational power. In short, in the formation àf character all the sensations are there, playing their proper part.

Emotion is the loving principle, sensation the doing principle, and thought the directing principle. Emotion is expressed by successions, sensation or passion by oppositions, and mentality by parallelisms.

Probably education originally separated these three natures into as unrelated action as possible, instead of putting man into harmony with himself (or within himself), on account of the idea that the physical is a lower nature, the origin of sin, and therefore entirely to be disregarded and subdued, thus blunting all its own sensibilities and leaving it to religion to develop the emotional or socalled higher nature, and to the schools to deal with the mind.

It seems quite natural that this idea of subduing the flesh should have prevailed once upon a time, when we consider that in the beginning of the historical evolution of the race, and also in the beginning of the development of the individual, in the savage and the child, we find the physical man quite near perfection, or at least very highly organized. But it seems equally apparent that, at the present stage of development, the powers of mind and heart are equally if not more fully developed than those of sense. They should all be equally developed and they would then be equally helpful. That which it formerly seemed necessary to restrain in its indulgence, now takes on higher forms of life, more especially when in closeknit intercourse and action with the other natures. That which was low now gives birth to the highest.

VIBRATIONS

From harmony, from heavenly harmony,
This universal frame began;
From harmony to harmony
Through all the compass of the notes it ran,
The diapason closing full in man. DRYDEN.

ARTIFICIAL education uses a minimum of the senses to instruct the mind, and a maximum of the mind to instruct the senses. Nature's educational method is exactly the contrary. A really scientific method would follow nature and employ freely the forces of the body, of which we have plenty, and which rapidly in crease by use, to affect and influence what may be called the physical faculties of the mind. It is quite from the purpose here to enter into the question of the identity or contrariety of matter and spirit, though it may be more than suspected that a final solution of that question would show that each proposition is a partial statement of the truth. What is certain is that, whether the same or not the same, there is always a fixed relation existing between the two. Nerve vibrations may not be thought, but no thought takes place without a corresponding nerve vibration. And, since all determinate knowledge arises from experience and all experience is gained through the mediation of the body, it follows that in all determinate thinking the body is first in time, and that to affect or change the nerve-vibrations is to affect or change the thought.

It is a received physiological hypothesis that nerve force moves in wave motion through the nerves and ganglia of the body, that it is a kind of vibration. All vibrations have time, form, and force. Variations of time produce relative pitch, variations of form relative quality, and variations of force relative intensity. A thought, a sensation, or an emotion must be, then, on its physical side, a pitch, a force, and a form of vibration. When new vibrations meet the continuations of the old, they combine into harmonies or discords. One or more of the combining forms may be a stored-up vibration or tendency to vibration. It may even be a persistent vibration set into activity by the motion of the new, just sent reverberating through the system from some action of the senses or exterior organs. Thus the whole body, rightly apprehended, is a musical instrument, capable of being "jangled, out of tune and harsh," but capable also of thilimited and intricate harmonies, and subtle and sympathetic overtones.

It is taught that pitch too high for the ear becomes heat, and can only be felt by the general nerves of sense; higher still, it becomes light and

is seen; and yet again higher and it passes beyond the perceptions of the senses and is known only by its chemical resuits. Vibration has not one set of laws for sound, another for heat, another for light, and yet another for the nervewaves of the human body. The laws of vibration are always the same; else it would cease to be vibration.

It would seem to follow that our gymnastic must regard not only the laws of motion in the mass but the laws of motion in the atom, though these also are in the last analysis the same. A gymnastic chosen with regard to these laws and to the laws of growth and expression which spring from them, must be intricately interrelated with the highest faculties of human nature.

My mind was led into its present direction of thought by my studies with Gustave Delsarte, who taught the method of his father and master, Francois Delsarte. I was shown that habit is our best means of growth; only the habit must be gained by repetition of the perfect thing which the genius would at once have done instinctively. A description of these perfect things done by geniuses was given to us by Delsarte in his laws of expression.

Many writers, critics, and audiences have shown good taste regarding acting. They have approved good voice, tone, grace, pose, etc., often giving helpful praise and practical suggestion to the actor. But it was Delsarte alone who discovered the laws of acting, and based upon them a series of exercises to induce habits of obedience to them, together with a special injunction to continue practice until each movement or expression learned had become automatic or instinctive or, in other words "second nature."

From the laws of acting Delsarte went on to the broader generalization of the laws of art. Though the beginnings of this, as of most things scientific, may be found in Aristotle, all previous work in this field is so little in comparison with Delsarte's that he may fairly be said to have created the science of art. He discovered the laws of expression, together with methods for obtaining obedience to these laws in imperfectly developed persons, or in persons drawn away from nature by habitual disobedience from such causes as fashion, weakness, or sin.

It has seemed to me that if this Delsartean method could only be applied to all education, it would result in making a fine art of life itself, and in the production of a genuine power, rising frequently even to genius.

GRACE

O sweet as only vigor can be sweet!
O strong as only loveliness is strong!
RICHARD HOVEY.

A GYMNASTIC, to be anything short of a positive injury, must be graceful. Grace is a physical necessity.

If our lives were perfectly natural, we should keep the balance of our faculties and need little or no gymnastic. In all probability the yawn would be sufficient for us. But many outside influences act upon the kind of movements we make, such as corsets, high heels, illfitting clothing, stiff collars, and tight sleeves. There are also moral influences, such as embarrassment, shame, conceit, antagonism; and mental, such as the foolish theory that repression is "good form," and the tendency of the student habit to throw its possessor out of relation to the world. These all cause imperfect rhythms, broken successions, and wobbly oppositions. Moreover, they are bad physical economy, causing waste, discord, and stunted growth.

