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PHYSIOLOGY OF PLAYFULNESS.



THE ILLUSTRATED  
FAMILY GYMNASIUM;

CONTAINING THE  
MOST IMPROVED METHODS

OF

APPLYING GYMNASTIC, CALISTHENIC, KINESIOPATHIC, AND VOCAL EXERCISES TO  
THE DEVELOPMENT OF THE BODILY ORGANS, THE INVIGORATION OF  
THEIR FUNCTIONS, THE PRESERVATION OF HEALTH, AND

THE

CURE OF DISEASES AND DEFORMITIES

~~~~~  
With Numerous Illustrations.  
~~~~~

By R. T. TRALL, M.D.,

AUTHOR OF "THE HYDROPATHIC ENCYCLOPEDIA," AND OTHER WORKS.

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## P R E F A C E .

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THE object of the present volume is to bring together, in a convenient form, the many useful and important facts and principles in relation to gymnastic, calisthenic, kinesipathic, and vocal exercises, which are now scattered through a score or more of books, and so to arrange and explain them as to give the whole the best practical application to the development of all the bodily powers and functions, and to the cure of chronic diseases and weaknesses, and constitutional defects and deformities.

The author has aimed to select the very best materials from all accessible sources, and to present a sufficient variety of examples to meet all the demands of human infirmity, so far as exercise is to be regarded as the remedial agency.

A great majority of our American people, whether invalids from disease or from injuriously sedentary habits, are too busy, while some are too poor, to expend the time and money necessary to employ teachers, join classes, or attend regular gymnasiums; and for all such persons I have endeavored to present an ample range of illustrations, so that each family or individual may choose such examples as may be most convenient under the circumstances.

R. T. T.

HYGIEO-THERAPEUTIC INSTITUTE, }  
No. 15 LAIGHT STREET, NEW YORK, 1857. }



## INTRODUCTION.

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As *vital action* is the property that especially distinguishes living beings from inorganic matter, so *exercise* becomes pre-eminently the law of development and health.

The vegetable kingdom being intermediate between the mineral and the animal, and its chief use being, so far as man is concerned, the transformation of the elements of the former into principles of nutrition for the latter, but little exercise comparatively is required for the growth and maturity of its organs and structures, and this is derived abundantly from the breezes, the winds, the storms and tempests, and the ever-varying temperature and vicissitudes of the seasons.

But as we rise in the scale of creation, we find new organs continually superadded, more complicated structures developed, establishing more varied relations to the universe around, and requiring greater variety of exercises or actions.

The human being, the most complex of all creatures in his structures and functions, requires hence the greatest diversity of motions, actions, or exercises to develop properly his whole nature, and to sustain all of his complicated machinery in its full vigor and integrity.

It is not very material, perhaps, whether our exercises be *work* or *play*, whether *amusement* or *utility* be their leading feature, provided both body and mind are agreeably affected. But it happens, unfortunately, that few avocations in life, as generally prosecuted, and very few methods of teaching now in vogue, are calculated to train and educate properly the *whole being*, while the great majority of trades, professions, and business pursuits, as well as educational institutions, not only do not regard the harmonious cultivation of all the diversified powers of body and mind, but, on the contrary, induce, of necessity, a very partial and unequal development; some organs or parts of the vital machinery being overworked and prematurely exhausted, and

others scarcely exercised at all. The result of this is frightfully apparent in the puny frames, gaunt forms, contracted chests, and defective vital organs of a large proportion of the American youth of both sexes.

How true, and yet how lamentable, is the declaration of Miss Catharine E. Beecher, in her recent valuable work, "Letters to the People on Health and Happiness," that "the *standard of health*, among American women, is so low, that few have a correct idea of *what a healthy woman is!*"

This remark will, with a slight qualification attributable to more active out-door habits, apply just as well to the other sex. And I fear, from the manner in which the boys and girls of this generation are being fed and clothed at home, and educated at the primary schools, that few parents or teachers have a correct idea of *what a healthy child is.*

The rules of universal health are exceedingly obvious and simple, viz., plain, unmixed food, free breathing, correct bodily positions, and various exercises. But how few have any intelligible idea of the right way of applying these simple rules to practice!

To remedy the imperfections, defects, and deformities resulting from unphysiological habits of life, as well as to develop in its utmost vigor the whole organization, various plans or methods have been devised, some assuming to themselves the titles of systems, and all of more or less value in particular cases.

*Gymnastic* exercises date back to the athletic games of ancient Greece, when bodily training was a branch of school education, and every town had its gymnasium. They included *walking, running, leaping, vaulting, climbing, balancing*, etc., with and without the aid of machinery. *Swimming, rowing, riding on horseback*, etc., may also be properly considered as parts of a system of gymnastics.

The term *Calisthenics* is applied to such gymnastic exercises as are more appropriate for the park, hall, family circle, or school-room. They comprehend a great variety of "free motions," with, and many without, the aid of technical apparatus, as ropes, poles, ladders, clubs, sand-bags, dumb-bells, weights, etc.

*Kinesipathy* has been applied to the system of "Therapeutical and Physiological Movements," invented, or rather systematized, about

1813, by Peter Henry Ling, of Stockholm, Sweden. The idea of his plan or system originated from his participation in the sword exercise of a fencing school. Observing the powerfully strengthening effects of such and similar exercises on the muscles more immediately called into action, he devoted several years to the introduction of a methodical plan well calculated to invigorate and energize weak and defective structures.

This system is called "free gymnastics," or "free movements," because no machinery of any kind is employed, all the motions being performed by the patient alone, or with the assistance of other persons.

In the department on *vocal exercises* I have, I trust, supplied a desideratum, this most important branch having been wholly omitted in all previous works on gymnastics. There are many defects in voice and speech, many deranged conditions of the respiratory system, and many dyspeptic and nervous invalids for whom vocal exercises are among the best possible remedial appliances; and, indeed, in some cases, absolutely essential to recovery. Many clergymen and other public speakers have nearly ruined, and sometimes lost, their voices, because they were ignorant of the proper way to exercise the breathing and vocal apparatus.

It is an encouraging circumstance that our educational and hygienic institutions are more and more appreciating the importance of regular and systematic exercises, based on physiological principles; and I hope the time will soon come when every town, village, and hamlet, if not every family, will have its gymnasium or "panegyrium," where health-promoting exercises, conjoined with innocent recreation and intellectual culture, will be among the necessary "institutions" of our country—of all countries.

The following extract, from an admirable address read before the New York State Teachers' Association, at its eleventh annual meeting, August, 1856, by Jeannette L. Douglass, is worthy the serious consideration of American parents and teachers:

"When and where should physical education commence? We answer, in early childhood, if we are to form the foundation of health for the future man or woman. It should be the first lesson given to a child. He should not be sent to school until at least seven years of

age, and then to a person that will educate him physically as well as mentally.

“He should not be confined more than four hours a day, until his limbs and muscles have become strong enough to endure partial confinement in-doors, if he is to have health, cheerfulness, vivacity, and strength, which should not be neglected on any account. His early school-days should be pleasantly interspersed with active sports and healthful amusements, as well as study. He should be free to exercise his limbs in the open air, and to perform feats of strength and agility, as children must do, in order to enjoy health and to obtain well and perfectly developed muscles.

“The parent should see that the school-room and gymnasium where he sends his child to school are of the most approved models, as regards cleanliness, ventilation, and location; there is *no* excuse for the neglect of school-buildings in this free, wealthy, and enlightened country of ours.

“In past ages—in the days when the schools of Athens were all in their glory, gymnastics and calisthenics and games were common for the students, and were, in short, a part of their education. The men of those days had stalwart forms and robust constitutions; the women, too, had full developed forms and enjoyed perfect health, while, at the same time, they possessed the highest cultivated intellect. Let us then learn a lesson from the ancients, if we would enjoy the *priceless* boon of health, and let *our* nation no longer be called ‘*weak* in body, but *strong* in intellect,’ but may they be physically and intellectually strong, that they may enjoy life in a cheerful, useful, and calm manner, which adds ‘length of days,’ and scatters peace and joy to all around—a calm and happy life, that seldom, if ever, the invalid from youth either has or transmits to others. Again we say, health is not prized by *us* as it was by the ancients, else *our* schools for boys and girls would have attached to them spacious yards, with gymnasiums, for the exercises of both sexes.

“Herodicus, the instructor of the great physician Hippocrates, said from experience and observation, he found gymnastics and calisthenics as essential to females as to males, in order to enjoy health and a cheerful flow of spirits. He was master of one of the Grecian pales-



tria or gymnasia, and frequently remarked that the females under his instruction attained the enviable enjoyment of an uninterrupted flow of health and spirits.

“The ancients were fully aware of the importance and preservation of the health and faculties of the human frame. They made it a prominent part of the education of *both* sexes, that they should be *thoroughly* taught in all exercises calculated to give tone and elasticity to the functions of the body, knowing well that the strength of the mind is increased or diminished, according to the health of the body; that it is intimately connected with it, and is strengthened in proportion as the body is enervated or invigorated.

“Gymnastics and calisthenics are of essential benefit to muscular development, beautiful and perfect symmetry, as well as to health and strength of mind and body. Connected with those already mentioned should be the healthful, graceful, and beautiful exercise of walking. Daily walks are alone *truly* beneficial to pupils—a brisk, lively walk, that calls into action *all* the muscles of the body. Not a slow march, as if the pupils had lost *all* energy and activity, and could hardly drag their weary limbs to the end of their walk. Such walks are no real benefit to them; on the contrary, they are inculcating indolent habits, which always result in ill health and depressed spirits. How essential, then, that the teachers take an interest in this important exercise, and walk with their pupils, and enliven their walks with pleasant conversations on the various objects of interest they may meet in their rambles—perchance some lofty mountain peak or lowly glen, a majestic river or meandering stream, a dense forest or beautiful grove, waving fields of grain or fragrant meadow, beautiful flower-gardens or modest flowers by the wayside, elegant mansions or lowly vine-clad cottages, the gay equipages of the wealthy, or the noble and manly sons of toil, as they walk living pictures of health, innocence, and happiness to their daily avocations. What a field of thought here lies before the teacher! Happy, thrice happy, the teacher must be who is qualified to explain to the pupil in a clear and felicitous manner, in such a panorama, *all* that tends to make him wiser, healthier, and happier than before. If the teacher is a mineralogist, a botanist, or a naturalist, a meteorologist, a lover of science, or a Christian, or if he understands the elements

essential to health—air and water, together with exercise combined—think ye he is not teaching in those walks, when discoursing from nature's exhaustless and rich volume, anon pointing the pupils to an upper and better clime—is he not teaching more practically than if he were conducting the daily routine of 'class recitation' in the school-room? We think he is.

"We need practical education as well as theoretical; the former gives exercise to the faculties of the mind and body, the latter exercises the mind only. What we need is the education of the two in close connection to form a perfect man or woman. Teachers, let us remember that we would retain health and vigor much longer by this bracing exercise, daily walking.

"Another healthful exercise for pupils is the exhilarating effect produced by dumb-bells, when judiciously used, always taking care that they are not too heavy, and that pupils do not exercise too long at a time, until they become accustomed to their use. Great care should be taken that they do not raise them too violently at first, or they will be injured instead of being benefited by their use. They should vary in weight as the strength of the pupil will permit, and in a short time the most frail and delicate member of the school will become conscious of their invigorating influence.

"We would recommend teachers to share and direct the sports and exercises of their pupils, if they would have them physically educated, to go out with them at their recesses, engage in their amusements, and remain until the ringing of the bell, returning to the school-room with the glow of health on their countenances, refreshed and as much benefited by the recess and its innocent sports as the pupils are. We hope all teachers consider themselves as much responsible for the health of their pupils as for their intellectual progress.

"Then we would ask them to take as much care of their health as they would to teach them arithmetic, algebra, and grammar, and the other sciences; furthermore, teaching them what the laws of health are, for they will trample on them until they understand them. The teacher is bound by *duty* to teach them the laws of health, as well as the laws of gravitation or mathematics.

"The professors in the universities and colleges, and in all the schools

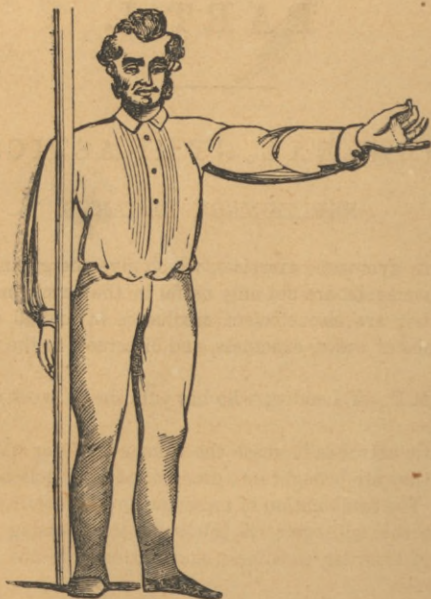
of Europe, have for ages considered the physical education of the students placed under their care of the highest importance. What has been the result? A robust race of men, and women, too, living in the full enjoyment of perfect health to a good old age.

“The Greeks considered this matter well. That was the grand secret of their wonderful feats of strength and courage—their perfect development and beauty of form and outline of figure. They lived most of their time in the open air. Their houses were so constructed that they enjoyed pure air at all times and seasons. Their climate did not do all for their perfect development, as many have supposed, although it was a more genial climate than ours. Their physical exercises were as regular as their meals. They drank the pure elixir of health daily—that cool and refreshing draught which is essential to life, and furnishes the body with animation and energy, and which is the medium of sounds as it flows in and expands the lungs, and is the fluid which we breathe, viz., *pure air*. Lord Bacon considered the healthful sports of children worthy the attention of physicians and teachers, when he said, ‘there was no disease among pupils that gymnastics and calisthenics could not cure.’ Galen, the celebrated physician, declared ‘*him to be the best physician who was the best teacher of calisthenics.*’ Ling, the celebrated Swedish author, made it a pleasant pastime to exercise with his pupils in the schools of Sweden, Great Britain, and the Continent, where he introduced those exercises with great success. He was not only a benefactor to his own country, but to the world. He left but two pupils that he deemed *competent* fully to carry out his science—Prof. Georgii, who has established himself in London, and Prof. Branting, who is at the head of the Central Institute founded by Ling at Stockholm.

“Where and when shall that powerful agent of which Dryden long ago sung be established in our land, namely, ‘the wise for cure on *exercise* depend?’ When it shall be a part of our national education, then, and not till then, may we expect its establishment in our land.”







BRECTITUDE.

# PART I.

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## GENERAL GYMNASTICS.

### PRELIMINARY REMARKS.

SYSTEMATIC gymnastic exercises, which give energy and precision to muscular movements, are not only useful in the development of bodily vigor, but they are also efficient auxiliaries in mental education, by inducing habits of order, exactness, and directness in the mental operations.

M. Roth, M.D., of London, who has published a work on Ling's system, remarks:

"Gymnastic exercises increase the influence of our will on the muscles, so that they are brought into prompt and rapid action at the instant of volition. The combination of muscular force, flexibility, and prompt obedience to the will, give to the body the pleasing and graceful appearance of firmness, steadiness, and dexterity in the positions and use of the limbs."

Rousseau observes: "If you wish to develop the mind of a pupil, develop the power which mind has to govern; exercise his body; make him healthy and strong, that you may make him prudent and reasonable."

Hoffman informs us that he made people, naturally stupid, comparatively intelligent, by prevailing on them to take gymnastic exercise.

"To raise the arms from a hanging position in a loose, random way, without thinking, and to stretch them in the air, can have little corporeal effect, and certainly no mental one; but to stretch the arms in a manner and direction, and with a velocity all previously determined and exactly prescribed, and then to move their different parts (upper and

fore-arm, hand and fingers) precisely as determined and commanded, this is an exercise which, independent of the physiological effect on these limbs, tends to awaken and sharpen the sense of space and time. To learn to leap very far or very high, it is not necessary to have special gymnastic instruction; but to be enabled to leap in a certain way, with the least possible expenditure of power, with great certainty and precision, with graceful ease, with nice regard to distance, etc., this is a matter calling for skillful and systematic instruction, and such a system constitutes gymnastics."

To the questions, Why are children always so easy and graceful in all their movements? and why are so many boarding-school misses and college-bred young men so stiff and awkward in nearly all their motions? all persons who examine the subject will be led to respond: Because the former are in the constant exercise of the whole muscular system, while the latter have acquired a habit of using mainly particular sets of muscles. Who ever knew a good dancer to walk ungracefully? Who ever knew a female dressed tightly around the waist to walk otherwise?

Mr. Mann, speaking of the pupils of the Royal Orphan House at Potsdam, says: "As the boys are destined for the army, it is thought important to give them agility and vigor. *It is not yet discovered that activity and energy are necessary in any occupation save that of killing our fellow-men.* The boys practice gymnastic exercises, such as climbing poles, ascending ropes, flinging their bodies round and round over a bar, while they hang on only by the bend of the legs at the knee-joints, vaulting upon the wooden horses, etc., until their physical feats reach a point of perfection which I have never seen surpassed, except by professional circus-riders or rope-dancers."

In the *Phrenological Journal* for 1853 is an excellent article, from which we extract:

"The wide-spread fallacy that, if persons are able to live without work, it is their right and privilege to lead an inactive life, is an error as fatal in its effects on health as it is fallacious in principle. The right to commit suicide, though practically asserted by some, is very generally denied. We have no moral right to abridge our powers of mind or body by opium, arsenic, tobacco, or alcohol, or to suspend them by a rope; and we apprehend that if a man had a just view of the duties he owes to himself, his family, and the world, he would discover, in many of his habits, that he is a culprit under laws more fixed than those of the Medes and Persians.

"Men of light occupations, and women whose circumstances do not compel them to work, a great majority of whom neglect physical exer-



eise, thereby become so deficient in muscular development as to be weak, delicate, and sickly—ever the prey to nervousness, dyspepsia, and that long train of chronic diseases that afflict the human race. We pity their condition, because, for the most part, the evils they suffer are brought on by ignorance of the laws of their being. To place ourselves on good terms with such, we will not now blame them for what, perhaps, might be called culpable ignorance, but good-naturedly address ourselves to the task of removing from their minds the veil of ignorance that has caused all the ills which scourge them.

“It is as natural for a child to exercise as to breathe. When unrestrained, nearly all children are distinguished for restless activity. Nature bids them exercise, and they obey the mandate, often in spite of ignorant parents, nurses, and teachers, who scold and whip them for restlessness. They are more disposed to consult their own convenience than to study the laws of nature as applicable to their young charge; and, by dint of praising quietness and blaming activity, the poor child's nature is smothered, and pale cheeks, diminutive muscular development, weakness, dyspepsia, consumption, and death are the fruit of the oft-repeated command, ‘Keep quiet.’

“Mothers, if you wish your children to be healthy, well-developed, and beautiful, feed them plainly, dress them very loosely, and let them run, jump, and exercise with all their might from infancy onward. The lamb skips and plays, and the colt rears and races, not from *mental* playfulness, but because the law of exercise is inwrought in every muscle and vital function of its organization. Vital force is sent out to the muscles, and they feel and obey the command, ‘Act! act!’

“Exercise is as essential to development as air is to life. No person can acquire a large, compact, muscular organization without it.

“‘But you would not have *girls* run and romp over hill and dale, and laugh boisterously, like boys!’ Let us examine the subject, and see what Nature, the great teacher, will say concerning it. Do young female animals frisk, jump, and play like males, and do little girls instinctively laugh loudly, and run and play like boys? If so, we may safely infer that Nature has established the same general law of exercise, not for animals merely, but for both sexes of the human race.

“By an irrevocable physiological law, growth of brain and body is acquired by exercise. Look at the arm and hand of the laboring man or woman, and how vast the difference in the size and strength of two classes! The same law holds respecting the lungs and other vital organs. The heart of him who creeps through the world languidly and mincingly is small, and weak in its power to circulate the blood, while the man who rushes into active business earnestly, and uses his

muscles vigorously, his heart is called upon for energetic action in sending the blood copiously to all parts of the system, and the consequence is an increase in the size and strength of that important organ."

The following brief extract from the "Hydropathic Encyclopedia" will conclude these introductory and somewhat desultory remarks: "To secure the full and perfect development of the body, Nature has implanted among the mental propensities a special organ of motion. The phrenological organ of 'mirthfulness,' or 'playfulness,' seems to be intended to secure this end, by prompting young animals to frequent, free, active, and vigorous exercise. Young animals, especially of the mammiferous class, manifest this disposition very early, and young children must have their frequent 'play-spells,' or be sick—there is no alternative. I am disposed to believe that it is impossible for a healthy adult to be otherwise than active in body or mind, or both, and that *laziness* is actually a disease, dependent on some abnormal condition of the organism.

"It is true that a variety of social circumstances may operate to produce an indolent disposition of mind and inactive habit of body, as extreme poverty, excessive wealth, grinding servitude, tyrannical government, etc.; but all these also produce a primary condition of ill health. So of personal habits, dissipation, gluttony, dietetic errors, or unhealthful voluntary habits in other respects; they all conduce to the production of a morbid condition.

"Nothing is more discouraging to the future prospects of a young child than a disposition to sit still, be quiet, keep out of mischief, etc. Such children may give the nurse and schoolmaster but little trouble in keeping them 'out of the way,' but in after life their parents may find it somewhat troublesome and expensive to provide them attendants and doctors."

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#### GENERAL RULES.

It is, no doubt, a correct maxim that all violent exertions should be made when the stomach is empty, or nearly so. The best times for the more active gymnastic exercises are early in the morning, and toward evening; when practiced at or near bedtime, they should be more moderate. They should never be practiced immediately after meals, nor very near the time for eating, as digestion is never well performed when the system is in an agitated, feverish, or exhausted condition.

Exercises should always be commenced as well as finished gently. This is especially important for new beginners, as they are sometimes injured and their progress retarded by too severe efforts at first. As a general rule, too, all very abrupt transitions are objectionable.

Let the pupil never forget that the organs or parts are to be developed and strengthened by moderate and prolonged exertions, rather than by violent and fitful ones. The weaker organs or limbs should always receive most attention, and be more frequently subjected to exercises specially adapted to their invigoration.

The dress should always be light and easy, and all superfluities in the clothing itself, or in the pockets, as toys, knives, etc., dispensed with. Pupils should be careful and not sit in a draught of cold air, nor drink much very cold water, nor lie down on damp or cold ground when fatigued from exercise. Nor should they bathe or wash all over when much fatigued. A high temperature, perspiration, or "feverishness" of the body is in itself no objection to cold bathing, but rather an indication for it, provided the body is not at all fatigued, and the respiration is not disturbed.

It is always important to vary the exercises frequently, so as to call into action alternately various sets of muscles. When large classes take lessons together, it is a good plan to divide them into sub-classes, giving the easier exercises to the smaller and weaker.

Fig. 1.



EXERCISING DRESS.

## BODILY POSITIONS.

In all kinds of gymnastic performances, as well as in all occupations, it is essential to observe undeviatingly correct bodily positions. In lying, sitting, standing, walking, riding, or laboring, the trunk of the body should be kept erect. The bending is to be done on the hip-joint, and not by crooking the spinal column forward, and thus forcing the ribs and sternum in upon the stomach and lungs. Immense mischief results from this habit.

Bolsters and high pillows are among the abominations of fashionable life. Fig. 2 represents the proper position during sleep. The head

should never be raised more than a few inches, by a single *small* pillow. But it is a

general custom to pile pillow on pillow, like "alps on alps," until the poor "doubled and twisted" victim is elevated out of all reasonable shape, and the neck so bent and lungs so compressed that congestion is sure to affect the brain, while free



Fig. 2.

PROPER POSITION IN BED.

breathing is utterly impossible, as seen in fig. 3.



Fig. 3.

MALPOSITION IN BED.

The right and wrong positions—sitting, standing, walking, at work, during study, etc.—are represented below. It ought to be among the first duties of parents and school-teachers to guard those under their care against improper attitudes.

Fig. 4.



SITTING UPRIGHT.

Dullness of mental comprehension, and general torpor or stupidity of the intellectual faculties, are among the consequences of this pernicious habit.

Fig. 5.



MALPOSITION IN SITTING.

Fig. 6.



STANDING ERECT.

Fig. 7.



MALPOSITION IN STANDING.

Fig. 8.



PROPER POSITION AT WORK.

Fig. 9.



IMPROPER POSITION AT WORK.

Fig. 10.



CORRECT POSITION IN STUDY.

Fig. 11.



MISPOSITION IN STUDY.

Fig. 12.



NATURAL SPINE.

Fig. 13.



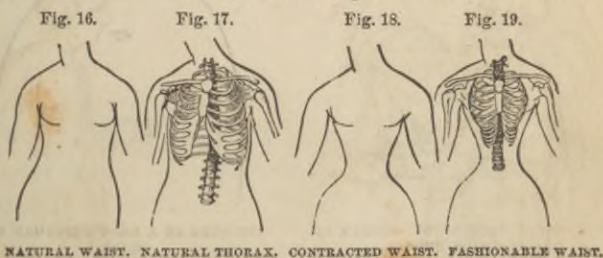
SPINAL MISCURVATURE.

The natural curves of the spinal column, and the distortions it is frequently subjected to, are represented in figs. 12 and 13. Of course the internal viscera are always crowded out of place, and injuriously compressed and distended in all these malpositions, so that a healthy performance of their functions is impossible.

Figs. 14 and 15 show at a glance the effect on the spinal column of a right or wrong position on horseback.

The effects of tight lacing in displacing the internal viscera and contracting the vital organs are represented in figs. 16, 17, 18, and 19.

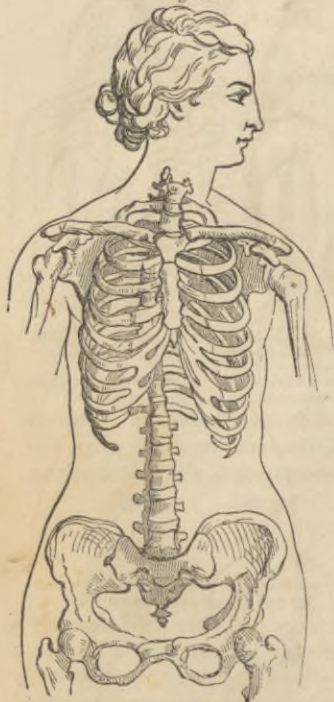
Not only is it pernicious to health, but injurious to beauty. It causes the blood to become highly carbonized, thus inducing a dull, dingy, sallow, or bilious hue of the skin, a lifeless expression of the countenance,



and not unfrequently a red and carbuncular appearance of the nose, not unlike that of a "brandy toper." I have seen many cases in which the foolish vanity of young girls had occasioned such a swollen and discolored condition of the nose as to amount to a serious disfigurement, and to keep them constantly ashamed and mortified. And, to make a bad matter worse, some of them have resorted to the use of cosmetics, while others have taken to the still more pernicious custom of drinking vinegar. This does indeed induce paleness of complexion, but it is the paleness of consumption. They have exchanged a discoloration of the skin for a fatal tuberculation of the lungs.

The horrible effects of this most wretched habit on the spinal column, by which the whole body is distorted, are seen in figs. 21, 22, 23, and 24, which are not at all overdrawn.

Fig. 20.



THE ANTERIOR VIEW OF THE THORAX IN  
THE VENUS OF MEDICIS.

Fig. 21.



THE SAME IN A LADY DEFORMED BY  
STAYS.

But tight lacing is not the only error we have to deplore in a fashionably-dressed female of the present day. The long, dragging dresses, heavy skirts, and multitudinous flounces are powerful auxiliaries in contributing to the prevalent female weaknesses and diseases. Woman must have perfect freedom of respiration and of locomotion before she can be physiologically redeemed. Whatever be the fashion of the costume—"Short," "Bloomer," or otherwise—it must be free and easy, or woman must be weak and sickly. Let our American females be well assured of this fact, that they must dress physiologically or die unphysiologically, and the work of reform will begin at once.



Fig. 22.

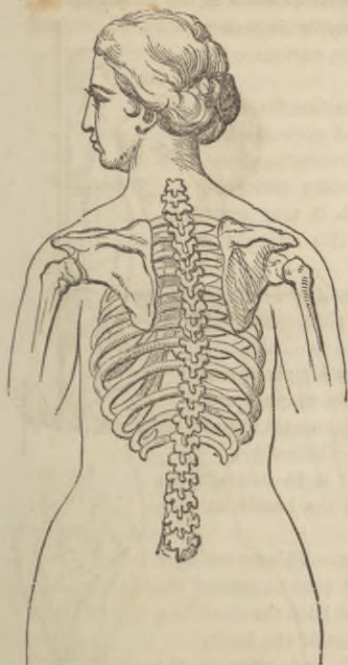
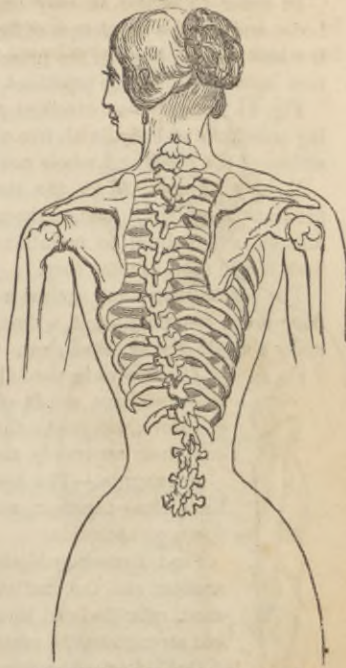
POSTERIOR VIEW OF THE THORAX IN  
THE NATURAL STATE.

Fig. 23.

POSTERIOR VIEW OF THE THORAX COM-  
PRESSED AND DEFORMED BY STAYS.

It is a most deplorable fact that a large proportion, and probably a very large majority, of American females over sixteen years of age have crooked spines. Indeed, it has lately been declared that a perfectly straight and natural spinal column is a rare exception to the general rule! How important, then, to guard, by proper exercises and positions, against the least tendency to incurvation in the daughters of the rising generation!

The strength and power of endurance may be estimated in a man or woman with mathematical certainty, other things being equal, by the straightness of the back. A single glance at the erect and graceful forms of the hard-working Irish and German servant girls, in contrast with the crooked figures and uncouth shapes and attitudes of a majority of their mistresses, ought to be as good as a whole sermon on this subject. Wherever we find a woman who can work without groaning, or play without panting and fainting, we find an erect spinal column.

In order to secure an easy upright position of body, and acquire suppleness of figure, with general freedom and flexibility of the muscles, various *extension movements* may be practiced.

Fig. 24 represents an excellent position for securing erectitude of body, with free and unconstrained action of the lungs and whole respiratory system.

It may be assumed in the standing and lying positions alternately, and, although it may prove difficult and painful to maintain this attitude at first, it will soon become easy.

The person may stand against a wall or lie on the floor for a few minutes at a time, and repeated as many times a day as convenient.

Fig. 24.



Fig. 25. The figures in the following plate, with the respective words of command, *à la militaire*, will enable the gymnast to execute them accurately and distinctly.



ATTENTION.—The body is to be erect, the heels close together, and the hands hanging down on each side.

First Extension Motion.—This serves as a caution, and the motions tend to expand the chest, raise the head, throw back the shoulders, and strengthen the muscles of the back.

One—Bring the hands and arms to the front, the fingers lightly touching at the points, and the nails downward; then raise them in a circular direction well above the head, the ends of the fingers still touching, the thumbs pointing to the rear, the elbows pressed back, and shoulders kept down.

Fig. 27.



Two—Separate and extend the arms and fingers, forcing them obliquely back, till they come extended on a line with the shoulders; and as they fall gradually from thence to the original position of Attention, endeavor, as much as possible, to elevate the neck and chest. These two motions should be frequently practiced, with the head turned as much as possible to the right or left and the body kept square to the front.

Fig. 26.



Three—Turn the palms of the hands to the front, pressing back the thumbs with the arms extended, and raise them to the rear, till they meet above the head, the fingers pointing upward, with the ends of the thumbs touching.

Fig. 28.



Four—Keep the arms and knees straight, and bend over from the hips till the hands touch the feet, the head being brought down in the same direction. (Fig. 27.)

Five—With the arms flexible and easy from the shoulders, raise the body gradually, so as to resume the position of Attention. The whole should be done very gradually, so as to feel the exertion of the muscles throughout. To these extension motions, drill-sergeants, in their instructions, add the following:

One—The forearms are bent upon the arms upward and toward the body, having the elbows depressed, the shut hands touching on the little-finger sides, and the knuckles upward, the latter being raised as high as the chin, and at the distance of about a foot before it. (Fig. 28.)

Two—While the arms are thrown forcibly backward, the forearms are as much as possible bent upon the arms, and the palmar sides of the wrists are turned forward and outward. (Fig. 29.) The two motions are to be repeatedly and rather quickly performed. A modification of the same movement is performed as a separate extension motion, but may be given in continuation, with the numbers following these, as words of command.

Three—The arms are extended at full length in front, on a level with the shoulder, the palms of the hands in contact. (Fig. 30.)

Four—Thus extended, and the palms retaining their vertical position, the arms are thrown forcibly backward, so that the backs of the hands may approach each other as nearly as possible. These motions, also, are to be repeatedly and rather quickly performed. Another extension motion, similarly added, consists in swinging the right arm in a circle, in which, beginning from the pendant position, the arm is carried upward in front, by the side of the head, and downward behind, the object being in the latter part of this

Fig. 29.



Fig. 30



course to throw it as directly backward as possible. The same is then done with the left arm. Lastly, both arms are thus exercised together. These motions are performed quickly.

### WALKING.

In *walking*, the breast should be projected forward, and the abdomen held in, as it were; the shoulders should be thrown back, but not so much as to project or protrude the lower portion of the abdomen; the arms should move with the utmost freedom; the knees should be kept straight, yet not stiff, and the toes turned slightly out.

In a "graceful step" the heel is raised before the foot is lifted.

High-heeled shoes and boots are objectionable, and no person can walk gracefully or naturally in them.

Various bad habits in walking have been acquired by different persons; for example, turning the toes too much in, making the *cow* walk; setting the feet too far apart, inducing a *wiggling* gait; inclining the body too much forward, occasioning the *waddling* motion; lifting and bending the knees, called the *climbing* or *up-stairs* gait; lifting the feet but partially, constituting the *shuffling* gait; bringing down the foot flat, or on the heel, making the *stiff* or *jarring* walk.

In walking naturally, the weight of the body should be thrown on the front part of the feet, the toes kept turned moderately out, the foot to be advanced raised on one heel as the body inclines on the toes of the other leg, and brought down on the toes and ball, as the heel of the other rises, the knees meanwhile being but very slightly flexed.

Fig. 32 represents the manner of bringing down the foot.

Those who are in any respect addicted to inelegance or awkwardness in walking, can very easily overcome it by a little practice. They should commence with short paces, about the length of the foot, very slowly measured,

Fig. 31.



Fig. 32.



WALKING POSTURE.  
TION.

and gradually increase the distance of the steps and the rapidity of motion. In this way, a short time will suffice to change the gait from any of the ungraceful movements we have noticed, to one of ease, elegance, and corresponding comfort.

RUNNING.

RUNNING is rapid walking, or rather a series of leaps from each foot alternately. The whole trunk of the body should be inclined forward

Fig. 33.



RUNNING POSITION.

(fig. 33), the head slightly back, the breathing deep, and the *expirations* restrained, the elbows bent, and the upper part of the arms kept close to the side, without being allowed to swing about. Runners should take deep, full inspirations, "hold the breath" as long as convenient, and then expire slowly, so as to acquire what is called "long-windedness." But it is injurious to run when the breathing has become short and panting. The pupil should exercise on short distances at first, and gradually increase them as his respiration improves.

The best runners, like the best dancers, are those who can keep the lungs expanded for the longest time.

LEAPING.

LEAPING is mainly performed by the vigorous contraction of the extensor muscles, by which the body is suddenly projected from the ground. (Fig. 35.)

It is important to fill the lungs and hold the breath at the moment of making the principal effort. The body should incline somewhat forward, the feet should be close together, and the spring be made from the balls of the toes.

In the *long leap* with a run the spring should be taken from one foot, and the descent made on both. Fifteen feet are a moderate leap, and twenty feet are rarely exceeded.

The *high leap* is practiced by jumping over a pole or cord extended between two upright posts, and sustained by pegs projecting toward

Fig. 34.

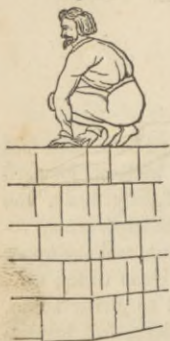
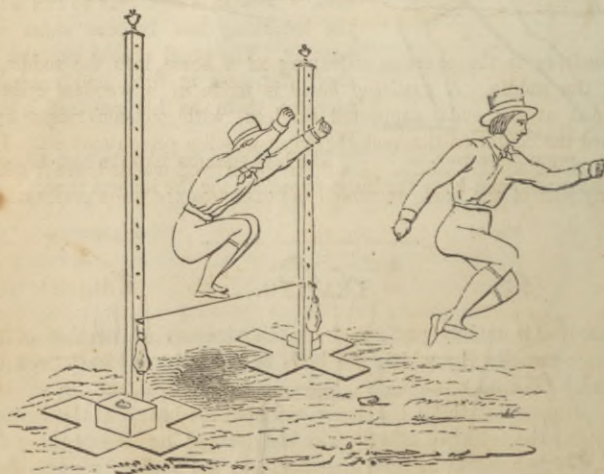


Fig. 35.



the opposite side from which the gymnast stands, so that if his feet do not clear it, it is pushed off without throwing him out of position. (Fig. 36.)

Fig. 36.



In all *high*, or *deep*, or *up-and-down* leaps, the performer should alight on the balls of the feet, as the shock or jar consequent on coming down violently on the heels would be injurious to the brain and spinal cord.

The high leap should be practiced at first standing, and then with running ten, fifteen, and twenty feet.

The *long leap with the pole* is a very pleasant exercise (figs. 37, 38), as is *walking on stilts*, a performance too generally known to require particular description.

Fig. 37.



Fig. 38.



*Vaulting* is the exercise of leaping on a horse, into the saddle, or over the saddle. A *vaulting horse* is made of a wooden cylinder rounded at the ends, supported on legs, with wooden ridges fixed toward the center of the back, between which a person may sit. This space is called the saddle. Leathern pads, well wadded, are buckled on any part of the horse on which the exercises are to be performed.

Fig. 39.



Fig. 40.



Fig. 41.



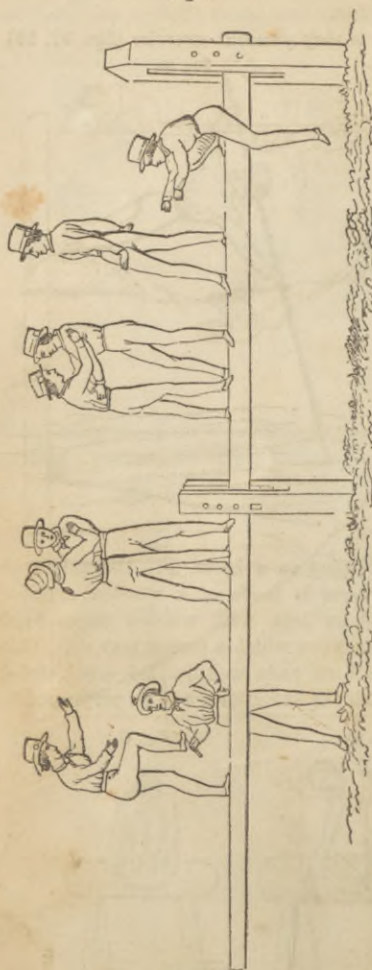
HORSE MOUNTING.

SIDE VAULTING.

VAULTING OVER THE SADDLE.

To leap on the horse only requires the hands to be placed on the top, and a light spring. In vaulting into the saddle the hands are placed

Fig. 42



BALANCING BAR.

dumb-bells, tossing up and catching a large India-rubber ball, etc., etc.

All of the balancing exercises are well calculated to give vigor and flexibility to the muscles of the loins.

one of the ridges, and one foot is thrown over the saddle, so that the body descends into it. This may be practiced standing or running.

Fig. 39 represents the manner of leaping on the horse, fig. 40 shows the position in side vaulting, and fig. 41 shows the manner of vaulting on or over the saddle.

*Balancing*, usually practiced on a pole or tight rope, is very useful in enabling one to acquire the art of preserving the stability of the body on a narrow or moving surface.

In this exercise the head should be held up, the body erect, the arms extended, the hands shut, and the feet turned outward.

The balancing bar represented in the cut is a round, tapering pole, supported about three feet from the ground by upright posts. One end is left unsupported, so as to waver when stepped upon.

A variety of feats may be performed on the balancing bar, several of which are represented in the cut. Others are—holding one foot as high as possible in the hand—kissing the toe, rotating the arms alternately, and then together, with and without weights or



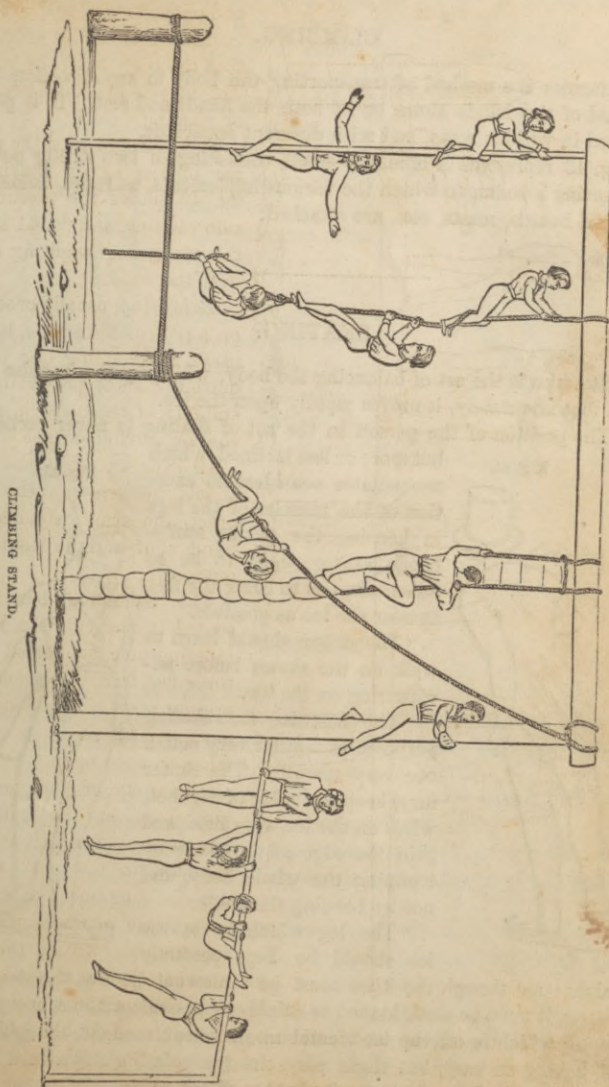


FIG. 43

## CLIMBING.

CLIMBING is a method of transporting the body in any direction by the aid of the hands alone, or of both the hands and feet. It is performed in various ways, and with different apparatus.

Fig. 43 represents a climbing stand, consisting of two strong poles supporting a beam, to which the various implements, as ropes, ladders, inclined boards, masts, etc., are attached.

## SKATING.

“SKATING is the art of balancing the body, while, by the impulse of each foot alternately, it moves rapidly upon the ice.

“The position of the person in the act of skating is never vertical,

Fig. 44.



but more or less inclined, which necessitates considerable exertion of the muscles of the legs in keeping the ankles stiff—hence skates ought to be so constructed as to bring the feet as near the ice as possible.

“The skater should learn to walk on the skates before adventuring on the ice.

“The best ice for skating purposes is neither very rough nor very smooth. The skater must keep the ankle of the foot, when on the ice, very firm, and gain the edge of the skate by inclining the whole body, and not by bending the ankle.

“The leg which is on the ice should be kept perfectly

straight; for though the knee must be somewhat bent at the time of striking, it must be straightened as quickly as possible without any jerk. The leg which is off the ice should also be kept straight, though not stiff, having an easy, but slight play, the toe pointing downward, and the heel within from six to twelve inches of the other.

Fig. 45.



"The learner must not look down upon the ice, nor at his feet, to see

Fig. 46.



how they perform. He may at first incline his body a little forward for safety, but hold his head up, and see where he goes, his person erect, and his face rather elevated than otherwise."

Experienced skaters will travel on the ice with great ease and rapidity. Many persons have accomplished eight or ten miles an hour, for several successive hours, without much fatigue or inconvenience.

Fig. 47.



## SWIMMING.

SWIMMING is not only useful as an invigorating exercise for the whole muscular system, but frequently essential for the preservation of life. It is therefore an art which all persons ought to acquire in the days of their youth.

This exercise should never be practiced soon after eating, nor when the body is uncomfortably cold or very much fatigued.

It is easier to swim in salt water than in fresh, on account of its greater buoyancy, which is about equal to the amount of saline matters held in solution.

Swimmers will do well to practice both in the nude state, and with short drawers and canvas slippers. It is also of great importance to be accustomed to swim in shirt, vest, and pantaloons.

In the attitude of swimming (fig. 48) the head must be drawn back, the chin elevated, the breast projected, and the back hollowed and kept steady. The head can scarcely be thrown too much back, or the back too much hollowed. Those who do otherwise, swim with their feet

near the surface of the water, instead of having them two or three

Fig. 48.



feet below.

Probably one of the best ways of learning to swim is to go, with a competent teacher, in a boat in deep water, this supporting the body more buoyantly than that which is shallower, and preventing the constant tendency of beginners to touch bottom, which here is of course impossible.

The teacher should fasten a rope carefully around the waist, or, better still, to a belt, which can neither tighten nor slip down. The rope may be fastened to a short pole. Supported in this manner, the pupil may take his proper position in the water, and practice the necessary motions, and the support of the rope may be gradually lessened, until the pupil finds himself entirely supported by the water.

Corks and bladders are often used as supports for learners, but it is much better to begin without them. As, however, they may be a protection in

some cases against accidents, and enable the learner to practice the proper motions for rapid swimming more carefully, they are not to be entirely condemned. Several large pieces of cork, uncut into stopples, must be strung upon each end of a piece of rope, long enough to pass

under the chest, and reach just above the shoulders; or well blown and properly secured bladders may be fastened in the same way, as

Fig. 49.



seen in the engraving. Care must be taken to confine these supports near the shoulders, as by their slipping down they would plunge the head under water, and produce the very catastrophe they were designed to prevent.

A great variety of life-preservers have been invented, made of India-rubber and cork shavings, in the form of jackets, belts, etc., which may be used like the cork and bladders; but as their bulk is generally all around the chest, they hinder the free use of the arms, and impede the velocity of motion. As life-preservers, they would do very well if people ever had them on when they were needed, or had presence of mind enough to fit and inflate them in sudden emergencies. The best life-preservers are the self-reliance and well-directed skill of a good swimmer.

Swimming with the plank has two advantages. The young bather

Fig. 50.



has always the means of saving himself from the effects of a sudden cramp, and he can practice with facility the necessary motions with the legs and feet, aided by the momentum of the plank. A piece of light wood three or four feet long, two feet

wide, and about two inches thick, will answer very well for this purpose. The chin may be rested upon the end, and the arms used, but this must be done carefully, or the support may go beyond the young swimmer's reach.

A better method, as many think, than any of these, is for the teacher to wade into the water with his pupil, and then support him in a horizontal position by placing his hand under the pupil's chest, while he directs his motions. He may withdraw his support almost imperceptibly; but I do not see what advantage this method has over that first noticed with the boat, unless it be that the teacher can better enforce his precepts by examples, and in swimming himself give practical illustrations of his theories of propulsion.

The rope is another artificial support which has its advantages. A rope may be attached to a pole, fastened—and mind that it be well

fastened—in the bank, or it may be attached, as shown in the engraving, to the branch of an overhanging tree. Taken in the hands, the swimmer may practice with his legs, or, by holding it in his teeth, he may use all his limbs at once. The rope, however, is not so good as the plank, as it allows of less freedom of motion, and the latter might easily be so fixed as to be laid hold of by the teeth, and held securely.

Fig. 51.



**THE CRAMP.**—Those persons who plunge into the water when they are heated by exercise, and remain in it until they are benumbed with cold, or exhaust themselves by very violent exertion, are the most subject to attacks of cramp. The moment the swimmer is seized by cramp in the legs, he must not suffer himself to feel alarmed, but strike out the limb affected with all his might, keeping the heel downward, and drawing the toes as far upward as he can, although at the time these movements give him great pain; he may also turn on his back, and jerk the limb into the air, though not so high as to throw himself out of his balance. Should these attempts prove unsuccessful, he must try to reach the shore with his hands, or, at all events, keep himself afloat until assistance can be procured. If he can not float on his back, he may swim upright, keeping his head above the surface, by striking the water downward with his hands near his hips; and he can thus make steady progress without using his legs. If only one leg be attacked, the swimmer may strike forward with the other; and, to acquire confidence in cases of cramp, it is advisable to practice swimming with one hand and leg, with the hands only, or even with one leg.