Absence of awkwardness or a mere facility for action is often miscalled grace. A man, for instance, is called graceful, who enters a room and bows without stumbling over the rug, as the awkward man who preceded him had done He may have been graceful, but was not necessarily so. Without ease there is no grace, but mere ease is not always grace; indeed, it is often only insolence.

This would be the case with all who could be easy in movements which they knew to be bad. It would be conceit if they thought the bad movements good and beautiful enough; ignorance if they actually thought them good and beautiful; and insolence if they considered them good enough for their audience.

Another mistaken idea i that limberness is grace. True, limberness is one element of grace, when properly combined with stiffness. An oyster is limber. We differ from the oyster in haying a backbone. Many people think that standing with one hip thrust out à la Bunt home is a graceful attitude. It is the attitude of a tired model, truly, and has therefore become fixed in Canovesque marble, and from thence copied into modern life. It is not good, in cause, meaning, or result. Its cause is either fatigue or affectation; it can therefore have no moral beauty or meaning. A strong man stands erect on two feet, unless weary.

Fatigue is always vulgar, unless its cause be so fine an action as to ennoble the unpleasantness of the result. Fatigue is stagnation, unre-

moved debris, decay; and all decay, physiologically considered, is disgusting. Unpleasant itself, it results in disagreeable movements and attitudes. It is morally ugly, too, for it is usually caused by the selfishness of some organ, which refuses to do its just share of the work and so doubles the labor of another.

But the greatest mistake of all is to suppose that grace is a special attribute of weak persons or small objecta. The tiger is the most graceful of animais; it is strength, not feebleness, that enables the chamois to bound so lightly from ledge to ledge; and the great bulk of the elephant is moved as felicitously as the lithe body of the gazelle. The old Sanskrit poet knew this when he compared the grace of woman to the motion of the elephant and of the swan.

A movement must be orderly to be graceful. One organ can never be graceful alone, The relation of parts is insufficient to please the mind, or intoxicate the senses, or to symbolize feelings of enough complexity to appeal to the emotional nature.

Grace is sometimes a pleasant opposition of might and lightness. A ballet dancer, for example, may be a strong, muscular woman, and yet she moves as if she weighed no more than, a feather. This is beauty of contrast. There is also a beauty of succession, as in the sequence of tone to tone in a melody.

In perfect grace the first element is equilibrium, which takes strength and makes strength; the second, harmony. This harmony is economy of strength, is productive of physical growth, and is a mental and moral stimulant. It contains the contrast of sensations and ideas, easy, agreeable steps from sensation to sensation, and from idea to idea, and a certain pleasurable likeness, as illustrated in the clearness, simplicity, and repose of parallel lines. Harmony is the fundamental principle of Nature, and the fundamental principle of Art; it should also be the fundamental principle of Life.

If a man's deeds and character will be influenced by his language, how much more by the form of expression he chooses in gesture, the language of love, whether it be good and graceful or a mere awkward inexpression. Now, the more language is conventionalized, the less spontaneously it reacts upon the inner nature. This is the reason for the audacities of poetry, for its splendid esapes from the debased coin of current metaphors. The saine thing is trie of gesture. A conventionalized gesture will convey to one who is conversant with the convention a certain meaning; but this meaning will be a dead formula, not a living ides. Gesture, it must be remembered, means all the motions and reposes of the body, not a mere waving of the arms.

Means of influencing the mind have long been studied, and this study has resulted in books, teachers, and preachers act libitum. But the means of making the body influence its own mind has been quite outside the educational ideal. This was a method of growth used only by nature, said by nature most forcibly in those higher organisms called geniuses.

True economy teaches that the body should teach the mind, that the instinct should suggest to the reason and direct it, thus making the emotions stimulate the senses and the sensations rise to the level of the highest emotions. This is the work that life and experience actually do for us, but in an irregular way; and this is what the real teacher should cause to be done in a regular way.

In the highest type of man, or in man in his highest moods, passion begets thought; in the lower, it kills thought. This is well illustrated by Shakespeare's heroes and heroines. Macbeth talks poetry in the height of passion, even in terror, and Portia is turned into an accomplished lawyer by love.

When passion, thought, and emotion are so wedded as to work simultaneously without destroying one another, a man is really great.

How this higher type of man can be produced, is a question to be studied in another volume, but there is quite room enough here to say that, unless our teaching be based on the harmonic interrelation of our triple nature, it merely results in fitting men for a single necessity in life examinations; or at most in developing minds at the expense of men.

Schools were once thought to be places for telling men certain things; but in this domain the printing-press has usurped their sceptre and wields absolute sway. The school of the future must be a place, not for acquisition, but for evolution. If the Darwinian hypothesis be true, if "scratching makes the claw," then the universal desire for infinite life is, we may conclude, created by the fact of infinite We, infinite somehow, whether in time, space, or relation. We already know that we are infinite in relation; infinite in space we know we are not. If all the thought arid emotion that has been given to the question of immortality (or infinity of duration) had been given to the study of our infinities of relation, it is possible that by this time we should have known whether we are or bow we are immortal. Or we might have had no time to care; in the infinite intensity of life, we might have forgotten the probability of its infinite length.