**ENTERING THE WATER—STRIKING OUT.**—We now come to the most important directions. As the pupil must gradually acquire confidence in this new element, he should not be urged to plunge in against his inclination. After wetting his head, he may wade in until the water is up to his breast, then, turning toward the shore, inflate his lungs and incline forward, until the water covers his chin. The head should be thrown backward, and the back hollowed, and the chest as much as

possible expanded. In swimming, the feet should be about two feet below the surface.

The hands should be placed just in front of the breast, pointing forward, the fingers kept close together, and the thumb to the fingers, so as to form a slightly hollow paddle. Now strike the hands forward as far as possible, but not bringing them to the surface; then make a sweep backward to the hips, the hands being turned downward and outward; then bring them back under the body, and with as little resistance as may be, to their former position, and continue as before.

The hands have three motions—First, from their position at the breast, they are pushed straightforward; second, the sweep round to the hips, like an oar, the closed and hollowed hands being the paddle portion, and their position in the water and descent serving both to propel and sustain the body; and, third, they are brought back under the body to the first position.

Having learned these motions by practicing them slowly, the pupil should proceed to learn the still more important motions of the legs. These are likewise three in number, one of preparation and two of propulsion. First, the legs are drawn up as far as possible, by bending the knees, and keeping the feet widely separated; second, they are pushed with force backward and outward, so that they spread as far as possible; and, third, the legs are brought together, thus acting powerfully upon the wedge of water which they inclosed.

Some works upon swimming advise that the propelling stroke of the arms and legs should be used alternately; but this is not the method used by good swimmers, or by that best of teachers, the frog, of whom I would advise all new beginners to take lessons. It is better that the feet should be brought up, at the same time that the hands are carried to their first position; the propelling strokes may then be combined so as to give the body its most powerful impetus, as a boat is rowed best with simultaneous strokes.

The motion in the water should be as straightforward as possible, and the more the head is immersed the easier is the swimming. Rising at every stroke—*breasting*, as it is called—is both tiresome and inelegant.

All these movements should be made with slowness, and deliberately, without the least flurry. The learner will soon breathe naturally, and as the motions are really natural, he will not be long in acquiring them. If he draw in his breath as he rises, and breathe it out as he sinks, he will time his strokes, and avoid swallowing water. Those who have been accustomed to fresh water must be particularly careful when they go into the sea, the water of which is very nauseous.

**PLUNGING OR DIVING.**—In leaping into the water feet first, which is done from rocks, bridges, and even from the yards and masts of lofty vessels, the feet must be kept close together, and the arms either held close to the sides or over the head. In diving head foremost, the

Fig. 52.



hands must be put together, as in the engraving, so as to divide the water before the head. The hands are also in a proper position for striking out.

It is wonderful how easily the swimmer directs his course under water. If he wishes to go down or come up, or swim to the right or left, he has but to bend his head

and body in that direction, and after a little use he will do this almost unconsciously, as if his movements were the result of volition alone.

In diving in shallow water, care must be taken not to strike the head upon a hard bottom, nor to stick it in the mud. It is better to fill the chest always. The deeper a man dives the more buoyant will he be, and from a depth of twenty feet, even in fresh water, he will rise to the surface with considerable impetus. No one need fear not being able to come up, the great difficulty being to stay down, those who make a business of diving being obliged to have heavy weights for that purpose.

The best swimmers and divers in the world keep their eyes open under water, so as to see their course, and any object of which they may be in search. The South Sea Islanders, who are almost born in the water, will swim for miles without showing their heads above the surface, which they manage in this manner: After diving beneath the surface, the swimmer keeps parallel to it as long as he can without breathing; when, turning upon his back by an easy motion of his hands, he allows his nose, and nothing more, to come above the surface. After breathing once or twice, by a slight motion of the hands he sinks again, and so pursues his course.

In descending in the water, bend the head so as to bring the chin near the breast, and curve the back in the same direction; in ascending, hold back the head and hollow the back. In swimming over the surface, look up to the sky. It is quite impossible to dive beneath the surface in this position.

**SWIMMING IN DEEP WATER.**—In the swimming schools of Prussia the pupils are taught in deep water, sustained by a belt, and a rope



attached to a pole, which the teacher holds as a lever over a railing. The motions of the arms, then of the legs, and then both together, are practiced by word of command, like military exercises. The support is given as required. After a few lessons the pole is dispensed with—then the rope; but the pupil is still kept, until quite proficient, within reach of the pole.

This mode of learning to swim is like that practiced in teaching boys to ride in the circus. A rope, fastened to a belt, passes through a ring in the saddle, and the end is held by the riding-master in the center of the ring. If the boy falls, his teacher has only to draw upon the rope, and he is secure from danger, and ready to spring to his feet again.

Those who are learning to swim in shallow water, and without a teacher, may find advantage in the following method:

When the learner has acquired some facility in swimming, and wishes to try to swim out of his depth, he should first venture to cross a stream which may be a foot or two overhead in the middle. He must not be alarmed at not feeling ground under his feet, or make quick and short strokes, and breathe at the wrong time, so that he involuntarily swallows water, all of which mishaps, of course, increase the hurry and agitation, and make it difficult for him to get back to shore. Learners should therefore never venture out of their depth without having first practiced such distances only as they are certain they can accomplish; for if they can swim eight or ten yards without allowing their feet to touch the bottom of the river, they may fearlessly attempt to cross a deep stream of only half that width, and so on, increasing the distance by degrees; they will thus progressively attain presence of mind, and find that the deeper the water the greater is its sustaining power, and the easier they will be enabled to swim in it.

**TREADING WATER.**—This is a favorite position in the water, and useful as a means of resting in swimming long distances. The position is perpendicular; the hands are placed upon the hips, as in the vignette, or kept close to the side, to assist in balancing the body, being moved like fins at the wrist only. The feet are pushed down alternately, so as to support the head above water, and the body may be raised in this way to a considerable extent. While in this position, if the head be thrown back, so as to bring the nose and mouth uppermost, and the chest somewhat inflated, the swimmer may sink till his head is nearly covered, and

Fig. 53.



remain for any length of time in this position without motion, taking care to breathe very slowly.

UPRIGHT SWIMMING—SYSTEM OF BERNARDI.—Bernardi, an Italian teacher of swimming, who has written a treatise upon the subject, warmly recommends the upright position in swimming as being in conformity with the accustomed movements of the limbs, from the freedom of the hands and arms, greater facility of breathing, and less risk of being caught hold of by persons struggling in the water.

Though this method can never supersede that taught by nature, and the frog, her best professor, it may be practiced for variety's sake. The great difficulty is in keeping the head properly balanced, for whichever way it inclines, over goes the body.

The first object of Bernardi's plan is to enable the pupil to float in an upright posture, and to feel a decided confidence in the buoyancy of his body. He first supports the pupil under the shoulder until he floats tranquilly, with the head and part of the neck above the surface, the arms being stretched out horizontally *under* water; from time to time the supporting arm is removed, but again restored, so as never to suffer the head to sink, which would disturb the growing confidence of the learner.

The learner is then taught the use of the legs for balancing the body in the water, one of these being stretched forward, and the other behind, and the arms laterally, he will soon find himself steadily sustained, and independent of further aid in floating.

Next is shown the sweeping, semicircular motion of the arms; this is practiced slowly without motion forward, until attained with precision, after which a slight bending of the body occasions its advance. The motion of striking with the legs is added in the same measured manner. The strength may be recruited by using the arms and legs alternately, turning first the right shoulder and then the left to the water; for, by this means, less resistance is opposed than by presenting the whole breadth of the breast.

The upright position, a little inclined backward (which, like every other change of posture, must be done *deliberately*, by the corresponding movement of the head), reversing, in this case, the motion of the arms, and striking the flat of the foot down and a little forward, give the motion backward, which is performed with greater ease than when the body is laid horizontally on the back.

Such is an outline of Bernardi's method of teaching the art of swimming, by which he calculates that, at every stroke, a swimmer ought to impel himself forward a distance equal to the length of his body,

and, in general, at the rate of three miles an hour. In consequence of Bernardi's successful practice, he was appointed to instruct the youths of the Royal Naval Academy of Naples in the art of swimming.

The upright mode of swimming is far more secure than the ordinary system, and it may be learned in one twentieth part of the time. A young Italian, after eleven days' instruction by Bernardi, is stated to have swam a circuit of nearly six miles in the Bay of Naples, although he was previously unacquainted with swimming.

The natives of New South Wales swim nearly upright, and generally backward, yet with much skill and velocity; indeed, they swim and turn with such swiftness, even under water, that they see and spear fish while beneath the surface.

**SIDE SWIMMING.**—In swimming on either side, the motions of the legs have no alteration, but are performed as usual. To swim on the left side, lower that side, which is done with the slightest effort, and requires no instructions. Then

strike forward with the left hand, and sideways with the right, keeping the back of the latter to the front, with the thumb side downward, so as to act as an oar. In turning on

the other side, strike out with the right hand, and use the left for an oar. To swim on each side alternately, stretch out the lower arm the instant that a strike is made by the feet, and strike with the other arm on a level with the head at the instant that the feet are urging the swimmer forward; and, while the upper hand is carried forward, and the feet are contracted, the lower hand must be drawn toward the body. This method is full of variety, and capable of great rapidity, but it is also very fatiguing.

Fig. 54.



**THRUSTING.**—This is a beautiful variety of this exercise, and much used by accomplished swimmers.

Fig. 55.



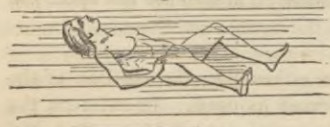
The legs and feet are worked as in ordinary swimming, but the hands and arms very differently. One arm—say the right—should be lifted wholly out of the water, thrust forward to its utmost

reaching, and then dropped upon the water with the hand hollowed, and then brought back by a powerful movement, pulling the water

toward the opposite armpit. At the same time the body must be sustained and steadied by the left hand, working in a small circle, and as the right arm comes back from its far reach to the armpit, the left is carrying in an easy sweep from the breast to the hip. The left arm is thrust forward alternately with the right, and by these varied movements great rapidity is combined with much ease.

**SWIMMING ON THE BACK.**—This is the easiest of all modes of swimming, because in this way a larger portion of the body is supported by the water. It is very useful to rest the swimmer from the greater exertion of more rapid methods, and especially when a long continuance in deep water would be unavoidable.

Fig. 56.



The swimmer can turn easily to this position, or, if learning, he has but to incline slowly backward, keeping his head on a line with his

body, and letting his ears sink below the surface. Then, placing his hands upon his hips, he can push himself along with his feet and legs with perfect ease and considerable rapidity.

The hands may be used to assist in propelling in this mode, by bringing them up edgewise toward the armpits, and then pushing them down, the fingers fronting inward, and the thumb part down. This is called "winging."

The hands may be used at discretion, the application of force in one direction of course giving motion in the other; and the best methods are soon learned when once the pupil has acquired confidence in his buoyant powers.

**FLOATING.**—This is so useful a part of the art of swimming that it can not be too soon obtained. In salt water nothing is easier, and in fresh, to most persons, it requires but the slightest exertion. The feet should be stretched out, and the arms extended upward, so as to be at least as high as the top of the head, and under water. The head must be held back, the chin raised, and the chest expanded. The hands will

Fig. 57.



easily keep the body in this horizontal position, and by breathing carefully, a person may float at ease for hours. Could a person unable to swim but have the presence of mind to take this position, he could never drown.

**TO BEAT THE WATER.**—This and the succeeding feats should never be attempted until the pupil can swim well, and has acquired perfect confidence in the water. The water is beaten by raising the legs out of it alternately, while swimming on the back, the body being sustained by the hands.

While swimming on the breast, one leg may be carried backward, and taken hold of by the opposite hand, and the swimming continued with the leg and hand kept unemployed. This is said to be useful when taken with the cramp in one leg.

**TO SWIM UNDER WATER.**—This should be done with the eyes open. If you would swim midway between the bottom and the surface, make the strokes of the arms and the hands inward, *i. e.*, toward you, as if you would embrace the water by large armfuls, keeping the thumbs turned rather downward. These are most important maneuvers. You are thus enabled to pass unseen across a river or branch of water, or to search for any thing which has fallen to the bottom, and also to rescue any one who is drowning.

**TO SWIM DOG-FASHION.**—One may easily swim like a dog by imitating the motions of that animal in the water. It is useful as a variety to rest from fatigue, by a change of muscular exertion. The right hand and foot are worked together alternately with the left.

**SPINNING IN THE WATER.**—To spin in the water the altitude must be perpendicular, the chest well inflated, and the feet may be crossed under the swimmer. The circular motion is to be given by the alternate motion of the hands working in the same direction.

By the same means the swimmer in a horizontal position may roll along with considerable velocity, especially down the current of a stream.

**ARTIFICIAL AIDS.**—Dr. Franklin found that with two painters' pallets—broad pieces of wood, with holes for his thumbs—with a little practice, he could greatly increase his velocity. Similar paddles might give greater breadth to the feet, and even the insides of the legs might be so provided. Their use would require practice, as in skating, and would serve to vary this amusement.

The *respiration* should be well managed. If the breath is drawn at the moment when the swimmer strikes out with the legs, instead of when the body is elevated by the hands descending toward the hips, the head partially sinks, the face is driven against the water, and the mouth becomes filled. If, on the contrary, the breath is drawn when

the body is elevated by the hands descending toward the hips, when the progress of the body forward consequently ceases, when the face is no longer driven against the water, but is elevated above the surface—then, not only can not the water enter, but if the mouth were at other times even with, or partly under the surface, no water could enter it, as the air, at such times, driven outward between the lips, would effectually prevent it. The breath should accordingly be expired, while the body, at the next stroke, is sent forward by the action of the legs.

CAUSES OF DROWNING.—In Dr. Arnott's *Physics* the causes of drowning are thus succinctly stated:

“1. Their believing the body to be heavier than water, which it is not; and, therefore, that continued exertion is necessary to keep them swimming, by which means they become the sooner exhausted.

“2. From a fear that water, by entering the ears, may drown, a wasteful exertion of strength is made to prevent it; the truth being, however, that it can only fill the outer ear, or as far as the membrane of the drum, and is therefore of no consequence. Every diver and swimmer has his ears filled with water, and with impunity.

“3. Persons unaccustomed to water, and in danger of being drowned, generally attempt, in their struggle, to keep the hands above the surface, from feeling as if their hands were tied while held below; but this act is most hurtful, because any part of the body kept out of the water in addition to the face, which must be out, requires an effort to support it which the individual at the time is supposed to be incompetent to afford.

“4. Not knowing the importance of keeping the chest as full of air as possible, the doing of which has nearly the same effect as tying a bladder of air to the neck; and, without other efforts, will cause nearly the whole head to remain above the water. If the chest be once emptied, while, from the face being under water, the person can not inhale again, the body remains specifically heavier than water, and will sink.”

HOW TO SAVE PERSONS FROM DROWNING.—The art of swimming, always pleasant and useful, may, in certain circumstances, be more useful than all others. The drowning wretch would give wealth, learning, accomplishments, every thing, to be able to swim; and so would he who sees a friend or a fellow-creature go down and perish in his sight where he is unable to save him.

It is difficult, and often very dangerous, for even the best swimmer to attempt to save a drowning man. The grasp of such a person is dread-

ful. The person attempting to save another should, if possible, reach him with a stick, which he may grasp without injury. Or he should come behind and seize him by his hair, or by the heel. If the drowning person be still sensible, and can be calmed sufficiently, he may be brought to the shore by placing his hands upon the swimmer's shoulders, or the swimmer may take him under the arm.

If a drowning man seize a person, the first object must be to free himself, and this must be done at all hazards. Sometimes, if the swimmer go down, the other will let go, from the instinctive desire to get near the surface. If he do not, he must be throttled without mercy, and then, when insensible, he may be brought ashore safely. These situations require great coolness and courage, but with these a good swimmer may generally save a person; and if they have sunk for the last time, so much the less likely are they to destroy those who would preserve them.

An exhausted swimmer, or one seized with cramp, generally has sense enough not to embarrass one who would save him; but even such persons are sometimes overcome by fear.

The *resuscitation* of drowning persons has never been well understood until quite recently. Indeed, the recent investigations of Dr. Marshall Hall and others seem to prove that some of the *rules* usually recommended by physicians, and adopted by "Humane Societies for the relief of Asphyxia," are decidedly injurious.

When a person is taken from the water in a state of suspended animation, the first and main thing to be done is to attempt to restore the breathing process. If this succeed, all the other functions will be resumed, as a matter of course.

One chief impediment to the restoration of respiration is the falling back of the tongue across the top of the glottis, or entrance into the windpipe. Instead, then, of waiting to carry the patient to the nearest house, which consumes valuable time, or heating the body with the warm bath or hot blankets, which only aggravate the difficulty in decarbonizing the blood, the patient should be at once placed upon the *face and breast*, so as to allow the tongue to fall forward and open the glottis.

The body should next be turned slowly upon its side, and as slowly returned to its first position on the face and breast.

This motion, which is in imitation of natural respiration, may be aided by gently compressing the abdomen as the body is turning from its face position to the side; and the effect is to cause a considerable amount of air to be expelled and re-inspired. The body should be moved in this way fifteen or sixteen times a minute, so as to imitate the normal respiration as nearly as possible; and the efforts should be con-

tinued until breathing is fully restored, or all hopes of resuscitation are abandoned.

## ROWING.

ROWING, when practiced for pleasure or as a health-restoring exercise, is usually performed with two sculls, and on the smooth waters of a river, lake, or bay.

A light and sharp boat is preferable in calm weather, but when the weather is rough, a heavier and broader boat is more safe.

The rower sits amidships on the thwart or seat of the boat, else she will heel to the side on which he is sitting, and much increase the labor of rowing. His sitting position should be entirely easy, his feet resting on the middle of the stretcher, and his legs not quite extended; but his knees, as he rows, should be brought down, and his legs stretched.

The following cuts (figs. 58 and 59) represent the manner of handling the sculls.

Fig. 58.



Fig. 59.



The rower should make long strokes in a heavy boat, and shorter and quicker strokes in a light boat. At the beginning of the pull he must, in general, bend his body till his head is over his knees, and extend his arms as far aft as convenient, that the blades of the sculls may be thrown correspondingly forward. With regard to the back in particular, some think that, if a short distance is to be rowed, it should be bent; and that, if a long distance, it is less fatiguing to keep it straight.



When the arms are extended as far aft, and the blades of the sculls as far forward as convenient—which must never be so far as to jam in the rullocks—the rower must dip the sculls into the water, and pull toward him by at once bending the arms and the body.

When in the middle of the pull, if the sculls are not short enough, or even if the head and body are slightly turned, one of the hands will go higher than the other; and as the right is generally the stronger, it may go above and the left below. It is often found difficult to keep one hand clear of the other in pulling a pair of sculls. This is so much the case, indeed, that the inexperienced frequently suffer more from the knocking and rubbing of the backs and sides of the hands against each other than from the friction of the handles of the oars in the palms of the hands. This may be easily obviated by attending to the following advice:

Having seated yourself in the center of the thwart, with your feet close together against the center of the stretcher, ship your sculls, but, before pulling a stroke, move your body three or four inches to the right hand, and still retain your feet in the center: thus you will be sitting rather obliquely; this will throw your right shoulder more forward, and consequently the right hand; and thus the hands will work perfectly clear of each other. This rule, however, must be modified by the circumstances of river-rowing. A waterman writes as follows: "As to carrying one hand above the other, my way is, that if, for instance, I go from Greenwich to Blackwall against tide, I keep down on the Greenwich side, in general look toward the shore, and having my face over the left shoulder, my right hand is then above. If I go from Greenwich to London, my face is turned over the right shoulder, and the left hand is then uppermost."

To *turn* the boat, back water with one scull, by putting the one on the side you wish to turn to into the water, with its concave front or filling toward you, and pushing against it; and at the same time pull strongly with the other scull, until the boat's head is turned round.

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## RIDING.

RIDING on horseback is one of the best methods for expanding the chest and energizing the digestive system. For dyspeptics it is particularly serviceable, and consumptives, in the early or incipient stages of the disease, may derive very great advantages from it.

The learner should practice without stirrups until capable of keeping his position easily, and it is better not to use a saddle until able to manage the animal well without.

Fig. 60.



The proper method of mounting and occupying the seat is shown in the cuts (figs. 60, 61, and 62).

Fig. 61.



In mounting without stirrups—after taking up the reins, instead of seizing the mane, the rider lays hold of the pommel and cantle, and, by a spring of both legs from the insteps, raises the body to the center of

Fig. 62.



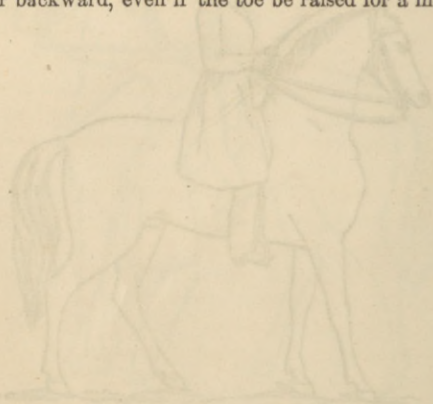
the saddle. By a second spring of both arms, the right leg is carried over the horse, and the rider enters his proper seat by closing the knees on the saddle, and sliding gently into it.

In dismounting without stirrups, on either side of the horse, the rider throws the weight of the body on the hands placed on the pommel, and, by a spring, raises the body out of the saddle before the leg is brought over the horse.

The saddle should be proportioned to the size of the horse. Before, the bearings should be clear of the plate-bone; behind, they should not extend farther than within four inches of the hips, and their pressure should be equal on every part intended to be touched. The closer the saddle then comes, the better, if neither the weight of the rider nor settling of the pannel can possibly injure the withers or chine. Before mounting, the rider should examine whether the saddle, girth, straps, lits, bridle, etc., are all good and well fixed.

When the saddle is on the horse, the lowest part of the seat should rather be behind its center, as it is there that the weight of the body should fall, and by that means the thighs can keep their proper position. The best test of the adaptation of the seat is, when the rider, without stirrups or effort, easily falls into his proper place in the saddle.

The proper length of stirrups is when the upper edge of the horizontal bar reaches a finger's breadth below the inner ankle-bone. When the feet are in the stirrups, the heels should be about two inches lower than the toes. No more than the natural weight of the limbs should be thrown upon them. It is by an accurate position, and an easy play of the ankle and instep, that the stirrup is retained, so as to slip neither forward nor backward, even if the toe be raised for a moment.



The following instructions are given to the officers and crew of the vessel in order to ensure the safety and efficiency of the voyage. It is the duty of all hands to observe these instructions carefully and to report any deviations or accidents immediately to the commanding officer.



FLEXION AND EXTENSION.

## PART II.

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### SPECIAL GYMNASTICS.

#### THE INDIAN CLUB EXERCISES.

PROBABLY one of the very best methods for developing the muscular power of the whole muscular system is the Indian club exercise. Nothing can be better calculated to invigorate the respiratory system, expand the chest, while all of the muscles of locomotion are called into action, and the principal structures around the joints are called into active play. The following remarkable instance of its curative efficacy is copied from the *Illustrated London News*.

"We learn that Mr. Harrison first began to use the clubs three years ago, at which time his muscular development was regarded as being very great, his measurement being then: Round the chest,  $37\frac{1}{2}$  inches; round the upper arm,  $13\frac{1}{2}$  inches, and round the forearm  $13\frac{1}{4}$  inches. The clubs with which Mr. Harrison commenced weighed about seven pounds each; he has advanced progressively, until he can now wield with perfect ease two clubs, each weighing 37 pounds, and his heaviest weighs 47 pounds. The effect of this exercise on the wielder's measurement is as follows: Round the chest,  $42\frac{1}{2}$  inches, the upper arm 15 inches, and the forearm 14 inches. At the same time his shoulders have increased immensely, and the muscles of his loins, which were weak when he first used the clubs, are now largely developed and powerful. In short, all the muscles of the trunk have been much improved by this exercise."

The robustness of Mr. Harrison after this three years' experiment is shown in fig. 1.

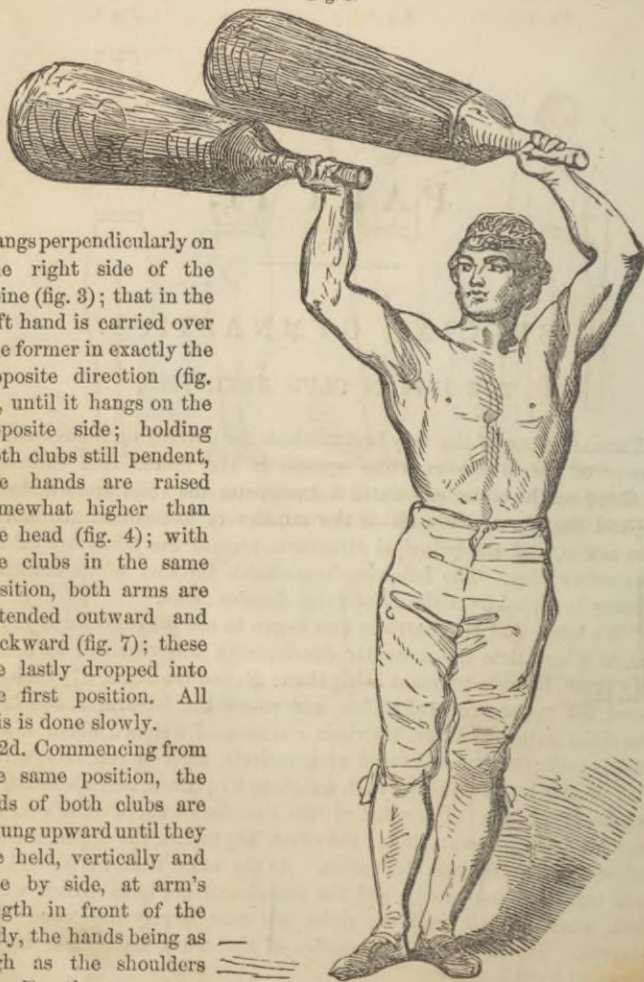
1st. Club is held by the handle, pendent, on each side (fig. 2); that

in the right hand is carried over the head and left shoulder, until it

Fig. 1.

hangs perpendicularly on the right side of the spine (fig. 3); that in the left hand is carried over the former in exactly the opposite direction (fig. 4), until it hangs on the opposite side; holding both clubs still pendent, the hands are raised somewhat higher than the head (fig. 4); with the clubs in the same position, both arms are extended outward and backward (fig. 7); these are lastly dropped into the first position. All this is done slowly.

2d. Commencing from the same position, the ends of both clubs are swung upward until they are held, vertically and side by side, at arm's length in front of the body, the hands being as high as the shoulders (fig. 5); they are next carried in the same position, at arm's length, and on the same level, as far backward as possible





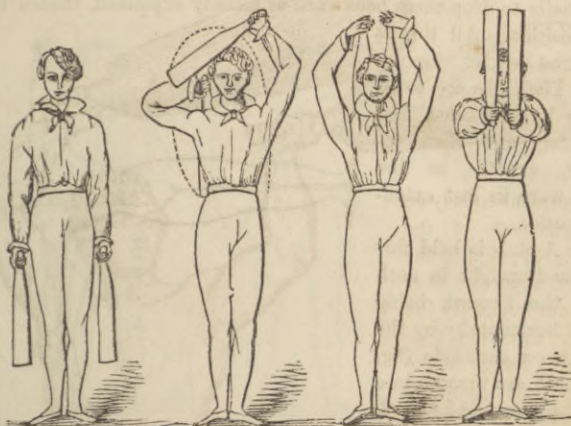
(fig. 6); each is then dropped backward until it hangs vertically downward (fig. 7), and this exercise ends as the first. Previous, however,

Fig. 2.

Fig. 3.

Fig. 4.

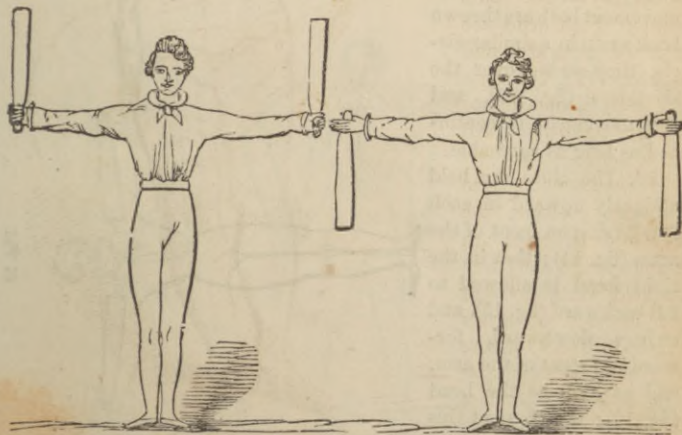
Fig. 5.



to dropping the clubs backward, it greatly improves this exercise, by a turn of the wrist upward and backward, to carry the clubs into a hori-

Fig. 6.

Fig. 7.



zontal position behind the shoulders, so that, if long enough, their ends would touch (fig. 8); next, by a turn of the wrist outward and down-

ward, to carry them horizontally outward (fig. 9); then, by a turn of the wrist upward and forward, to carry them into a horizontal position before the breast (fig. 10), again to carry them horizontally outward, and finally to drop them backward as already explained, thence to the first position. All this is also done slowly.

3d. The clubs are to be swung by the sides, first separately and then together, exactly as the hands were in last extension motion.

1st. A club is held forward and upright in each hand, the forearm being placed horizontally by the haunch on each side (fig. 11); both are thrown in a circle upward and forward, and by a turn of the wrist outward and backward, so as to strike under the arms (fig. 12); by an opposite movement both are thrown back again in a similar circle, they swing over the shoulders (fig. 13), and this movement is continued as long as agreeable.

2d. The clubs are held obliquely upward in each hand, lying on front of the arms (fig. 14); that in the right hand is allowed to fall backward (fig. 15), and swings downward, forward to extent of the arm, and as high as the head (fig. 16); the moment this club begins to return from this point, in precisely the same direction



Fig. 8.



Fig. 9.



Fig. 10.

to the front of the arm, that in the left hand is allowed to drop backward and to perform the advancing portion of this course in the time

that the other performs the returning portion, so that each is at the same time swinging in an opposite direction.

Fig. 11.

Fig. 12.

Fig. 13.



3d. From either of the first positions now given, the clubs are, by a turn of the body and extension of the arms, thrown upward and later-

Fig. 14.

Fig. 15.

Fig. 16.



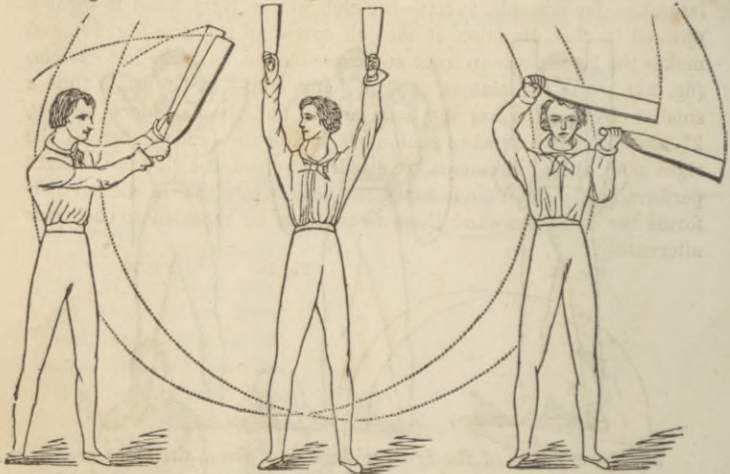
ally (fig. 17); make at the extent of the arms and in front of the figure a circle in which they sweep downward by the feet, and upward over

the head (fig. 18), and fall in a more limited curve toward the side which they began (fig. 19), in such a manner that the outer one form-

Fig. 17.

Fig. 18.

Fig. 19.



ing a circle around the shoulder, and the inner one round the head

Fig. 20.

Fig. 21.

Fig. 22.



(both passing swiftly through the position in the last figure of the first

exercise), they return to the first position; this is repeated to the other side, and so on alternately.

4th. Beginning from either first position, the body being turned laterally—for example, to left—the club in the right hand is thrown upward in that direction at the full extent of the arm (fig. 20), and makes the large circle in front and curve behind, as in the last exercise (fig. 21), while the club in the left hand makes at the same time a smaller circle in front of the hand and behind the shoulders (figs. 20, 21, and 22), until crossing each other before the head (rather on the right side), their movements are exactly reversed, the club in the right performing the small circle round the head, while that in the left performs the large one—and these to continue be repeated to each side alternately.

Fig. 23.

Fig. 24.

Fig. 25.



5th. The clubs being in either first position, the body is turned to one side—the left, for example—and the clubs being thrown out in the same direction, make each, by a turn of the wrist, a circle three times on the outer side of the outstretched arms (fig. 23); when completing the third circle, the clubs are thrown higher to the same side, sweeping together in the large circle in front, as in the second exercise, the body similarly turning to the right; but, instead of forming the smaller curve behind, both are thrown over the back (fig. 24); from this position the clubs are thrown in front, which is now toward the opposite side, and the same movements are reversed, and so it proceeds alternately to each side.

6th. In this exercise the clubs are reversed, both being pendent in front, but the ends of their handles being upward on the thumb sides of the hands (fig. 25). The exercise consists chiefly in describing with the ends of the club two circles placed obliquely to each other over the head. For this purpose the club in the right hand is, in a sweep to that side, first elevation behind the head, and thence passing to the left (fig. 26), the front the right (fig. 27) behind (where its continuation is indicated in fig. 27 and completed in fig. 28), thus forms its circle; meanwhile the club in the left hand, commencing when that in the

Fig. 26.

Fig. 27.

Fig. 28.



right was behind the head, has passed on the back in its circle to the right (fig. 27), while that on the right hand has passed on the front of its circle to the same side (fig. 27), the parts performed in both being marked by complete lines, and the parts to be done merely indicated; and they continue that in the right hand by the back, and that in the left hand by the front, toward the left side (fig. 28), and so on at pleasure, circling overhead.

[Although but two thirds of the body, viz., from the loins upward, are called into operation in this exercise, its importance must be estimated by the fact that they are precisely those requiring constant artificial practice, being naturally most exempted from exertion. As an adjunct to training, there is nothing in the whole round of gymnastic performances that will be found of more essential service than this exercise with the Indian clubs. It demands but little muscular exertion,

and such as it does require calls chiefly upon that portion of the system which it finds in a state of comparative repose.]

By an irrevocable physiological law, growth of brain and body is acquired by exercise. Look at the arm and hand of the laboring man or woman, and how vast the difference in the size and strength of two classes! The same law holds respecting the lungs and other vital organs. The heart of him who creeps through the world languidly and mincingly is small and weak in its power to circulate the blood, while the man who rushes into active business earnestly, and uses his muscles vigorously, his heart is called upon for energetic action in sending the blood copiously to all parts of the system, and the consequence is an increase in the size and strength of that important organ.

#### FREE EXERCISES FOR SEDENTARY PERSONS.

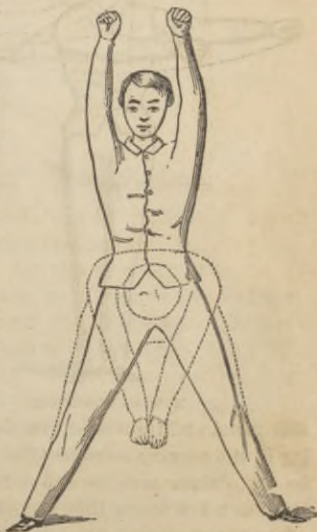
THERE are many persons laboring under dyspepsia, torpid liver, constipated bowels, and of consumptive tendency, and whose occupations or circumstances preclude ordinary outdoor, or much in-door exercise of a healthful kind, who might keep up their health by devoting twenty minutes twice a day to gymnastics suitable to their condition.

With nearly all such persons the special indications are to keep the lungs expanded, and promote the action of the digestive system.

In addition to the exercises already pointed out, there are a few which may be very conveniently practiced by almost all persons of sedentary occupations, especially adapted to invigorate the respiratory and digestive organs, and, if duly attended to, would prove infallible as a preventive of that prevalent malady of our country, consumption.

In the first place, let the patient or gymnast purify the air in the

Fig. 29.



CHOPPING MOTION.

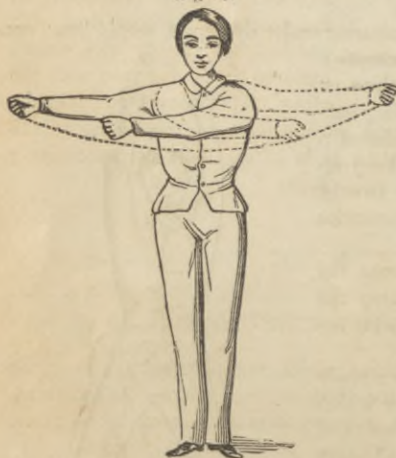
lungs thoroughly, by drawing in the abdominal muscles upon the diaphragm, throwing the chest forward, and expiring all the air out of the lungs possible; then inhale slowly till the lungs are filled to their utmost capacity, retain the whole volume of air in the lungs a few moments, and then expire or blow it out as completely as possible. This may be repeated from half a dozen to a dozen times, which will serve, in most cases, to decarbonize the lungs effectually.

Some persons not accustomed to gymnastic respiratory movements may experience, at first, some degree of vertigo or dizziness; but this will soon wear off. Such persons should, however, be gentle in their first exercises.

Next, the movement represented in fig. 29, called the *chopping motion*, may be practiced a few minutes. The lungs should expire as the hands descend, and inspire as the body regains its erect posture, taking care to have the lungs fully inflated each time the body becomes erect.

These movements act in one direction quite powerfully on the slug-

Fig. 30.



MOWING MOVEMENT.

Fig. 31.



SAWING MOVEMENT.

gish rectal and transverse muscles of the abdomen; and then by resorting to the *mowing movement* (fig. 30), we bring the action more directly on the oblique muscles and internal organs. After performing these motions a few times, they should be so extended as to bring the points of the fingers down to the floor on each side. The same precautions as to respiration are necessary here as in the preceding movement,



The *sawing movement* (fig. 31) may next be practiced. One arm is

Fig. 32.



FLEXION.

Fig. 33.

TROTTING OR HOP  
MOVEMENT.

thrown forward as the other is drawn back, precisely as though you were striking at an object with one hand, and drawing it toward you with the other. This produces a very *general* or *universal action* of the muscular system.

The joints of the lower extremities should lastly be specially brought into play, by a few of the *sinking and rising movements*, as shown in fig. 32.

The exercises may be concluded with any familiar dancing step, or with the *trotting movement* (fig. 33), which consists of hopping on the points of the toes, first with one foot, ten, twenty, fifty, or one hundred times, and then with the other. This movement may be

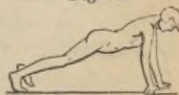
easy or severe, as it is prolonged on one foot, and according to the height of the hop. In moderation, it is an excellent sleep-promoting and soothing exercise for nervous invalids.

## PROMISCUOUS EXERCISES.

A VARIETY of useful illustrations, which were selected and arranged for the *Water-Cure Journal* for 1853, are well adapted to individual cases and for family use, and may be properly introduced in this place.

In fig. 34, the feet being placed close, the hands fixed on the hips, rise on the toes, then bend the knees, and lower the body gradually till the thighs touch the heels; extend the arms in front, and fall forward, so that the body forms a straight line from

Fig. 34.



the head to the heels, and rests on the hands and toes. These motions call into powerful action nearly three hundred muscles—those of the upper and lower extremities, chest, spine, and abdomen.

The action in fig. 35 is intended to exert mainly the muscles of the

Fig. 35.



lower extremities alone. The feet being placed close, the hands open, the arms straight upward, the palms in front, bend the body forward, and touch the ground with the points of the fingers. The knees are to be kept straight.

The exercise in fig. 36 acts particularly on the muscles of the toes, ankle-joints, and hips. The feet close, the hands on the hips, cross the legs, bend the knees gradually, sit down, and rise again.

Fig. 36.



The action in fig. 37 throws the whole effort on the muscles of one of the lower extremities. The feet close, the

Fig. 37.



arms extended in front, raise the left leg in front, bend the right knee gradually, and sit down on the ground, then get up again in the same position.

The action in fig. 38 is performed by two persons facing each other, so as to act upon the muscles of the upper

Fig. 38.



and lower extremities simultaneously. The left hand on the hip, the right foot in front, lock the middle finger in each other's right hand, and pull backward.

The action in fig. 39 brings into play the

Fig. 39.



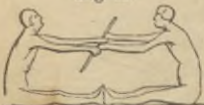
muscles of the chest, shoulders, and upper portion of the back. Let the palms of the hands touch behind, fingers pointing downward; turn the fingers inward, and bring the hands as high as possible up the back, taking care to keep the palms of the hands close together.

In fig. 40 the action is calculated to give great power and flexibility to the muscles of the legs and feet. The feet close, the hands on the hips, jump up and spread out the legs and close them alternately.

Fig. 40.

In fig. 41 the action is performed by two persons sitting

Fig. 41.



down, who face each other, the soles of the feet touching, then grasping a stick and pulling against each other, first with knees straight, secondly bent, and thirdly with the legs open.

The principle force is exerted by the muscles of the arms, and those about the knee-joints.



Fig. 42 mainly exerts the muscles of the toes and legs. The hands

are placed on the hips, the right foot in front, the toe pointing downward; spring or jump twice on the right toe, and twice on the left, alternately, the knees being kept straight.

Fig. 43.



Fig. 43 exercises the muscles of the upper extremities, small of the back, and feet. In performing this exercise, take hold of each other's hands, with the toes opposite; then lean back and go round quickly.



Fig. 42.

In fig. 44 the action exercises the pectoral muscles, with those around the shoulder-joint. Grasp the left hand with the right, bring the arms behind the head, and move them from one side to the other.

Fig. 45.



The action in fig. 45 is intended to act powerfully on the muscles of the leg and instep. Place the hands on the hips, the left leg in front, toe toward the ground; then jump forward on the right toe, both legs being kept quite straight.



Fig. 44.

In fig. 46 the action exerts powerfully all the muscles of the leg and hip. Lift the left foot behind, bend the right knee, lower the body gradually, touch the ground with the left knee, and rise again.

Fig. 46.



Fig. 47.

In fig. 47 the action strongly exerts the muscles of the wrist and shoulder. Hang from the pole by one hand—first by the right, then by the left—several times alternately. Walking by the hands along the rounds of a ladder, where there is room, is an improvement on this exercise; and a semicircular ladder, on which the gymnast can ascend and descend, is better yet.



Figs. 48 and 49.

In figs. 48 and 49 the exercises are designed for putting the muscles of the arm and the chest to the utmost possible tension. In performing these evolutions the gymnast swings backward and forward a number of times, and finishes by jumping as he swings back, and comes down on the pole.



In fig. 50 the action calls the muscles of the wrists, arms, and

shoulders into strong contraction. First throw the right leg over the pole; then, with a spring, bring up the right elbow; lastly, by another spring, bring up both arms straight, so as to sit across the pole.

Fig. 50.



The action in fig. 51 throws nearly the whole effort upon the muscles of the wrist. Draw up the body as high as possible, and with a spring elevate both elbows at once, if possible, or one at a time; then rise gradually,

Fig. 51.



the whole of the body being on one side of the pole; change the position of the hands, and come gradually over the pole till the feet touch the ground.

Fig. 52.



The action in fig. 52 brings the principal effort on the muscles of the elbows and shoulders. Rise up as high as possible, and throw the arms over the pole, holding firmly by them.

The action in fig. 53 brings the principal effort on the elbow and shoulder of each arm alternately. Rise up, as in the preceding case, and try to keep up the body by the right arm only, and then with the left.

Fig. 53.



For the special purpose of expanding the chest in cases of weak lungs or malformed chests, and in persons predisposed to consumption, the following exercises are excellent:

Fig. 54.—Bring the arms up quickly in front, as high as the shoulders—nails turned upward—then swing them forcibly backward, at the same time turning the nails backward, keeping the body perfectly upright.

Fig. 54.



After the above exercise is mastered, the next will call the respiratory muscles into still stronger play.

Fig. 55

In the action in fig. 55 the elbows are to be drawn back so that the fists may be close to the sides; then throw the arms straight forward, and then back as before. When this action becomes easy and familiar, the succeeding ones are very easily acquired.



In the action in fig. 56 is a circular motion of the arms, striking the

wrists and palms together as the hands pass in front. It is one of the very best methods of enlarging the capacity of the air-cells of the lungs, by bringing the principal action upon the diaphragm and pectoral muscles. These exercises may be improved upon by inflating the lungs with a full inspiration, and then holding the breath while half a dozen circular motions are made as rapidly as possible. And the best time to practice these gymnastics forcibly is just after the morning bath, while the body is but partially dressed. All sedentary persons, and all the pent-up inhabitants of cities, who do not enjoy the benefit of a walk before breakfast in the open air, can find an excellent substitute in these muscular exercises.



Fig. 56.

Fig. 57. Fig. 57 exercises the muscles of the lower extremities powerfully, and the abdominal muscles, with the whole respiratory apparatus, moderately. The feet are to be brought close, the hands on the hips, then rise on the toes, and jump on the toes, with the knees kept perfectly straight.



In the next action (fig. 58) the arms are again brought into activity. The fists are to be brought up to the shoulders, the elbows being close to the sides. The arms are then to be thrown upward, and then brought back again to the previous position. The action may be extended to the abdominal muscles by, lastly, throwing the hands downward.



Fig. 58.

Fig. 59.



In fig. 59 the arms and muscles of the upper part of the chest and back are more particularly called into action. Raise the elbows to the height of the shoulders, with the fists on the front of the shoulders, the nails turned inward, and then throw the arms forcibly

back, the body being kept perfectly upright.

A still more powerful method of giving full activity to all the muscles of the chest is represented in fig. 60. Bring the right fist on the left shoulder; extend the left arm in a line with the shoulder; throw the right arm toward the right side, nails toward the ground; then bring the left fist to the right.

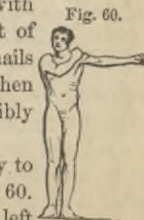


Fig. 60.

Fig. 61. The next action (fig. 61) calls into play those muscles of the back most intimately connected with respiration. Open the hands, then raise the arms sideways, and touch the back of the hands straight over the head.



In figs. 62, 63, 64, and 65 are shown a variety of exercises calculated to act especially on the limbs, the upper extremities particularly. Some of them, as will be seen at a glance, act powerfully upon the muscles, ligaments, and fascia of the fingers, hands,

Fig. 62.

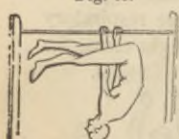


and wrists, as in fig. 63; and motions testing the strength and action of the structure around

Fig. 65.

Fig. 63.

Fig. 64.



the knee are seen in fig. 65.

The flying steps, or giant strides (fig. 66), is a very good and very amusing exercise for the arms and legs.

Fig. 66.



THE FLYING STEPS.

A strong post or mast is fixed firmly in the ground, on the top of which is an iron cap, revolving easily, to which the ropes are fastened. When in rapid motion, the pupils touch the ground with their toes hardly once to an entire revolution.

The parallel bars (figs. 67 and 68) are very conveniently constructed, and are calculated to act particularly on the joints of the wrist and shoulders, and generally on the whole

respiratory system.

The body is first raised by the hands, and then swung alternately forward and backward; also pass along by moving the hands alternately, and then by moving both hands at once. The exercise may be varied in many ways, as throwing the limbs, and then the body, over the bars, lowering the body down until the elbows are level with the head, etc.

For young children of narrow, contracted chests, and weak digestive

powers, especially if they are attending school, this exercise is excellent.

Fig. 67.

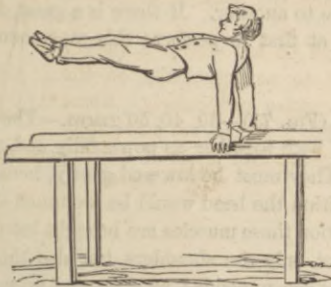


Fig. 68.



THE PARALLEL BARS.

## SPECIAL MEDICO-GYMNASTICS.

THE illustrations under this head are taken principally from a work by Moritz Schreiber, M.D., Director of the Leipzig Orthopedic and Medico-Gymnastic Institute, translated by Henry Skelton, of London.

Fig. 69.



ROTARY HEAD MOVEMENT (FIG. 69)—10, 20, 30 TIMES.—The head describes a circle from right to left, and from left to right, the circumference being as extended as the articulation of the neck allows of. The other parts of the body remain immovable.

Fig. 70.



TURNING OF THE HEAD (FIG. 70)—6, 8, 10 TIMES TO EACH SIDE.—A turning of the head on its axis. With a free articulation of the neck, the head describes on each side nearly a quarter of a circle, so that the chin comes nearly over the shoulders.

These two movements set the whole of the muscles of the neck in motion, and serve to render *their action freer*

*in cases of stiffness*—when no organic hindrance exists—and as a remedy for a *disabled state of the same*, and against *nervous giddiness*. The latter soon disappears, because the head gets accustomed to all positions and changes from one to another. If there is a great disposition to giddiness, it is better at first to perform this movement in a sitting posture.

RAISING OF THE SHOULDERS (FIG. 71)—30, 40, 50 TIMES.—The shoulders

Fig. 71.



are raised both together as powerfully and as high as possible. They must be lowered gently, because by frequent repetition the head would be too much shaken. As by this motion those muscles are brought into action which raise not only the shoulders, but also the upper ribs, it is to be recommended as enlarging upward the cavity of the chest, in cases of *incipient consumption and formation of tubercles* on the lungs—which usually takes place first at their tips, and, if their progress is not arrested, spread lower and lower, destroying the remaining tissue, and so causing the ordinary form of consumption. Of more direct service is this movement against *paralyzation\* of the shoulder muscles*, which is seen by a loose hanging of the shoulders. In cases of unequal height of the shoulders, proceeding from a partial paralyzation of one of them, or from curvature of the spine, this movement should be performed with *only* the defective shoulder.

CIRCULAR ARM MOVEMENT (FIG. 72)—8, 12, 20 TIMES.—Both outstretched arms describe as large a circle as possible, first in a backward direction and then forward. The arms must pass close to the head, which necessitates a certain freedom of the articulation of the shoulder, in most cases only to be attained by practice. The shoulder muscles, as well as those lying round the framework of the chest, are by this means set in freer universal (all-sided—in opposition to partial or one-sided) motion. Its essential working consists in causing a *freedom of*

\* By the word *Lähmung, paralysis, paralyzation*, is to be understood not exclusively a completely paralyzed state, but also a partial paralyzation, of which there are, it is true, an infinite number of degrees. Paralyzation is already present where the normal balance of the muscular parts of the two sides of the body compared one with another, or in general the normal condition and power of motion of a limb is visibly disturbed. In this general sense it occurs both here and elsewhere, and is generally translated *paralyzation*, which must also be understood in this modified sense.



*action of the shoulders, and promoting respiration, with which must also be reckoned an enlarging of the framework of the chest, which is a mechanical consequence. This movement is decidedly of great service in cases of a defective action of the shoulders, narrowness of the*

Fig. 72.

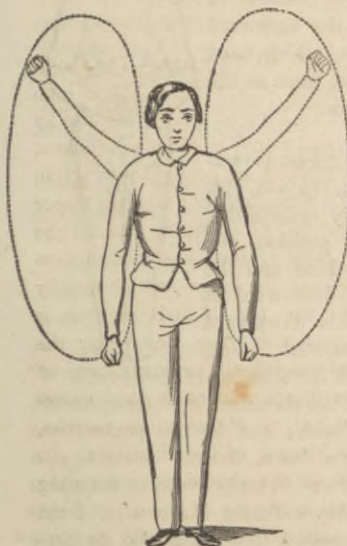


Fig. 73.



*chest, and therefore for certain forms of asthma, incipient consumption—in short, wherever an amelioration of the process of respiration is the end to be attained. Besides this, it acts as a preservative against paralysis of the muscles brought into play.*

RAISING OF THE ARMS SIDEWARD (FIG. 73)—10, 20, 30 TIMES.—The arms are raised sideward as high as possible, without the slightest bending of the elbow. If the muscles and articulation of the shoulders are healthy and free, the forearm, when fully raised, should touch the sides of the head. The allotment (raising) muscles of the arm, and the side neck muscles, are chiefly operative in this movement. The sides of the chest and the space between the lower ribs are considerably enlarged by the mechanic action. As one consequence of this motion is a *promotion of healthy respiration*, it can be profitably used for *asthma*, and in cases of *adhesion of the membrane of the lungs to the side* (after inflammation); and then also against *paralyzation* of the muscles exercised.

THROWING BACK THE ELBOWS (FIG. 74)—8, 12, 16 TIMES.—Both

Fig. 74.



hands are set fast on the hips, and in this half-bent position the arms are thrown forcibly back as far as possible. The trunk remains immovable. The accent (stress) of the motion lies on the backward motion of the elbow, which must take place at the same time as the inhaling of the breath.

Fig. 75.



STRETCHING THE ARMS DOWNWARD BEHIND (FIG. 75)—8, 12, 16 TIMES.—The body maintaining a perfectly upright position, the hands are clasped behind, and the arms then stretched downward as far as possible. This downward movement, the essential point,

should take place at the same time with the exhaling of the breath.

By this and the foregoing movement the shoulders are strengthened,

Fig. 76.



and thrown more back; and by the present one they are also drawn down, thereby promoting a *nobler carriage*, and one in many respects favorable to the health, as also *widening the chest*. It aids respiration, and remedies that *wing-like standing out of the shoulder-blades*, and is very serviceable in cases of *laxity and defectiveness of the hinder shoulder muscles*, which manifest themselves by a bad carriage, and the inability to assume at once an upright position, and in the greatest number of cases of *chronic asthma*.

UNEQUAL BREATHING (FIG. 76)—6, 8, 10 TIMES, BUT REPEATED FOUR OR FIVE TIMES DAILY.—The aim of this exercise is a compensating action, and is therefore only of service in cases where the action of the respiratory organs on either side is *unequal*, *i. e.*, where one half of the chest—one lung—is less active than the other; whether this arises from a disabled state of the respiratory muscles on one side,

or from organic changes (such as the adhesion of the lungs to the side),

the consequences of former diseases of one part of the organs of the chest. The open hand is placed high up close under the axillary cavity (armpit) on the healthy side—in the illustration the right side is supposed to be the healthy side—and pressed firmly against the ribs, thus causing here an obstruction; while the other side, rendered more than otherwise free by the passing of the arm over the head, is so much the more stimulated to stronger and deeper breathing. The hand placed at the side must be tightly placed against the ribs, particularly when inhaling. The breathing must be as deep and complete as possible, but at the same time gentle and regular, as in yawning. All haste and exertion must be avoided.

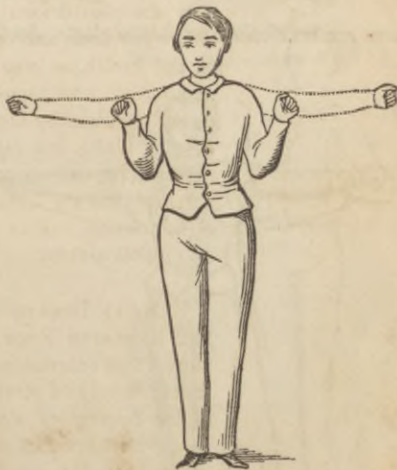
This operation of unequal breathing can be sometimes used, in cases designated, instead of the usual equal breathing, without the latter's being entirely neglected.

STRIKING OUT THE ARMS FORWARD (FIG. 77)—10, 20, 30 TIMES; SIDeways (FIG. 78)—10, 20, 30 TIMES; UPWARD (FIG. 79)—4, 8, 12 TIMES; DOWNWARD (FIG. 80)—10, 20, 30 TIMES; BACKWARD (FIG. 81)—6, 10, 16 TIMES.—A vigorous bending and stretching of the arms from the elbow in five different directions. The movement is performed with closed fists, and a rigid tension of the arm muscles. The same

Fig. 77.



Fig. 78.



power must be employed in bending as in stretching the arm, yet not so as that it cause too great a concussion, which is not good for the head.

The flexor and extensor (bending and stretching) muscles of the fore-  
Fig. 79.



Fig. 80.



Fig. 81.



arm are here called most into play. As this movement requires the co-

Fig. 82.



operation, more or less, of a great number of muscles (nearly all the arm muscles), it serves in the first place as a part of the system of *universal motion*, and besides for facilitating the *free action of the elbow joint*, as a remedy against a *defective state of the arm muscles*, and partly also for *promoting respiration*. This exercise has no other special curative effect.

SWINGING THE ARMS TOGETHER (FIG. 82)—8, 12, 16 TIMES.—The arms first stretched out on either side,

are swung energetically together horizontally, but without allowing the hands to touch. The effect lies in the convergent movement.

SWINGING THE ARMS APART (FIG. 83)—8, 12, 16 TIMES.—A similar movement, only in an opposite direction. The structure of the body does not allow of the hands coming so close together as in the former exercise. The effect here lies in the divergent movement.

In both these motions the muscles of the fore part of the chest and the hinder shoulder muscles are alternately set in predominant activity; at the same time that now the fore part of the framework of the chest, now the hinder part, is mechanically enlarged, thus *aiding respiration*, and being serviceable in cases of *asthma*, *the formation of tubercles on the lungs*, and *adhesion of the membrane of the lungs*.

Fig. 84.



Fig. 83



TWISTING OF THE ARMS (FIG. 84)—30, 40, 50 TIMES.—The movement (fig. 84) is that produced in boring a hole with a gimlet, but with outstretched arms.

EIGHT-MOVEMENT OF THE HAND (FIG. 85)—20, 30, 40 TIMES.—Fig. 85 will be best executed by the hands describing in the air the figure eight ( $\infty$ ) horizontally.

BENDING AND STRETCHING OF THE FINGERS (FIG. 86)—

12, 16, 20 TIMES.—In fig. 86 the fingers are stretched out as much as possible, and then tightly clenched, forming a fist.

Fig. 85.



possible, and then tightly clenched, forming a fist.

In the first two movements the rotator muscles of the arm and hand are active, and the finger muscles in the third. They promote a *free action of the joints of the arm, the wrist, and the fingers*, and are besides useful against *paralyzation* of the above-mentioned muscles, *contractions* of the wrist and finger joints (particularly as forerunners of gout), and, at the same time, as aids in cases of different

forms of *cramp, epilepsy, St. Vitus' dance*, and the *writing-cramp*. If such an end is to be attained, these movements may be repeated three or four times a day, if no pain is felt therefrom. They also serve as a remedy against *affluence of the blood, and pain or nervous affections of the head or breast*.

Fig. 86.



**RUBBING THE HANDS TOGETHER** (FIG. 87)—40, 60, 80 TIMES BACKWARD AND FORWARD.—A well-known movement. When the palms of the hands are vigorously struck together, the movement becomes quite an energetic one for the exercise of nearly all the arm muscles, especially the flexor muscles, and those of the fore part of the chest. In the first place this motion is useful in as much as it contributes its quota to the amount of *universal exercise* required; and then also as a preservative against *paralyzation of*

the muscles employed, and as a means of *quickly warming the hands*; and thus, with certain foot movements (to be mentioned by-and-by), as a remedy against *affluence of the blood, and nervous affections of the head*. It can be also used against *the same complaint of the inner organs of the chest*. But in this case the energetic striking together of the hands, which rather strains the muscles of the chest, should give place to a quiet rubbing together of the same, which being longer performed, the operation gains in amount what it loses in intensity.

Fig. 87.



**BENDING OF THE BODY FORWARD AND BACKWARD (FIG. 88)**—10, 20, 30 TIMES EACH WAY.—With the legs fixed and their muscles rigid, the body is bent as far forward as possible, and then the same backward. This movement, as well as the other following ones of the trunk, must be performed gently: this must not be forgotten. The forward motion is produced by the muscles of the fore part of the abdomen, and the backward one by the extensor muscles of the back. By this means a very healthy influence is exercised on the organization of the abdomen, when sluggish or suffering from *constipation*, and a lively strengthening effect produced on the lower muscles of the back—a preservative against *paralyzation* of the same.

Fig. 88.



**SIDEWARD MOVEMENT OF THE BODY (FIG. 89)**—20, 30, 40 TIMES TO AND FRO.—The trunk is moved directly sideward to the right and left, but without effort.

The muscles active in this operation are especially the side and back muscles of the abdomen, as well as the muscles between the ribs. This movement exerts a favorable influence on the circulation of the blood, and on the mechanism of *the organs of the body on either side*, particularly

the *liver* and *milt*, and is therefore to be especially recommended for all complaints consequent upon a derangement of the *port-vein* system.

TWISTING OF THE BODY (FIG. 90)—10, 20, 30 TIMES TO AND FRO.—

Fig. 89.



The trunk maintains its upright position, and turns on its own axis the same distance on each side, the legs being immovable and the back well stretched.

Fig. 90.



The lower back muscles and those of the hips are thereby principally employed. By this movement a mechanic straining and stretching of the fore coat of the stomach on the opposite side takes place, causing the intestines to be moved about from one side to the other gently *kneaded*—so to say—thus promot-

ing the action of the organs of the trunk, and besides serves as a preservative against a disabled state of the muscles employed, and especially what is called a *paralyzation of the spinal marrow*.

Fig. 91.



CIRCULAR MOVEMENT OF THE TRUNK (FIG. 91)—8, 16, 30 TIMES.—The trunk, turning on the hips, describes a circle as large as possible in circumference from left to right and from right to left. This takes place by means of the muscles lying about the hips. The abdominal muscles are also thereby set in a sort of see-saw, alternate motion. This motion gives a *universal impulse to the digestive organs*, and is therefore to be recommended in cases of *their sluggishness*, and the many evils consequent thereupon. If it is practiced principally to *relieve the bowels*, the best way will be thus: that the hinder half of the circle to

be described with the head and trunk go from right to left, and that



the accent be laid upon this part of the movement. This see-saw stretching of the muscles of the abdomen acts most favorably in forcing down the contents of the great gut.

This movement strengthens all the *muscles about the hips*, and, by the operator's becoming gradually accustomed to a circular movement of the trunk and head, it serves as an aid in cases of *nervous giddiness*. Should there be a *great* tendency to giddiness, this movement must at first be practiced sitting.

RAISING OF THE TRUNK (FIG. 92)—4, 8, 12 TIMES.—The body must

Fig. 92.



be in a horizontal position. As the employment of a sofa or a bed is not at all times convenient, in the illustration we have represented a doubled carpet. Two cushions, one under the head and the other under the hips, would do just as well; neither one way nor the other requires much trouble. The movement itself consists in a simple raising of the trunk to an upright position without moving the legs. Many will not at first be able to accomplish this without the aid of a block of wood or a heavy cushion, which, being laid across the legs about the ankle, serves as a compensation weight. By-and-by this becomes unnecessary. At first the arms should be crossed over the breast. If this succeeds, the hands may then be placed behind the head, as in the illustration. If it is desired to render the movement still more difficult, dumb-bells may be used, the hands being then held close down to the body.

This is a movement setting powerfully in motion all the muscles of the abdomen, but especially those of the fore part, whose activity, and the straining they undergo, exert a decidedly direct influence on the functions of the body, but which are, however, just those that are in so many cases so much neglected. After a repetition of the motion from four to eight times, the beneficial influence of it will be already

experienced by the feeling of warmth which immediately follows, and spreads itself over the whole region of the abdomen. It is of great service against *weakness, or paralyzation of the muscles of the stomach,* and for all forms of *chronic obstructions of the abdomen,* and their consequences, and may be used as a trial for the radical cure of hernia.

*Remark.*—In cases where, in spite of the facility afforded by the laying of something over the lower part of the legs, the movement is still too difficult—and further, in such cases where great caution must be observed in habituating one's self to the movement and in the passing through the different stages of it (as in hernia), and for women who have already had several children (and who therefore generally have the abdominal muscles rather slacker)—it would be found better to place the upper part of the body in a slightly elevated position—not quite horizontal, as in the other cases; in such a manner the raising will be greatly facilitated. A sofa can be very easily arranged for the purpose.

CIRCULAR MOVEMENT OF THE LEG (FIG. 93)—4, 6, 8 TIMES WITH EACH LEG.—The leg, fully stretched, describes a circle as large and as

Fig. 93.



high as possible, from the front backward, coming down again to its former position by the other leg, which now performs the same movement in its turn, and so this goes on alternating. The trunk should be kept as much as possible immovable. As, however, the center of gravity is continually changing, a many-sided play of the muscles is the consequence. Not only the allotment (raising) muscles of the legs, but also the whole of the muscles of the trunk, particularly of the back and loins, are set in active motion. The movement serves to *render freer the play of the legs in their sockets* if impeded, and especially in cases of *rheumatic gout*, but of course only where no trace of inflam-

mation any longer exists. It is also a prevention against *paralyzation of the muscles employed,* and is of service *where the head or breast requires to be relieved.\**

\* *Ableitungsmittel*, translated, *relieving, relief, etc.*, is literally *carrying-off means*; that is, relieving the respective parts of the body of superfluous blood, juices, etc., by promoting their passing off or out of the body.

**SIDEWARD MOVEMENT OF THE LEG (FIG. 94)**—6, 10, 16 TIMES WITH EACH LEG.—The fully stretched right leg is raised sideward, in doing which, in order to make it as complete as possible, the accent should be laid upon the upward movement, but without any violent effort. After doing this a few times with one leg, the other should take its turn.

The movement is operated more especially by the side muscles of the hips and trunk. The practical use of it is the same as that of fig. 93, only that here, by virtue of its more violent and exciting shaking effect upon the regions of the liver and milt, it is of great service in cases of *obstruction of the port-vein system*. It is to be avoided by females.

Fig. 94.



**TWISTING OF THE LEGS (FIG. 95)**—20, 30, 40 TIMES WITH EACH LEG.

Fig. 95.



—The leg, fully stretched, slightly raised from the ground, and with the toes turned upward, is vigorously twisted outward, and so that the accent is laid on the outward twisting, answering to the normal predominant relation in which those muscles which twist the leg outward stand to those which cause the inward twisting or rolling. This movement is more easily and completely executed if each leg performs its whole task without the interruption of alternating with the other. The muscles in operation here are the rotator and extensor muscles of the leg. The application is the same as that of fig. 93.

**DRAWING THE LEGS TOGETHER (FIG. 96)**—4, 6, 8 TIMES.—The legs are placed at a moderate distance apart, the body resting on the well-turned out toes. The legs are then drawn together by sliding them along the ground (still on the toes), the knees remaining stiff. This is a very energetic movement for the

muscles of the upper part of the thigh, and for those of the calves, and

Fig. 96.



finds its application as a preventive against a *paralyzation* of the muscles mentioned, and as a means of *relieving* the head and chest.

BENDING AND STRETCHING THE KNEE FORWARD (FIG. 97)—6, 8, 10 TIMES WITH EACH LEG.—The leg, bent at the knee, is gently raised in front of the body, and then, with a tension of all the muscles, stretched out vigorously at full length. This is performed by each leg alternately. The greatest number of the flexor and extensor muscles of the leg and foot, including those in the pelvic cavity, are thereby set in active motion. The movement serves to render *freer the joints of the knees*, in cases of painless stiffness, and *prevents their becoming paralyzed*; as a stimulant for the circulation of the blood in the lower organs of the trunk, especially in cases of *hemorrhoidal obstructions*, and as a means of *relieving* the upper parts of the body.

BENDING AND STRETCHING OF THE KNEE BEHIND (FIG. 98)—10, 12, 16 TIMES WITH EACH LEG.—On account of the organization of the joints of the hips the leg can not be raised so high behind as before. It is, however, to be raised as high as possible (the body preserving its upright position), then bent, and then vigorously stretched out to its full length. It is better not to alternate with the legs, but that each should accomplish its allotted task without interruption. This movement extends its influence over most of the extensor and flexor muscles of the leg and foot, as fig. 97, but in a partly opposite way; and besides that, exercises the lower

Fig. 97.



back muscles. The combined effect of these two movements is to set in active motion all the extensor and flexor muscles of the leg. The

Fig. 98.



exercise serves to render freer the joints of the knees, and is of service in cases of incipient paralysis of the spinal marrow, or of the muscles of the feet, as well as being a remedy against affluence of the blood and irritation of the nerves of the head and breast.

**BENDING AND STRETCHING OF THE FOOT (FIG. 99)**—20, 30, 40 TIMES WITH EACH FOOT.—A powerful and complete as possible raising and sinking of the point of the foot, the leg being held forward and the knee rather stiff. The movement takes place simply by means of the ankle joint. In connection therewith there may also be an energetic bending and stretching of the toes, which, however, of course, require plenty of room in the shoes. The simple raising of the point of the foot may be also alternated with a circular motion of the same. The

muscles thereby active are those of the shin and calf, and the muscles of the lower part of the thigh and of the foot. The movement serves to render freer the action of the joints of the ankle, the tarsus, and the toes; as a means of relief for the other parts of the body, and against paralyzation and slighter contractions of the foot. It is also a good means of warming the feet.

Fig. 99.



**RAISING OF THE KNEE (FIG. 100)**—4, 8, 12 TIMES WITH EACH KNEE.—The leg, firmly bent at the knee, is raised so high that the knee is brought as near as possible to the breast. On the raising a strong accent must be laid. The upper part of the body should be kept as immovable as possible, in spite of a great disposition to bending forward, which is liable to show itself. If the joints of the hips are quite free, and the allotment muscles of the legs have attained a full average amount of power, the movement then becomes so perfect that the knee lightly

touches the breast without any perceptible bending forward of the trunk. But here the average amount regulated by the circumstances

Fig. 100.



of each individual must not be exceeded, as there exists a great difference in persons as to their capability of performing this motion. All violent efforts must be avoided, and each will attain his aim most completely by being satisfied with doing his best. The movement succeeds best by changing the legs. This is a very energetic exercise for all the allotrent muscles, and especially for those in the lower part of the abdomen, also powerfully acting mechanically from two directions—from within and without—upon the whole of the organs of the abdomen, beneficially invigorating and promoting the functions of the same. It is therefore to be especially recommended for all chronic complaints proceeding from or connected with *sluggishness or obstruction of those functions; viz., obstruction of the port-vein system, weak digestion* (especially of the small gut, declaring itself by an unpleasant feeling generally an hour and a half or two hours after the meal), *constipation, flatulency* (this movement has an especially powerful, immediate action against flatulency), *hypochondria* proceeding from the abdomen, *hysteria, interruption of the hemorrhoidal flux, and of the monthly courses, so-called mucous and bladder hemorrhoids, chronic mucous fluxes of females, etc.* This exercise is also calculated to produce a quickly fatiguing and sleepy effect, if such be desired.

But this must be kept in mind, that the most immediate working of this movement is a heating one, and its use must therefore be dependent upon this consideration, and regulated accordingly. Where any inflammation is present in the region of the abdomen, or in cases of disposition to bleedings, or the existence of hernia, it is to be totally avoided. By women, where there is a disposition to orgasm, and in connection with heating medicinal-water cures (internal or external), it is to be used with caution. For girls it should be allowed only as an exception.

SINKING AND RAISING OF THE TRUNK (FIG. 101)—8, 16, 24 TIMES DOWN AND UP.—With the heels close together, the body is raised on the toes, and then let down as low as possible, the trunk retaining its upright position: the raising of the same then follows under the same conditions. At first the maintenance of a perpendicular position of the trunk is attended with some difficulty, as there is involuntarily a

greater or less disposition to bending forward, caused by the changing of the center of gravity; but this is soon overcome by a little attention and practice.

Fig. 101.



The extensor muscles of the knees, and the muscles of the calves and toes, take the most active part in this exercise; at the same time, by the exertions made to maintain the trunk in an upright position, it acts in a not unimportant manner upon the lower muscles of the back. It is also effective for *rendering freer all the joints of the leg and foot*, and further as a strengthening remedy against *paralyzation of the lower extremities* of the body, and as a means of relief for the upper parts.

Now follow a series of compound movements, *i. e.*, movements in which the activity of the muscles is not confined to one particular limb or part of the body, but where the action is at the same time extended, in various degrees, over many parts, or even the whole body.

**CIRCULAR MOVEMENT WITH A STICK (FIG. 102)**—4, 12, 16 TIMES BACKWARD AND FORWARD.—For this purpose a rounded stick is necessary, which must be at least as long as to reach from the ground to the axillary cavity (armpit) of the person who is to use it. He takes hold of it near the ends, the backs of the hands being turned upward, and describes a circle over his head backward, and then brings it forward again in the same manner, letting the stick touch the body before and behind. The principal thing to be observed is that the arms be not bent at the elbows. This is at first difficult, because in most persons the joint of the shoulder has lost its normal freedom of movement from want

Fig. 102.



of use. But by degrees this hindrance will yield to practice, and then the distance between the hands can be proportionately diminished till that is no longer possible. The illustration represents this point, that is, as a general rule, and beyond which it is difficult to go. By the forward and backward movement there arises a soft rocking to and fro of the trunk, causing the movement to be considered as a compound one. The principal effect is produced upon the muscles of the shoulders, next come the arm muscles, and then those of the lower part of the back and of the abdomen. The movement is a most effective one for *rendering freer the action of the shoulder joints*, and has a helping curative working in cases of *paralyzation* of the above-mentioned muscles, *for the completeness of the process of respiration*, and as a stimulant *for the functions of the abdomen*.

WALKING WITH A STICK UNDER THE ARMS (FIG. 103)—FROM TEN TO FIFTEEN MINUTES.—A short, rounded stick is put straight across the

Fig. 103.



back under the arms, which are thrown backward, and bent at right angles. In this manner the operator walks up and down the given time, preserving as much as possible the upright position of the body. One principal point is the drawing of the shoulders back and down at the same time. A good carriage is thus promoted, and that position and bearing of the arms and shoulders which it is difficult always to preserve if the exercise is not performed with something to hold. The attention is to be directed exclusively to the upright bearing of the body while thus in motion.

The aim of the movement, at the same time that it contributes to the strengthening of the muscles of the shoulder, back, and foot, is to promote and confirm an habitually noble and healthy carriage. It is therefore designed as a remedy against a *one-sided, loose, and unsteady carriage of the back, and in general of the whole body*. This bad habit often shows itself in young people who are growing fast, and its effects are then most prejudicial (defective growth, faulty formation of the chest, etc.), extending their influence over the whole after life. This movement has further no especial working.

SWINGING THE ARMS BACKWARD AND FORWARD (FIG. 104)—30, 60,



100 TIMES TO AND FRO.—The arms are stretched out (but not stiffly),

Fig. 104.



with the fists closed, and then thrown forcibly backward and forward in *allegro* time. The trunk must not remain stiff, but rather yielding upon the hip joints, in such a manner that, acting as a balance, it is now bent a little forward, now a little backward, according as the arms are swinging backward or forward. The whole movement is thereby rendered easier, and the effect more universal. Besides the respective arm and shoulder muscles, most of those of the abdomen and back are set in a sort of rocking motion. The immediate effect of this motion is an agreeable feeling, and although the motion itself is somewhat violent, its influence is, on the whole, a mild one. It forms, firstly, a pretty good quota of the whole amount of exercise required, and is a *powerful promoter of the circulation of the blood*. It is also

of essential service in cases of *paralyzation of the muscles of the arm, back, and abdomen*, as well as *sluggishness and interruption of the functions of the abdomen in general*, and is recommendable on account of its mild working in especial cases, and particularly at the commencement of a series of gymnastic exercises. Although the movement is not what you may call heating (in spite of the impulse given to the blood), yet it may be advantageously used for *warming* the trunk, arms, and hands. It has a favorable effect as a stimulant at those times of bodily and mental *lassitude* which now and then arrive, in consequence sometimes of a change of the weather or of the season, or of a disorganized state of the nervous system of the abdomen, and which are not to be otherwise explained. If thought necessary, this movement may be executed 200, 300, 400 times at short intervals, and then at last the enemy will be vanquished.

SWINGING THE ARMS SIDWAYS (FIG. 105)—30, 60, 100 TIMES TO AND FRO.—A movement very like the foregoing, principally differing in the direction. Both the arms are here moved to one side, but in other respects in the same manner as in fig. 104. The upper part of the body is bent forward a little, but only enough to give free action to the arms, which are swung to and fro perpendicularly in front of the body. Also here must the trunk be quite free, and movable on the

hip joints; it has a similar rocking motion to that in fig. 104, but sideways, always in opposition to that of the arms as they move to and fro.

Fig. 105.

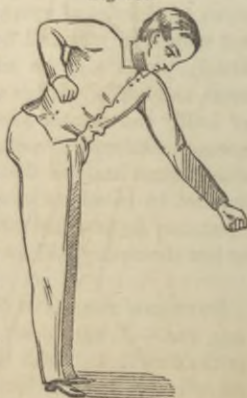


Among the muscles set in motion are the muscles of the fore part of the breast, and instead of the muscles of the fore part of the abdomen, those of the sides of the abdomen. The effect, therefore, of this movement is *more the stimulating of the regions of the liver and mill*, and is, on that account, of use as a remedy against *obstruction of those organs*. By the bending of the body forward, a *strengthening of the muscles of the back* is effected.

This movement has, for the rest, the same qualities and uses as fig. 104.

**SAWING MOVEMENT (FIG. 106)**—10, 20, 30 TIMES WITH EACH ARM, UP AND DOWN.—The body is bent considerably forward, and then each arm in turn thrown vigorously forward: the backward motion is combined with a bending at the elbow. One arm is thrown forward, as the other is drawn back. This movement succeeds very well, if you imagine you have something before you in the required direction that you would like to strike away with one hand, at the same time that you would draw it toward you with the other. A great number of muscles are thereby exercised—nearly all those of the arm, shoulder, and back; and the movement contributes much to the amount of necessary *universal action*, and is good against *paralyzation* of the above-mentioned muscles; and, by virtue of the effect of its rocking motion upon the chest and abdomen, against such complaints as are a consequence of *obstruction of the juices* and *sluggishness of the functions of the organs* in those parts.

Fig. 106.



**MOWING MOVEMENT (FIG. 107)**—8, 16, 24 TIMES TO AND FRO.—The body preserves its upright position, and the feet remain immovable. The arms stretched forward in a horizontal position then describe a semicircle to the right and then to the left. The accent must be laid equally upon the movement to the right and that to the left. One should imagine one's self mowing right and left, in which motion a certain force is exerted in the act of swinging. In consequence of the directions given above, to keep the body motionless, some slight opposition is experienced in swinging the arms alternately to each side, which causes a lively activity not

Fig. 107.



Fig. 108.



only of the muscles of the shoulders and the allotment muscles of the arms, but also a sort of see-saw stretching of the whole of the muscles of the trunk, leg, and foot. The movement has therefore an invigorating influence upon the limbo-moving muscles of the whole body, and is of great service in cases of a *general muscular weakness*, and of *paralyzation of the spinal marrow*, in that period of the complaint when a certain bluntness of feeling, and an extraordinary unsteadiness upon the feet are the first symptoms which attract the earnest attention of the patient.

**CHOPPING MOVEMENT (FIG. 108)**  
—6, 12, 20 TIMES.—The legs are stretched out sideways, not too far:

the hands are then raised above the head, and then brought swingingly down together, as if with the intention of chopping in two some certain block of wood lying between the feet. The legs must be flexible in the knee joint, so that the movement may be freer. The allotment muscles of the arm, the whole of the fore and the hinder muscles of the trunk, as well as most all of the leg and foot muscles, are brought into play by this movement, which thus takes the character of an *energetic* and somewhat *fatiguing one*. By virtue of its peculiar qualities it is useful in a twofold manner: as a means of *promoting the freer action of the organs of the abdomen*, in cases of *sluggishness and obstruction* of the same, and as a *stimulant for the nerves of the spinal marrow*, even when already in a somewhat advanced state of *paralyzation*. But as one or the other aim is to be attained, so must the employment of the movement be modified. In the first case—stimulation of the action of the organs of the abdomen—the principal stress must be laid upon the movement at the moment the arms and the upper part of the body are brought downward; in the second case as the body regains its upright position, turning on the hip joints.

In cases of a disposition to a flow of blood to the head or breast, as also (for many reasons) for females, this exercise is to be avoided.

#### TROTTING MOVEMENT ON ONE SPOT (FIG. 109)—100, 200, 300

Fig. 109.



**TIMES WITH EACH FOOT.**—This is the common motion of trotting, except that here the performer does not advance, but remains always on the same spot, for which reason the body maintains its upright position, instead of being bent, as in running forward; and here also the movement is performed on the *points of the toes*. This latter condition must be observed, because by coming down on the whole sole of the foot, the shaking of the body so caused would be communicated to the head in many ways disagreeably and prejudicially. The joints of the knee and the ankle must be quite free and elastic, for only by this means can be promoted that soft and wholesome shaking of the body which, after the setting in motion of the leg and foot muscles, is the aim of the movement. The degree of intensity of the movement can be regulated at will, by raising the foot to any desired height.

Where it is desirable to bring about a *softly fatiguing, sleep-causing feeling*, and to promote the *circulation of the*

*blood in the abdomen, the relieving of the bowels, and the carrying off of humors, etc., from the head and chest, this movement is very applicable; as also in cases of paralyzation of the muscles of the foot, and where a disposition to having cold feet exists. By means of its shaking motion—which draws the blood toward the lower parts of the body, and which is for the greatest part concentrated on the abdomen—this movement is especially adapted to the bringing again into order hemorrhoidal fluxes and the monthly courses of females which may have got out of order by obstruction. But at the same time attention must be paid to the remarks to be found in the special rules hereafter given.*

SWINGING THE LEG FORWARD AND BACKWARD (FIG. 110)—SWINGING THE LEG SIDEWARD (FIG. 111)—8, 16, 24 TIMES TO AND FRO WITH EACH LEG.—The operator lifts one foot, the toes pointed upward, about

Fig. 111.

Fig. 110.



two inches from the ground, and throws it with an energetic swinging movement straight forward, and then backward—to the right and then to the left. At first, till he has learned to keep his balance, this will require the aid of a table or chair to lean upon. But he should endeavor to do without this aid as soon as possible, because otherwise a great part of the effect of the compound working is lost. This very endeavor to keep one's balance and the upright position of the body calls into action many of the muscles, and is one of the aims of the movement.

Both movements require the working of the muscular parts all round and from all sides of the hips, but have also an effect upon all the muscles of the back up to the nape of the neck, and upon the whole muscular systems of the legs and feet; for the leg, apparently so immovable, has enough to do to maintain the equilibrium of the body, menaced from so many sides. The two movements are recommended against *chronic and fever-free rheumatic-gouty affections of the joints of the hips*, against *paralyzation of the foot muscles*, and as forming part of the required amount of *universal (all-sided) exercise*.

STEPPING OVER A STICK (FIG. 112)—4, 6, 8 TIMES WITH EACH LEG, FORWARD AND BACKWARD.—You take hold of any straight stick with the tips of the fingers of both hands, leaving a distance between the hands of full the width of the body. With the body bent forward you

Fig. 112.



try to step over the stick without letting go of it; and so that, at the moment the leg passes over, its lower part remains quite perpendicular, *i. e.*, forms a right angle to the stick. When both the legs have had their turn forward, do the same backward. This movement is certainly somewhat difficult, and even not possible for some persons at first, but only after long practice, while for others it is quite impossible.

Without speaking of the unimportant secondary motion connected with this exercise, it concentrates its principal influence upon the allotment muscles of the leg situated in the lower part of the abdomen, which are here drawn together in the greatest degree possible. This acts as a powerful stimulant on the lower part of the intestinal canal, *viz.*, the strait-gut (rectum) and the hemorrhoidal vessels. For this reason this movement may be well included, by way of trial, in the list of daily gymnastic exercises, against *obstinate constipation*, and against what are called *blind hemorrhoids* (or blind piles), but only then when no inflammation or irritation exists.

In cases of a disposition to a flow of blood to the head, where hernia exists, and by females, this movement is to be avoided.

TURNING OF THE BODY (FIG. 113)—30, 40, 50 TIMES TO AND FRO.—With something soft to lie upon (which need be only as long as down

to the knee), and a pillow for the head, you lie down on your back, with the arms folded across the breast, the legs half bent at the knee, and the feet resting on the ground. The whole body then makes a simple turning motion which brings it on to the arm, shoulder, and the

Fig. 113.



side of the hip joints—then back again, and then the same to the other side. The movement must be a complete change from a back to a side position, so that it forms a semicircle.

The aim of the motion is not so much exercise of the muscles—for here there is no particular use of them, and the amount is unimportant, which is the reason that this movement has nothing straining or fatiguing—as a rocking, *alternating change of position of the more easily moved inner organs, especially the abdominal intestines.* Such a change of position may, however, be, in a simple manner, a means of causing many a cure, or at least of aiding in doing so, as every physician knows; so, for instance, for a more regular distribution of blood in all such cases where *the overstocking and obstruction of the circulation of the blood in the organs of the lower part of the abdomen* requires remedy, as in cases of *hemorrhoidal tumors* (not yet inflamed, but already perhaps in an advanced state), *of contraction of the urinary bladder*, which stands in connection with the above; or *overstocking of blood in the abdomen before the monthly courses of females, giving cause to fear a too great bleeding, etc.* It is further of use against a *swelling of the intestinal*, or the presence of wind in it (wind-cholic), and *for the reduction of strangled hernia, etc.*

As this movement does not aim at radical cures, but only at an alleviation, it is not intended that it should be placed on the list of everyday exercises, but only used according as the want of it is felt.

## STANDING, SITTING, AND LYING POSITIONS.

FOR the purpose of giving an ample variety of exercises, so that physician or patient can readily select to suit all cases, I subjoin the following examples from Roth's "Cure of Chronic Diseases by Movements."

STANDING COMMENCING POSITIONS.—*The standing commencing posi-*

Fig. 114.

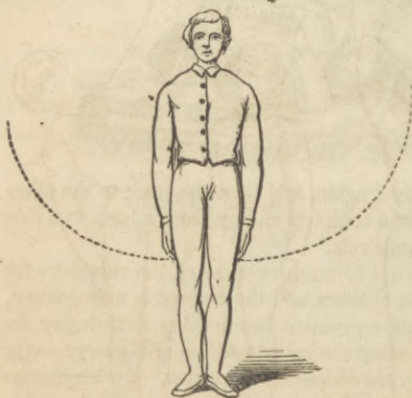


Fig. 115.



Fig. 116.

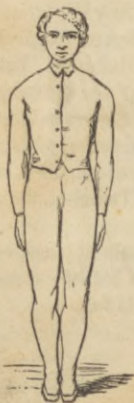


Fig. 117.



Fig. 118.





tions, in which the points of support are in the soles, differ (a) according to the position of the body with respect to the supporting plane, and (b) according to the relative position of the limbs to each other.

We quote only the following standing commencing positions :

1. Upright standing (with the feet in a right angle, touching each other with the heels, and the arms depending) in the fundamental position. See fig. 114.

Fig. 120.

Fig. 119.



Fig. 121.



Fig. 122.

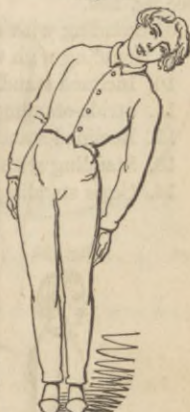


Fig. 123.



Fig. 124.



Fig. 125.



2. Standing upright in the fundamental position, with the hips held. See fig. 115.
3. Standing upright, with feet close together, and arms hanging down. See fig. 116.
4. Standing on the toes. See fig. 117.
5. Standing with the arms horizontally extended outward. See fig. 118.
6. Standing with the arms extended horizontally forward. See fig. 119.
7. Standing with the arms extended upward (extended standing). See fig. 120.
8. Standing with the trunk turned. See fig. 121.
9. Standing with the trunk flexed sideways. See fig. 122.
10. Inclined standing. See fig. 123.
11. Stride-standing. See fig. 124.
12. Reclined standing. See fig. 125.
13. Standing with one foot on a step. See fig. 126.
14. Cross standing. See fig. 127.

Fig. 126.



Fig. 127.



15. Curved (arch) standing. See fig. 128.
16. Standing in a stooping position. See fig. 129.
17. Standing in a leaning position (see fig. 130). All standing positions in which we lean with a part or the whole of the posterior surface of the body or limbs on a fixed object, belong to this class.
18. Opposite standing (see fig. 131). All standing positions in which we lean or keep ourselves with a part or the whole of the limbs on the

anterior surface of our body on a fixed object, are called opposite standing positions.

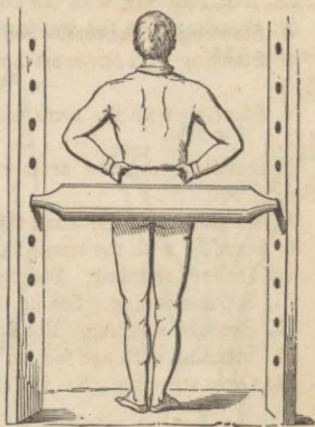
Fig. 128.



Fig. 129.



Fig. 130.



19. Walking-standing, with one arm extended upward—see fig. 132—(half extended walking-standing).

20. Curved (arch) walking-standing, with arms extended upward—see fig. 133—(extended-curved walking-standing).

Fig. 132.

Fig. 131.



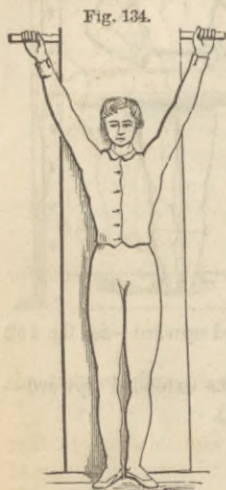
Fig. 133.



21. Sustained standing, with the arms extended and fixed. See fig. 134.

22. Half standing, with the arms extended upward. See fig. 135.

23. Standing with the legs astride and the arms extended upward. See fig. 136.



THE SITTING COMMENCING POSITIONS have their points of support in the seat and also in the thighs.



1. Short sitting. See fig. 137.

2. Full sitting. See fig. 138.

3. Sitting with the legs extended in the same plane with the seat, called long sitting. See fig. 139.

4. Sitting with the trunk flexed sideways. See fig. 140.

5. Stride (ride) sitting.

See fig. 141.

6. Short sitting, with the hips held and the trunk reclined. See fig. 142.

7. Sitting with the legs forming an angle. See fig. 143.
8. Sitting with the arms extended. See fig. 144.
9. Sitting with the trunk turned sideways. See fig. 145.

THE KNEELING COMMENCING POSITIONS have natural points of support in the knees, and besides them, the points of the feet afford also points of sup-

Fig. 140.



Fig. 139.



port, except we kneel on an elevated plane, in which case the anterior surface of both legs helps to support the body.

1. Walking-kneeling. See fig. 146.
2. Half-kneeling. See fig. 147.
3. Half-kneeling, with the trunk flexed backward, and arms extended upward. See fig. 148.

THE LYING COMMENCING POSITIONS have the points of support either on the back or the anterior surface of the body, or on one of its sides. We call half-lying positions all those in which either the upper part of the

Fig. 141.



Fig. 142.



body to the hips, or the inferior part from the hips, is the supporting part.

Instances of lying commencing positions are—

1. Half-lying on the anterior surface of the lower limbs. See fig. 149.

2. Half-lying on the posterior surface of the lower limbs. See fig. 150.

3. Supported lying, with the thighs drawn upward, and flexion of the knees. See fig. 151.

Fig. 143.



Fig. 145.



Fig. 147.



Fig. 144.



Fig. 146.



Fig. 148.



4. Horizontal extension of the whole body, while the feet and hands are fixed; commencing position. See fig. 152.

5. Horizontal extension of the whole body, while the feet and hands are fixed; final position. See fig. 153.

DEPENDING COMMENCING POSITIONS. — The hands, arms, or the knees are the holding points; ropes, beams, and balks are the external supporting points.

Instances of depending positions are—

1. Prop-depending. See fig. 154.

2. Depending with one arm. See fig. 155.

Fig. 151



Fig. 152.

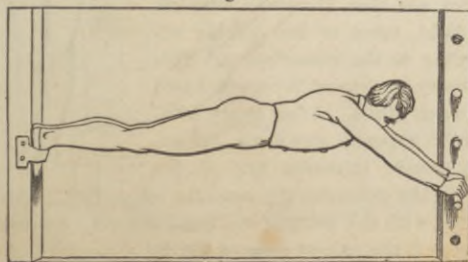


Fig. 149.

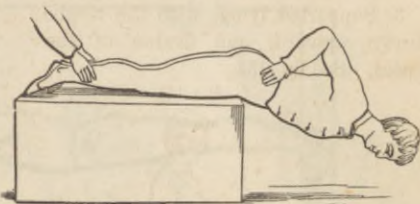


Fig. 150.



## TREATMENT OF SINGLE DISEASES.

CONGESTIONS OF THE HEAD, HEADACHES, GIDDINESS, HUMMING IN THE EARS, ETC.—The following three classes of movements form the essential part of the treatment.

We subjoin only a few instances for practical use.

I. *Derivative movements on the legs and feet*, as for instance, active and passive rotation of the feet, active-passive extension and flexion of the legs and feet, etc.

Every movement.

whether active or passive, by increasing the activity of the blood-vessels in the lower limbs, is at the same time derivative in congestions of the head and chest.

Fig. 153.

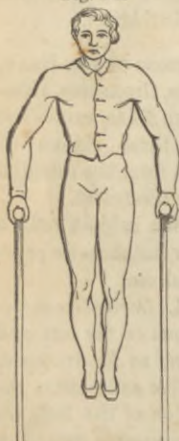


*Passive rotation of the feet, with active-passive extension and flexion of the feet.*

The patient is in a sitting reclined position, his leg, which is extended, resting with the lower part of the calves on both knees of the operator, who places, when acting on the left leg, his right hand an inch before, and on the anterior aspect of the articulation of the foot, in order to fix it, without strong pressure, while the palm of the left hand is placed on the point of the foot, the heel of which is not rested like the calf, but is entirely free; this is the commencing position. The operator then moves his left hand, which presses a little on the point of the foot, in a circle from right to left, from three to six times, and then the same from left to right, more or less quickly according to the prescription. This rotatory movement is repeated two or three times. After every rotation in opposite directions, the active-passive extension and flexion of the foot is executed; in the extension the operator resists (while the patient extends his foot), with the palm of his hand pressing against the upper part of the sole; if the patient tries to flex his extended foot,

Fig. 155.

Fig. 154.



of the foot is executed; in the extension the operator resists (while the patient extends his foot), with the palm of his hand pressing against the upper part of the sole; if the patient tries to flex his extended foot,



the operator, after having changed the position of his hands, retains its point a little by pulling his hand with a slight pressure along the upper side of the metatarsal part of the foot.

The three movements above mentioned are performed in the following order:

(a) Passive rotation of the foot from right to left, and *vice versa*.

(b) Active-passive extension of the extended foot.

(c) Active-passive flexion of the flexed foot.

(b) and (c) are alternately made from three to six times.

The *passive-active flexion of the leg* is also a derivative movement, in which the patient and operator are placed as in fig. 159; the operator presses down the leg, while the patient slightly resists; in the active-passive extension

Fig. 156.



COMMENCING POSITION OF THE PASSIVE ROTATION OF THE FOOT.

Fig. 158.

Fig. 157.



COMMENCING POSITION OF ACTIVE-PASSIVE EXTENSION OF THE FOOT.

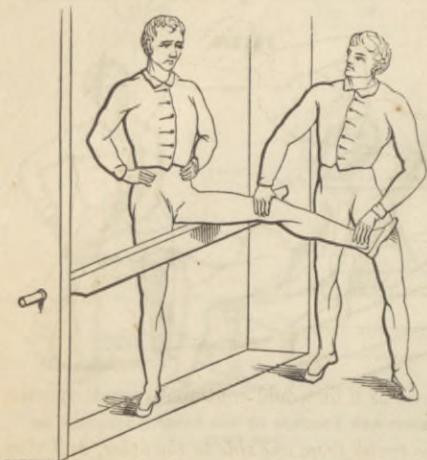


COMMENCING POSITION OF ACTIVE-PASSIVE FLEXION OF THE FOOT.

of the leg, the patient tries to stretch the flexed leg, and the operator resists.

II. *Movements determining a greater flow of blood to the abdomen*, which may be either passive or active manipulations of different kinds;

Fig. 159.



COMMENCING POSITION OF PASSIVE ACTIVE FLEXION OF THE LEG.

as, for instance, turnings or flexions of the trunk, and principally the following:

(a) *Passive-active inclination of the trunk forward in the stride-kneeling position.*

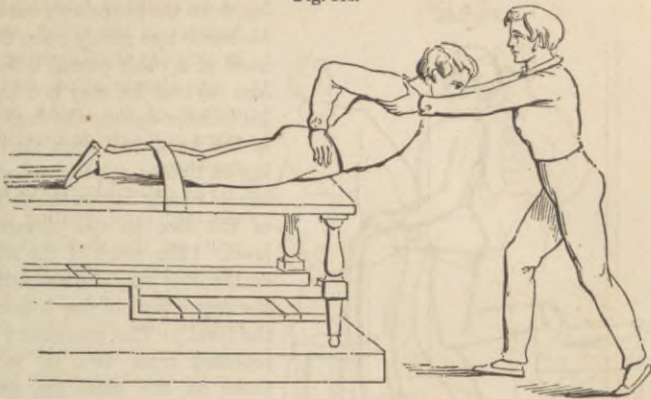
The patient kneels on an elevated level, putting his arms on the shoulders of two assistants standing on each side of him; each assistant puts one hand on the anterior side of the patient's shoulder, while the other hand is placed on the lower part of the patient's spine. (Our artist did not indicate the position of the other hand of the assistants, because he feared the figure of the patient would not be distinctly

Fig. 160.



shown.) If this commencing position is taken, the assistants bring the patient slowly forward to an angle of forty-five degrees, while the pa-

Fig. 161.

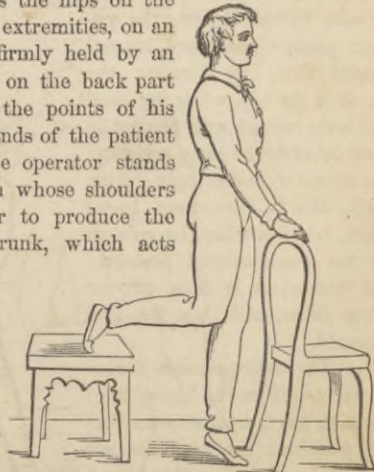


tient makes a slight resistance, as if he would continually try to remain in the commencing position.

(b) *Passive turning of the trunk from one side to the other, and vice versa, in the high half-lying position.*

The patient rests as far as the hips on the anterior surface of his lower extremities, on an elevated level; his legs are firmly held by an assistant, who puts his hands on the back part of the patient's legs, while the points of his feet are kept outward; the hands of the patient are placed on the hips; the operator stands before the patient's head, on whose shoulders he puts his hands in order to produce the turning movement of the trunk, which acts principally on the sinuses within the cranium, and retards the circulation of the blood toward the jugular veins.

Fig. 162.



(c) *Active flexion of one leg in a half-standing position, while the other foot rests backward on an elevated level.*

The patient stands on one foot, with the toe turned out-

1. COMMENCING POSITION OF ACTIVE FLEXION OF ONE LEG IN A HALF-STANDING POSITION.

ward, while he places the toe of the other foot upon a level elevated as high as his knee, and at a distance behind him equal to the length of the

Fig. 163.



2. FINAL POSITION OF ACTIVE FLEXION OF ONE LEG IN A HALF-STANDING POSITION.

The patient and operator are placed in the commencing position, as seen in the figure; the patient presses backward his extended arm, by turning the trunk in the hip, while the head and body remain with respect to each other in the same position; the operator resists only during the patient's movement backward, but not when he returns to the commencing position; the movement is done two or three times, and then the arm changed.

(e) *The active-passive flexion of the trunk in the high-sitting position* has the same commencing position; the trunk is not turned, but flexed to the side of the extended arm.

leg, from the knee downward; his hands rest gently upon the back of a chair placed before him (so that he may not lose his balance during the flexion of the knee and when standing on tiptoe), while the body lets its weight rest on the point of the foot on the elevated level. (The point of the foot on the level may also rest with the upper part of the toes on the level.) The movement is repeated from two to four times on the same leg, and then alternately with the other.

(d) *Active-passive turning of the trunk in the high-sitting position.*

Fig. 164.







MUSCULAR DEVELOPMENT

## PART III.

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### KINESIPATHY.

This term, which is a Greek compound, meaning *motion applied* or done to a person, has been employed to designate the plan or system of "free exercises," as developed by Ling and his followers. The word, however, like many others in medical literature, is a misnomer; for the motions are sometimes done to the patient, he remaining passive, while at other times he makes active resistance.

The motions are bio-mechanical, and consist of a set of voluntary movements, as bending, stretching, rotation, twisting, etc., and a set of movements independent of the will, under the form of friction, vibration, pressure, percussion, ligation, etc., so directed as to act specifically on particular parts or organs.

"The movements in the free exercises," says M. Roth, "are done on the ground if in the open air, on the floor if within doors, without any supporting apparatus. There is a certain class of exercises in which a support is used, but then it is not that of any technical apparatus, but a living one, effected by a mutual apposition of the hands, arms, legs, etc., of the individuals performing the exercises."

"The different species of free exercises consist—

"1. In movements of the limbs on the spot, and without reciprocal support.

"2. In movements from the spot, and without support.

"3. In movements with support.

"4. In wrestling exercises.

"5. Exercises belonging to the *Æsthetic Gymnastics*."

## THE POSITIONS.

EVERY gymnastic movement is divided into three positions: the *commencing*, in which the movement begins; the *intermediate*, which lies in the direction of the movement from its commencement to its end; and the *final*, in which the part returns to a state of relative rest, and where the movement ceases.

The positions of the body with respect to the basis are different, according to whether the feet touch each other, or there is a certain distance between them.

FIRST POSITION.—Rectangular heel on heel, or fundamental position.

The feet touching each other with the heels, and forming a right angle. This position is definitely chosen as the first in every standing commencing position, and called *fundamental position*.

Fig. 1.

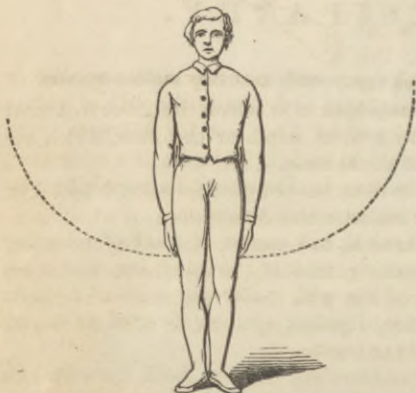


Fig 2.



SECOND POSITION.—Feet close together.

The feet being in the rectangular position, heel on heel, the toes a little lifted from the ground, and immediately both feet turned quickly on the heels, so that the inner parts of the feet touch each other from the heels to the toes. If you resume the first position, this is expressed by *feet outward*, and the feet are turned in the above-mentioned manner, but in an opposite direction.

*Positions with a Distance between the Feet.*—The distance may be one, two, or three times the length of a foot from the toe to the heel, and the direction of the feet remains either as in the rectangular, or as in the position with the feet close together, with respect to each other.



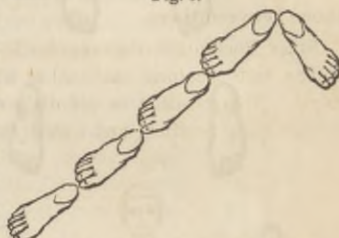
THIRD POSITION.—Right or left foot forward.

The above-named foot is placed at double its length (measured from the heel of the other foot) forward in the same line as the one in which it was in the previous position. For instance, if it were in the rectangular position, the foot always retains the rectangular direction, with respect to the other foot; if the previous position were *feet close together*, the feet remain in the same line.

FOURTH POSITION.—Right or left foot completely forward.

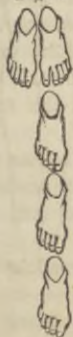
Is the same as No. 3, only the distance is three times the length of a foot. The weight of the body is placed on the fore foot, the knee of which is bent perpendicularly to the instep; head and shoulders remain immovable; the trunk and the hind leg in a straight line, inclined forward. If you wish the advanced foot placed back, this movement is indicated by *right or*

Fig. 3.



RIGHT FOOT FORWARD IN DISTANCES.

Fig. 4.



LEFT FOOT FORWARD IN DISTANCES.

*left foot placed back*, after which the above foot must be placed by a short step near the other, which remains quiet all the time.

If the above-mentioned distance should be taken in the position with closed feet, the foot which is to be moved must be in a straight line before the other, which remains quiet. If the foot is to be drawn back, the position with closed feet must be resumed, according to the preceding direction of *right or left foot placed back*.

FIFTH POSITION.—Feet alternately put completely forward.

The same position as No. 4, in two motions.

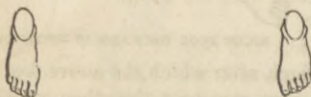
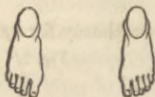
First. The foot pushed forward is again placed in its former position.

Second. The other is to be placed forward in its own direction, as far as the distance is in which the foot drawn backward was before.

SIXTH POSITION.—Feet placed apart.

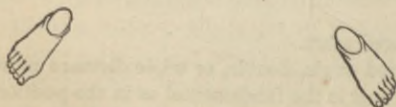
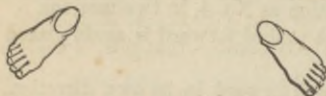
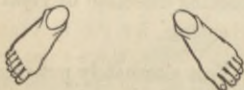
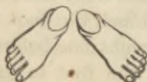
In two motions. The desired single, double, or triple distance must be taken between the feet, as well in the fundamental as in the position with feet close together.

Fig. 5.



FEET PLACED APART AND STRAIGHT. FROM THE POSITION FEET CLOSE TOGETHER.

Fig. 6.



FEET PLACED APART FROM THE FUNDAMENTAL POSITION.

First motion. The right or left foot is placed apart, at the distance of the length of a foot, to the left or right, so that the heels remain in the same direction, and that the angle of the feet does not become altered.

Second motion. The left or right foot must be placed to the left or right at the length of a foot, thus the distance between the feet is now twice the length of one foot, and the weight of the body equally distributed on both legs.

If the fundamental position is to be resumed, this is indicated by *feet placed together*, in two motions.

First. The right or left foot is placed inward, at its own length in the former direction.

Second. The left or right foot is replaced in one length to the right or left, with quick step.

In all the preceding positions, we have more strength if they are combined with the following position.

SEVENTH POSITION. — Hands on the hips, or hips held.

Both hands are raised and clasp the haunches, with the thumb backward, the fingers forward, the inner part of the hand resting on

the foremost edge of the hip-bone, the elbows in the same level with the shoulders, which must be kept down and drawn backward.

“The different forms of gymnastic movements, with regard to space, are affected also by other causes besides those before mentioned; this is principally the case in those free exercises in which the person moves from the spot, and in which the line of movement describes certain symmetrical figures. Thus it is possible, in the walk and run exercises, to move in a straight, circular, or serpentine line, etc., and each of these modes of moving from the spot has some special characteristic with regard to the developing influence of the exercise. The greatest diversity in the different forms, with regard to space, is exhibited when a large number of persons move together, according to a certain model form, acting in concert as a tactically articulated whole, forming groups, and executing different evolutions.

“The importance of the rhythmus and time of the movements is very great. The single motions of the exercises are to be compared to a speech spoken in an articulated manner, inasmuch as the articulation of words during speaking consists in movements of certain muscles and parts of the body done in a certain time. Each syllable which is pronounced is a motion, and each word is a movement, and when several words are pronounced and follow each other according to a determined metrical law, then the movements of the organs of speech become rhythmical movements, as, for instance, in declamation.

“Therefore, for both groups of movements, for the movements of speech as well as for the movements of the limbs, there exist the same laws of meter. The metrical development of the speech is made an important object of education; but with regard to the exercises of the limbs, the metrical laws have been very little or not at all thought of, and it is a great advantage of Ling's Gymnastics that this is made one of the principal features.

“The measure of time, or the tempo, must also be viewed in a special way, as far as it regards the gymnastic free exercises. If we see a whole series of movements, either one exercise repeatedly executed according to a certain law, or different exercises following each other according to a similar law, then we have the rhythmus; the movements become rhythmical, and the various motions appear as parts of a certain measure of time. Military marching may serve as an instance; it consists

Fig. 7.



HANDS ON THE HIPS.

of one principal movement, the repeatedly executed pace, which, being alternately done by both feet, appears as a double movement, which in its repetitions produces the movement of walking, and this, if the same tempo is observed for both feet and for the repetitions, becomes a rhythmical walking or marching. Each pace is a tempo, a part of a measure, which finishes with the setting down of the advanced foot.

The special rhythmical relations of walking and marching, as well as in general of all the advancing foot movements, are made sensible either by directing our attention principally to one foot while the other is comparatively disregarded, and thereby to our imagination the steps of the first foot appear the heavier and stronger, or the rhythmus may be observed by marking more prominently the steps of one of the feet, or in general certain steps, which are, so to speak, somewhat more accentuated, either by a really more vigorous tread, or by resting longer with one foot on the ground, or by executing at certain steps corresponding movements of other limbs (clapping together of the hands, for instance, inclination of the upper part of the body, etc.); in this way originate rhythmical forms of time, which show themselves as determined metrical articulations. To exhibit movements in such pleasing and beautiful forms is an essential branch of *Æsthetic Gymnastics*. Here gymnastics enter into the most intimate sisterhood with music; nay, in these exercises and representations they are music itself."

When exercising in classes, which is always preferable when practicable, the *word of command* is given by the teacher or director of the movements, according to which all must move simultaneously.

This word of command consists of the *descriptive* or *announcing order*, and the *execution order*. The first declares the part to be moved, or the movement to be performed; and the second commands its performance, something after the manner of military exercises. Thus, whenever the announcement is made, "*feet apart in two distances—place!*" the class prepare for action as soon as the announcing order is heard, but do not move till the execution order—"*place!*"—is given. And so of all other movements, as "*feet—close!*" "*feet—open!*" "*right knee upward—bend!*" "*head forward—bend—stretch!*" etc.

In the last example above there is a compound or double announcing order, and when the second—"*stretch!*"—is given, the head is again raised to the fundamental position.

It is important to notice that all of these movements are to be performed steadily and gradually, and never with a sudden jerk.

"All movements of the trunk and head must, in comparison with the movements of the limbs, be done in slow time. Therefore, in the order '*trunk right sideways—bend,*' the word '*bend*' must be pronounced

slowly; in the same way, if a run is to be finished by a stop, the word 'stop' must be pronounced sharp and short, or long and drawled out, according to whether the stop is sudden or more deliberate.

"In later lessons, for the sake of shortness, two full orders are combined into one; this is done by the word 'and.' The two combined words must be pronounced quickly, one after the other, and only the second execution order interrupted and accentuated. The break occurs in the second, thus: '*hips firm and feet—closed.*' A similar combination very frequently used is, for instance, that by which the simultaneous closing of the feet and grasping of the hips is ordered, viz., '*hips firm and feet—closed.*' Here the order should be, properly, first, '*hips firm,*' and then '*feet closed.*'

"When a movement of a certain limb is executed in a certain direction, for instance to the left, and then immediately after with the same limb to the right, it is not necessary in the order to repeat the name of the limb to be moved. The same takes place if flexion and extension of one and the same part are to be executed quickly one after the other.

"When movements for the limbs are not to be executed equally with the limbs of both sides, but unequally, then, as soon as the first movement is executed, the order '*arms (feet) change*' follows, in order to move both limbs in a similar way, by a different execution of the movement." For instance, in the arm extensions, after '*right arm upward, left arm forward—stretch,*' as soon as the stretching is executed, instead of the order, '*right arm forward and left arm upward—stretch,*' nothing is necessary but '*arms change.*'

"Marking and counting of the time is considered very essential in the free exercises. It must be understood that if the movement itself has but one tempo, it is not advisable to count. This is the case not only in every absolutely simple movement, but also in those compound movements in which different limbs are moved at the same time. Thus, at the order '*arms upward—bend,*' the movement is done in one motion, although it is not an absolutely single one; for, besides the forearm being bent toward the upper arm, the hand is also bent toward the latter, but both flexions taking place at once there is no need to count. On the other hand, the extension of the arms upward from the fundamental position is done in two motions, clearly distinguishable from each other, and is done with counting.

"To execute the free exercises well, the pupils must be placed in a definite order; this is called the formation.

"The formation depends on the kind of exercise, and also the place of exercise. When the space permits, all the pupils are to be placed abreast.

“When the pupils have met, and the exercises are to begin, the order is ‘*fall in,*’ on which all the pupils place themselves, according to their height, beside each other in one rank, slightly touching each other with their arms. If this formation is to be taken immediately after another mode of formation, then the order is ‘*formation with touch.*’

“In this close formation only certain exercises are done, as, for instance, twisting, marching exercises, etc. In other exercises each pupil must have sufficient free space to move his limbs in all directions without being hindered; for this purpose the open formation is chosen, which is made from the close formation at the order ‘*right (left) distance take—march.*’

“Whether the distance is to be taken to the right or left depends upon the free space available. Generally, in the beginning, the right-flank man is placed in such a way that the free space is to the left, and the distance is therefore taken to the left. At the announcing order each individual places his right hand near the shoulder of his right neighbor; at the order ‘*march,*’ the right-flank man remains in his place, and all the rest step so far to the left that each one touches with the tips of his fingers of his stretched arm the upper arm of his neighbor. The teacher, after having convinced himself that the exact distance is taken by all, gives the word ‘*position,*’ and then the stretched arm is placed down by the side.

“For some of the movements, as, for instance, the arm extensions on both sides, or some of the leap exercises, the ordinary distance is not sufficient. In such cases, at the order ‘*double distance take—march,*’ wider distance is taken by each pupil placing himself so far from his neighbors that he can, with his stretched arms and fingers, touch the tips of the fingers of the stretched arms of his neighbors; this formation requires a greater longitudinal space, and makes it more difficult, if there is a great number of pupils, to overlook them. In such cases it is best to take the flank position directly from the formation with ordinary distance; the order is ‘*section to the right (left) face.*’

“When the pupils are properly placed, the teacher gives the order ‘*tell off in twos,*’ the right-flank man calls out *one*, the second *two*, the third *one*, the fourth *two*, etc., alternately, until it comes to the left-flank man. Now follows the order ‘*twos, three paces backward—march;*’ on which the *ones* stand with an ordinary distance between them, and so with the *twos*; and between the two ranks there is also a convenient distance; in this formation longitudinal space is saved and supervision rendered easy.

“As soon as the necessary formation is executed, each individual must assume the fundamental position.

"From this position all others proceed, and also most of the movements. If at the order of the teacher any other commencing position has been assumed, and we wish that the fundamental position shall be taken, it is done at the order '*position*.' When a sufficient series of exercises have been gone through, the word '*at ease*' is given, and a short rest follows, during which each person remains in his place, unless a further recreation is permitted, such as walking. In this latter case, as soon as the exercises are to recommence, the order is '*fall in*,' on which all the pupils resume their places, and then, at the order '*attention*' or '*position*,' the fundamental position is taken.

"For several movements it is necessary to fix the arms and to keep the hips firm, by placing the hands on the hips with the thumbs backward, and the other fingers in front. This is done at the order '*hips firm*,' and principally in the flexion of the trunk forward and backward, in the twisting of the trunk to the right and to the left, in double knee flexion, in alternate knee flexion, in pass position, in leap movements on the spot, and in some other cases, as, for instance, the long run. The fixing of the hips must not be abused by being employed too frequently or too long, because it easily becomes a habit."

## MOVEMENTS OF THE HEAD.

THESE MOVEMENTS comprise *flexions* and *extensions* and *turnings*, all of which are to be done in slow time.

### 1. *Movements forward and backward.*

HEAD FORWARD—BEND!—STRETCH! (fig. 8).

The head is held straight, without any twisting of the neck, and bent slowly forward until the chin slightly touches the chest.



Fig. 9.

The upper part of the body, and especially the shoulders, must be kept firm. At the order "*stretch*," the head is raised into the fundamental position.

HEAD BACKWARD—BEND!—STRETCH! (fig. 9).

The head is slowly bent backward without turning, and at the command "*stretch*," is raised to the original position. The head should never remain very long in the bent position.

Fig 8.



HEAD FLEXION.

2. *Movements right and left.*

HEAD RIGHT SIDEWAYS—BEND!—STRETCH!

HEAD LEFT SIDEWAYS—BEND!—STRETCH! (fig. 10).

Fig. 10.



HEAD LEFT.

The head is exactly bent to the side designated, without twisting of the face or shoulders, and with no raising of the opposite shoulders nor sinking down of the shoulder on the same side.

3. *Turnings.*

HEAD RIGHT: TURN! FORWARD TURN!

HEAD LEFT: TURN! FORWARD TURN! (fig. 11).

The head is turned horizontally to the side designated, without the least flexion—if possible, so far that the chin shall be over the shoulders—the shoulders, in the mean time, being kept square in the front line.

Fig. 11.



HEAD RIGHT.

## FOOT AND LEG MOVEMENTS.

Foot positions are usually taken and the movement executed in a lively quick time.

1. *Closing and opening.*

FEET: CLOSE!—FEET: OPEN!

Fig. 12.



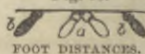
RECTANGULAR FOOT POSITION.

The feet are brought from the rectangular position (fig. 12, *a*) into the close position. At the second command they resume the original position. When the two commands are given together as one, "*feet close, and feet open,*" the closing and opening are done repeatedly till the command "*stop.*"

2. *Stride position.*FEET SIDEWAYS: PLACE! (fig. 13, *b*).

Done in two motions: first, placing sideways of the left foot one length of a foot; and, second, placing sideways of the right foot also one length, so that the medial line of the body does not change place. Both feet must remain exactly in the front line, and retain their rectangular position with regard to each other.

Fig. 13.



FOOT DISTANCES.



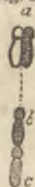
At the command "*position*," the feet are again placed in the fundamental position.

### 3. Pace position.

RIGHT (LEFT) FOOT FORWARD: PLACE! (fig. 14).

The foot designated is placed forward one distance in the same oblique direction in which it stood. The upper part of the body is not twisted, but moves in the upright position so far forward that its weight falls between both feet. At the command "*position*," the foot which is placed forward is drawn back into the fundamental position. If the left pace position follow the right pace position, the command is "*free change*," the right foot is drawn back into the fundamental position, and then the left foot placed forward.

Fig. 14.



FOOT POSITION.

RIGHT (LEFT) FOOT BACKWARD: PLACE! (fig. 15).

The foot designated is placed so far backward parallel to its former direction, that its heel is distant from the heel of the other foot one length (viz., of the foot). The upper part of the body is not twisted, but moved in an upright position, so far backward that its weight falls between both feet.

Fig. 15.



The change of the backward position from the right to the left follows at the command "*feet change*," in two motions. At the command "*position*," the fundamental position is taken.

### 4. Close pace position (fig. 16).

FEET CLOSE! (then the same command as in No. 3).

The difference between the close pace position and the ordinary pace position is, that in the first the basis is much narrower, because the foot which is placed forward is straight before the other, and both point in the same direction. The taking up and keeping up of the position is in itself a good balancing exercise, and especially if it is used as a commencing position for other exercises. The change from right to left follows the command "*feet change*."

Fig. 16.



FORWARD PASS.

5. Pass position (with hips firm, figs. 16 and 12, a, c).

RIGHT (LEFT) FOOT TO THE PASS FORWARD: PLACE!—POSITION!

The foot designated is placed in the same direction in which it stands (consequently in a half right angle toward the front line), two lengths of a foot forward. The upper part of the

body, with the leg of the foot which remains fixed, is so far inclined forward in the same direction, that the upper part of the body and the back leg form a straight line, which is inclined toward the horizontal floor at an angle of forty-five degrees. The weight of the body rests on the forward foot, the leg of which is so far bent at the knee, that the knee is just over the point of the foot.

Should the exercise be changed from the right to the left, at the command "*feet change*," this must be done in two motions: in the first the body, with the foot which was placed forward, is brought into the fundamental position; in the second

Fig. 17.

the pass is done on the other side.

6. *Pass position from close position* (figs. 17 and 14, a, c).

FEET CLOSE! (and the command as in No. 5).

The execution is similar to that of No. 5, but both feet are to be placed in the same direction.

#### OTHER FOOT AND LEG EXERCISES.

1. *Raising and sinking of the body on the toes*, from the fundamental position, from close position, from stride position, from pace position, from close pace position, etc. As soon as one of these commencing positions is taken at a previous command, there follows the command—

HEELS: RAISE!—SINK!

At "*raise*," the heels are raised from the ground, with the body upright and immovable. In raising, the feet are kept in the same relative position which they had in the commencing position; in the fundamental position and in the close position both raised heels must be close to each other. The exercise is done slowly. The body remains in the raised position for several seconds, and at the command "*sink*," heels and body slowly and steadily descend. This movement is a very good balancing exercise, especially from the stride position and the close pace position. It is generally repeated several times.

2. *Leg sideways raising and sinking* (in slow time).

RIGHT (LEFT) LEG SIDeways: RAISE!—SINK!

At the command "*raise*," the leg designated being firmly stretched, is raised in a vertical plane sideways and upward, till it makes an angle of about sixty degrees with the other. The upper part of the body is kept upright, and generally with hips fixed. At "*sink*," the raised leg is slowly brought back into the fundamental position. If the exercise



PASS POSITION.

is to be executed as "*alternate striding*," the raising and sinking of the right and left leg is done alternately, and repeated several times, at the command ALTERNATE STRIDING OF THE LEGS RIGHT AND LEFT: STRIDE!

3. *Double knee flexion* (also called *knee flexion, with extension*, fig. 18).

This exercise with hips fixed is executed in four motions:

1. *Raising of the heels.*
2. *Flexions of both knees* at the same time, uniformly and steadily, with the upper part of the body kept vertical, and not twisted. The flexion is done so far that the posterior angle of the knee is a right angle, and each knee is placed vertically above the foot of the same leg.
3. *Re-stretching of the knees, and returning into the heels raise position.*
4. *Sinking down of the heels, and returning to the commencing position.*

The exercise is done generally with hips fixed, and first, from the fundamental position, later from the stride position, and other commencing positions; it is first practiced by counting at the command KNEE: FLEXION! ONE! TWO! THREE! FOUR! later it is practiced with the extension belonging to it, at the command KNEE: BEND! STRETCH! (fig. 18).

Both execution commands must be pronounced in a lengthened tone. As soon as the exercise is so far practiced that the counting is superfluous, the movements during the first and second motions become more smooth, and in the same way also the movements of the third and fourth motions; so that as the knees are bent, the heels are raised, and as the knees are stretched, the heels sink down, and in this way, at the moment the stretching is completed, the heels are on the floor. This exercise, which is also a very good balancing exercise, must be done steadily, and the flexion must not be more than to a right angle; if the movement is done from the fundamental position, we must take care that the heels remain together during the whole movement. However performed, the pupil should remain for a time in the position with knees bent, before the stretching follows.

4. *Alternate knee flexion* (with hips firm).

a. *From the pace position.*

RIGHT FOOT FORWARD: PLACE!

BACK KNEE: BEND!—STRETCH! (fig. 19).

The weight of the body, which is kept upright and not twisted, is

Fig. 18.



DOUBLE KNEE FLEXION.

thrown on the back foot, the knee of which is bent to a right angle,

Fig. 19.



GENUFLEXION.

while the heel is raised. The foot which is placed forward remains entirely on the floor, and this knee bends only so far as is necessary to allow the other knee to form a right angle. After remaining a short time in this bent position, at the second command the stretching is done, in order to reassume the commencing position. Afterward follows the command "*feet change*," at which the right foot is drawn back and the left placed forward into the pace position, in order that the right knee may now execute the flexion and extension described.

The alternate knee flexion is done also—

*b. From the pass position.*

RIGHT FOOT TO THE PASS FORWARD: PLACE!

FRONT KNEE: BEND!—STRETCH!

As soon as the pass position is assumed, the projected leg is bent a little further, at the same time rising on the toes, the back leg remaining firmly stretched, with the sole of the foot on the floor. At the second command "*stretch*," the forward foot sinks upon the heel, and the knee returns to a right angle, but the body remains in the pass position. At the order "*feet change*," the same movement is done by the other knee.

*Knee upward flexion (fig. 20).*

This is also executed with hips firm, and alternately with the right and left leg from the fundamental position, with a somewhat lively motion. The exercise includes a flexion of the foot-joint simultaneously with that of the knee. The knee is raised quickly so far upward that the thigh is horizontal, and in the same oblique direction in which the foot was in the fundamental position. The lower leg is vertical. The foot is bent simultaneously at its joint as much as possible, that is, with the toes upward and backward. The commands of this exercise are—

RIGHT FOOT UPWARD: BEND!—PLACE DOWN! (OR POSITION!)

\* LEFT FOOT UPWARD: BEND!—PLACE DOWN (OR POSITION! OR ALSO, RIGHT FOOT UPWARD: BEND!—FEET: CHANGE!—POSITION!)

The change from the right to the left, at the command "*feet change*," must not be done too quickly; on the contrary, the left knee must not be raised before the right foot is perfectly placed down and the right leg entirely stretched. In these knee flexions (which, as well as the following exercises in Nos. 20 to 24, are good balancing exercises), the

upper part of the body must be kept firmly upright in the fundamental position.

Fig. 20.



UPWARD KNEE FLEXION.

Fig. 21.



BALANCING ON ONE FOOT.

6. *Knee forward stretching.*

This is done with the hips firm from "the knee upward flexion,"

Fig. 22.



BALANCING BACKWARD.

Fig. 23.



BALANCING FORWARD.

Fig. 24.



UPRIGHT BALANCING.

described in No. 19, and is executed as an alternate movement (right and left).

RIGHT KNEE UPWARD: BEND! (as in last movement).

RIGHT KNEE FORWARD: STRETCH!

At the order "*stretch*," the right knee and, simultaneously, the foot are straightened so as to be as nearly as possible in a straight, unbroken, horizontal line. The stationary leg is kept rigid, and supports the trunk upright.

To do the same exercise with the other knee, the order is given "*right knee bend*," at which the pupil assumes the "*knee upward flexion*" position. Then, at the words "*feet change*," he takes the fundamental position, and then proceeds to move the left leg similarly.

7. *Knee backward stretching* (fig. 20, *b*).

The hips are firm, and the movement done from the "*knee upward flexion*," and alternately with right and left leg.

RIGHT KNEE UPWARD: BEND! (as before).

RIGHT KNEE BACKWARD: STRETCH!

At the order "*stretch*," the right thigh is slowly brought into the vertical position, the lower leg remaining at a right angle with it, and therefore now pointing backward. The whole leg is then carried back, and then straightened so that it forms a line of about forty-five degrees with the ground. The body must not be twisted or bent.

To do the movement with the left leg, the order will be—

KNEE UPWARD: BEND! and then FEET CHANGE!

8. *Knee sideways guiding* (fig. 21, *a*).

First, "*knee upward flexion*" is done, and then, at the order RIGHT KNEE SIDEWAYS: GUIDE! the thigh is slowly carried round to the right hand, till it is as near as possible in the breast line; the trunk remains untwisted. At the command RIGHT KNEE FORWARD: GUIDE! the previous position is regained. The order "*feet change*" will be as before.

9. *Knee stretching, from knee sideways guide position* (fig. 21 *b*).

As soon as the "*knee sideways guide*," described in last paragraph, is executed, the order is given RIGHT KNEE: STRETCH! on which the knee is steadily and slowly straightened. To change from the right to the left, the order will be RIGHT KNEE: BEND!—FORWARD: GUIDE! and then FEET CHANGE!

10. *Foot rolling, during the "knee upward flexion."*

The hips are firm, and one knee is brought into the position of "*knee upward bend*," at the order given, and then follows—

FOOT RIGHT: ROLL! on which the foot of the raised leg is moved in small circles, not too slowly, on the ankle-joint as a center, in a direction toward the right. At the word HALT! the foot reassumes its firm upward bent position.

At FOOT LEFT: ROLL! the motion just described is resumed, but in a direction toward the left. The lower leg must be kept firm, and the

circles described in the air by the toes must be uniform. When one foot has been rolled both ways, the order will be FEET CHANGE!

*c. Leap exercises on the spot.*

In these all the parts of the body but the feet and legs are unused. Their object is, first, to accustom the lower extremities to act promptly and vigorously; and, secondly, to serve as preparatory to the leap exercises, properly so called. The upper part of the body must be kept straight, upright, untwisted, and the arms stationary, with hips firm: thus the whole action is thrown on the feet and legs.

1. *Close leap from fundamental position.*

This must be practiced at first with the teacher counting. It consists of three distinct, well-defined motions, performed at the order CLOSE LEAP ON THE SPOT: ONE! TWO! THREE! At "one," the pupil makes a prompt and rapid "double knee flexion," the upper part of the body being kept perfectly upright. At "two," by a sudden straightening of the knees, and a vigorous action of the feet against the ground, the pupil springs into the air without separating the heels, and immediately drops back on the toes into "double knee flexion" position, from which he just before sprang. At "three," by straightening the knees, he retakes the fundamental position.

The motions should be correctly and smoothly performed, and the leap need not be high.

When the exercise has been sufficiently practiced with counting, the three motions should be done without intermediate pauses, yet regularly and smoothly, and with the different parts of the movement well distinguished, at the order "close leap on the spot—leap!"

2. *Stride leap on the spot.*

This leap is also done at first with counting, at the order STRIDE LEAP ON THE SPOT: ONE! TWO! THREE! and afterward without counting, at the order STRIDE LEAP ON THE SPOT: LEAP! The commencing attitude is the stride stand position. At "one," the knees are slightly bent, and the heels raised from the floor; at "two," the pupil springs into the air, at the same time throwing out the legs sideways, with some vigor, and with such precision that, at the moment of alighting on the ground again, the pupil receives himself on the toes in the attitude just before left; at "three," the knees are straightened, and the heels brought down into the fundamental position.

The trunk must be kept vertical throughout the movement.

## ARM AND HAND EXERCISES.

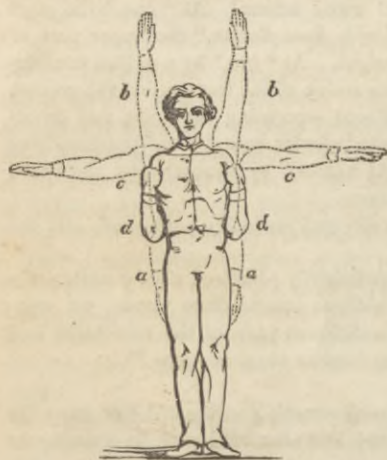
With a few exceptions, these exercises are to be done energetically, and with tolerable rapidity.

STRETCHING (in the five fundamental positions).

The stretch movements of the arms have reference principally to the elbow-joint, and as a limb must be bent before it can be stretched or straightened, a flexion must be the first step in a stretching movement.

1. *Bi-lateral stretching*, that is, the same stretching done with both arms simultaneously.

Fig. 25.



ARMS UPWARD: STRETCH!  
—DOWNWARD: STRETCH! (fig. 25, *b*, *a*).

ARMS SIDWAYS: STRETCH!  
—DOWNWARD: STRETCH!

ARMS FORWARD: STRETCH!  
—DOWNWARD: STRETCH!

ARMS BACKWARD: STRETCH!  
—DOWNWARD: STRETCH!

These movements are executed each separately; at first, with counting "one, two;" subsequently, the pupil may pass from one position to another, thus from "upward," "sideways," or "forward," etc. Finally, all the stretchings may be done consecutively at the order—

ARMS UPWARD, SIDWAYS, FORWARD, BACKWARD, AND DOWNWARD: STRETCH!

Time must be well kept in this movement, that all the pupils may act together, and observe that the hands must be held in a straight line with the arms; in upward, forward, and backward stretching, with the palms toward each other; in sideways stretching, with the palms turned downward; in the flexion which precedes each stretching, the upper arm is laid vertically down the side of the trunk, the forearm then turned completely upward, so as to lie along the upper arm, and the wrist so turned that the fingers, slightly crooked, touch the shoulder.

When the bi-lateral stretchings are sufficiently practiced, then follow:

2. *The alternate arm-stretching.*



In which the arms move simultaneously, but in different directions. The orders are—

RIGHT (LEFT) ARM UPWARD :	}	STRETCH!—ARMS: CHANGE!
LEFT (RIGHT) ARM SIDWAYS :		
RIGHT (LEFT) ARM UPWARD :	}	STRETCH!—ARMS: CHANGE!
LEFT (RIGHT) ARM FORWARD :		
RIGHT (LEFT) ARM UPWARD :	}	STRETCH!—ARMS: CHANGE!
LEFT (RIGHT) ARM BACKWARD :		

And so with other combinations.

At “*stretch*,” both arms are moved as ordered. At “*change*,” both arms are brought into the commencing attitude, “*arms bent up*,” and then each arm takes the position the other previously had. This change should be repeated several times.

#### OTHER ARM AND HAND MOVEMENTS.

##### 1. ARMS HALF FORWARD: BEND!—BACKWARD: STRETCH!

The upper arms are quickly raised sideways to a level with the shoulders, and simultaneously, the forearms bent in a forward direction at right angles with the upper arm; hand and fingers well stretched, palm inward. At “*backward—stretch*,” the forearm is thrown back till it comes in a line with the upper arm, which is to be kept immovable in its position sideways, so that both arms are in one line with the body. When the movement is repeated, the order is “*bend*,” “*stretch*,” etc.

##### 2. ARMS FORWARD: BEND! BACKWARD: STRETCH!

This exercise is similar to the preceding; the forearm is, however, laid *along* the upper arm, till the thumb touches the shoulder. At “*stretch*,” the forearm is thrown out till in a line with the upper arm (fig. 26, *a*, *b*).

Fig. 26.



##### 3. ARMS FULLY FORWARD: BEND!—BACKWARD: STRIKE!

In this the arm is bent at the elbow, as in the last, but the forearms are so brought forward that the tips of the fingers, instead of coming to the shoulder, meet immediately in front of the chest. At “*strike*,” the whole arm is thrown back as far as the shoulder-joints will allow, but preserving the horizontal position. When the movement is repeated, the order is “*bend*,” “*strike*” (fig. 27, *a*, *b*).

Fig. 27.



ARM STRIKING.

After each of the three last-described movements, the fundamental position is taken at the word "*position.*" For the sake of room in these and in all the movements where both arms are stretched sideways, the pupils must be placed either at "*double distance,*" or in flank position.

4. ARM SIDWAYS: STRETCH!—FORWARD: ROLL!

HALT!—BACKWARD ROLL!—HALT!—POSITION!

The rolling consists in a moderately quick circular guiding of the stretched arms on the shoulders as a center. The circles must be regular, and with both arms at once, and need not be large, the hands reaching to the level of the crown of the head. In the "*forward rolling,*" the hand commences its movement forward; in the "*backward rolling,*" the hand begins to move backward. If the arms are to be rolled, the one forward, the other backward (simultaneously), the order will be RIGHT ARM FORWARD, LEFT ARM BACKWARD: ROLL!—HALT!—LEFT ARM FORWARD, RIGHT ARM BACKWARD: ROLL! etc.

5. ARMS SIDWAYS: RAISE!—SINK!

The arms, freely hanging at the side, are slowly and steadily raised, till they are at an angle of forty-five degrees above the horizontal line of the shoulders, the palm being downward. At the word "*sink,*" both arms are steadily dropped. If this is to be done as a "*flying*" exercise, the order will be, ARMS RAISE AND SINK! In this case the movement is made repeatedly, and more quickly than usual. At "*halt,*" the flying ceases with the dropping of the arms.

6. *Hand turning in the four principal positions.*

These movements are done while the arms are stretched either forward or sideways. After the arms have been stretched forward, the command is—

HAND TURNING: ONE! TWO! THREE! FOUR! (fig. 28).

Fig. 28.



HAND TURNING.

At "*one,*" the hands are turned outward, with the knuckles down; at "*two,*" the hands are turned inward, with the knuckles up; at "*three,*" the hands are turned outward, with the knuckles outward, the

thumb up, and the little finger down; at "*four*," the hands are turned inward, with the knuckles inward, the thumb down, and the little finger up. The movements are done moderately quick, while the hand is always perfectly stretched.

#### 7. *Hand cuts.*

These are also hand turnings. They are done with more energy, and more suddenly than the preceding, and the hand is at an angle with the arm. The motion "*four*," of the preceding, is omitted, and "*three*" done in two ways. Consequently there are four positions of the hand, and they answer to the four fundamental cuts of the broadsword exercise, viz., quart, tierce, prime inward, and prime outward. These terms are used as the word of command, in lieu of *one, two, three, four*. After the arms have been placed in the position, "*arms forward—stretch*," the command is, HAND CUTS: QUART!—TIERCE!—PRIME INWARD!—PRIME OUTWARD! At "*quart*," the hands are suddenly turned outward till the knuckles are downward, and at the same moment the whole hand is so strained inward that the medial line of the hand forms an obtuse angle with the medial line of the arm. Then follows "*tierce*," knuckles upward, and at the same moment the hand is forcibly bent at the wrist till the fingers point firmly as much outward or backward as the muscles will allow. At "*prime inward*," the striking is done by a circular movement of the hand downward and inward, and finishes in a strong blow from upward downward, after which the hand is at an angle downward, with the knuckles directed outward. At "*prime outward*," the back of the hand is at an angle backward; the circular movement is done from below upward, and a strong blow downward, while the hand returns into the previous position, with knuckles outward.

These four cuts must be done with the hand-joint, while the arms are as immovable as possible in their stretched position. The movement can be done also while the arms are stretched sideways, or one arm forward and the other sideways.

#### 8. *Finger-spreading and closing.*

This is done from different arm stretchings, principally from "*arms forward—stretch*." The order is—

FINGERS: SPREAD!—CLOSE!

At "*spread*," the fingers are separated, and at "*close*," they resume their former position. This movement may be done in a slow or quick time.

FINGERS: SPREAD IN PAIRS!—CLOSE!

The separation is made only between the third and fourth fingers.

## TRUNK MOVEMENTS.

THESE are all done slowly, from various commencing positions, but principally at first from the fundamental and close position.

1. *Forward and backward flexion (with stretching).*

Trunk flexion must be distinguished from trunk inclination, the latter proceeding only from the hip-joint, the spine not bending at all.

HIPS FIRM!—TRUNK FORWARD: BEND!—STRETCH!

The trunk, bending at the hips as on a hinge, is thrown forward without twisting, and the head accompanies the movement so as to be always in a line with the trunk. The face thus inclines a little downward. The legs and knees firm. At "*stretch*," the trunk returns to its former position.

HIPS FIRM!—TRUNK BACKWARD: BEND!—STRETCH!

The trunk bends as before, but backward, and the face is thus slightly inclined upward.

These exercises must be practiced cautiously, and not overdone. At "*stretch*," the trunk returns to its former position.

2. *Sideways flexion of the trunk (with stretching); arms hanging freely down, and generally with the feet in close position.*

TRUNK TO THE RIGHT (LEFT) SIDEWAYS: BEND!—STRETCH!

The trunk is inclined to the right (left) so far as is possible, without raising the opposite foot from the ground; the head in a line with the trunk; legs unyielding. The hands accommodate themselves to the movement; the one on the side of the inclination by sliding down the high to the knee, the other by sliding up the thigh to the hip. The upper part of the body must not be twisted.

3. *Trunk twisting.*

This consists in twisting the upper part of the body round its longitudinal axis. The hips are fixed, and the feet placed in the close position.

TRUNK TO THE RIGHT: TWIST!—FORWARD TWIST!

At the first order the body is twisted steadily and gradually to the right so far that the line of the shoulders forms a right angle with the front line, and consequently the fourth part of a circle is described by each. The head follows the twisting, preserving its original position with regard to the trunk; after a short pause, at the second order, the trunk is steadily brought into the previous position.

Then, TRUNK TO THE LEFT: TWIST!—FORWARD TWIST!

The movement is similarly executed to the left. At a later part of the exercise, the trunk turnings both ways may be ordered at once, thus, TRUNK TO THE RIGHT AND LEFT: TWIST! on which the pupil

moves the trunk first to the right side and then to the left, pausing sufficiently long between the motions for a full expiration and inspiration; such a pause must be observed between each movement.

INSTANCES OF COMPOUND MOVEMENTS, ETC.

THE movements of the limbs in thus far are to be considered as elementary movements, which can be combined and varied in many different ways, so that one and the same movement can be done from different commencing positions. Each movement of the limbs produces a certain effect on the body, which is essentially different if made from another commencing position. Here follow some instances of combinations which are frequently used. It is to be understood that these and similar combinations of movements are not to be practiced before the respective single positions and movements can be correctly executed.

Fig. 29.



HEAD MOVEMENTS.

1. *From head-turn position—  
the head bending and stretching.*

HEAD TO THE LEFT: TURN!  
HEAD FORWARD: BEND! —  
STRETCH! (fig. 29).  
HEAD BACKWARD: BEND! —  
STRETCH! (fig. 30).  
HEAD TO THE RIGHT: TURN!

Fig. 30.



HEAD MOVEMENTS.

Fig. 31.



HEAD AND TRUNK MOVEMENT.

2. *From trunk-twist-position — trunk flexion and stretching.*

TRUNK TO THE RIGHT:  
TWIST!—then:  
TRUNK FORWARD: BEND!  
—STRETCH! (fig. 31).  
TRUNK BACKWARD: BEND!  
—STRETCH! (fig. 32).  
TRUNK TO THE LEFT:  
TWIST! etc.

Fig. 32.



BACKWARD TRUNK MOVEMENT.

3. *From the stretch position (i. e., at the order ARMS UPWARD: STRETCH!*  
a. *Raising and sinking of the heels.*

b. *Double knee flexion* (fig. 18, a).

c. *Trunk flexion forward and backward.*

Fig. 33.



LIMB STRETCHING.

The same three movements as in No. 3, with change from the right to the left.

7. *From yard position* (i. e., after ARMS SIDEWAYS: STRETCH!).

LEFT LEG SIDEWAYS: RAISE! and TRUNK RIGHT SIDEWAYS: BEND!—STRETCH!

RIGHT LEG SIDEWAYS: RAISE! and TRUNK LEFT SIDEWAYS: BEND!—STRETCH!—POSITION! (fig. 33).

8. *From half-stretch-close-position* (i. e., after RIGHT ARM UPWARD: STRETCH! and FEET CLOSE!).

TRUNK LEFT SIDEWAYS: BEND!—STRETCH!—ARMS CHANGE! etc. (fig. 34).

9. *From stretch position, or from yard position, or with hips firm.*

RIGHT KNEE UPWARD: BEND!—BACKWARD: STRETCH!—HEELS: RAISE!—SINK!

KNEE UPWARD: BEND!—FEET: CHANGE! etc.

10. *From half-stretch-close-pace-position* (i. e., after the right (left) arm is upward stretched, the feet closed, and then the left (right) foot placed forward)

4. *From stretch-stride-position* (i. e., after ARMS UPWARD: STRETCH! and FEET SIDEWAYS: PLACE!

5. *From stretch-pace-position* (i. e., at ARMS UPWARD: STRETCH! and RIGHT (OR LEFT) FOOT FORWARD: PLACE!).

The same three movements as in No. 3, with the change of feet which follow each other (right and left).

6. *From stretch-close-pace-position* (i. e., after FEET CLOSE! and ARMS UPWARD: STRETCH! and RIGHT OR LEFT FOOT FORWARD: PLACE!).

Fig. 34.



TRUNK SIDEWAYS.

TRUNK TO THE RIGHT (LEFT) SIDEWAYS:  
BEND!—STRETCH! (fig. 35).

ARMS AND FEET: CHANGE!

TRUNK TO THE LEFT (RIGHT) SIDEWAYS:  
BEND!—STRETCH!—POSITION!

11. *Arm striking backward during march movement* (after the section is placed to the left in flank position).

ARMS FULLY FORWARD: BEND!—WITH  
BACKWARD ARM STRIKING IN SLOW PACE:  
MARCH!

The pupils begin marching with the left foot forward, and at the same time they make the first backward striking with the arms; as they place the right foot forward they make the fully forward flexion of the arms, and in this way five to six paces are taken; then the order is, HALT!—FACE ABOUT!—RIGHT FOOT FORWARD: MARCH!

The double or alternative arm stretchings are combined with the marching exercise in a similar way.

Fig. 35.



TRUNK SIDEWAYS.

## TRUNK FACINGS.

To the exercises on the spot, besides the single limb exercises, which have been already described, belong also the turnings of the whole body, that is, those movements by which the body turns upon its longitudinal axis so as to change its front direction. The execution order for this purpose is RIGHT FACE!—LEFT FACE!—HALF-RIGHT FACE!—HALF-LEFT FACE!—FACE ABOUT!

If these movements are practiced one after the other, they are first announced by the advertising order, FACINGS. The execution order is divided in such a way that the emphasis falls on the word "*face*;" before the order "*face about*," the advertising order, WHOLE SECTION! is always used, even if there is but one person making the movement.

In the fourth and eighth facings, when practiced occasionally between other exercises, we use, as an advertising order, the word SECTION! This is similar to the military exercises, and the facings are

executed in a military way, with the difference that the *facing about* in the gymnastic exercises is not always done exclusively to one side, but to both in turn. When these exercises are done independently of others, the facings are made at the following orders: FACINGS! RIGHT FACE! LEFT FACE! HALF-RIGHT FACE! HALF-LEFT FACE! WHOLE SECTION: (LEFT) FACE ABOUT! WHOLE SECTION: (RIGHT) FACE ABOUT! If the direction is not particularly designated in the "*face about*," it is to be done to the left.

Each gymnastic facing consists in the body being turned to the right on the heel of the right foot, or to the left on the heel of the left foot; the change in the front, which is named in the command, is to be quickly executed, with the body kept perfectly upright. After each facing the feet must stand at a right angle toward each other.

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#### MOVEMENTS FROM THE SPOT WITHOUT MUTUAL SUPPORT.

THESE exercises are classified into *Walking, Running, Leaping, Walk-and-Run*, and *Marching Movements*.

The *Free Walk* exercises are practiced in three different ways:

1. *Walking in the usual time*; that is, at the ordinary or natural speed.
2. *Walking in slow time*; that is, about half as fast as usual.
3. *Walking in quick time*; that is, stepping more rapidly than usual, as though in a hurry, yet not wishing to run.

*Marchings* are practiced at a *slow pace* of 80 per minute, and a *quick pace* of 108 per minute; also in *single file*, in *straight lines*, and with *sharp turnings*; and with evolutions by dividing the class into divisions, subdivisions, sections, etc.

*Run-Exercises* consist principally of the *short run* and the *quick run*. In the first, the object is not to develop the velocity of the feet, but to instruct the pupil to run in general with accuracy and steadiness, to preserve a good posture, to increase the elasticity of the foot and knee-joints, and to move during the running in definite directions. The *short run* is done only in short steps, and the step is made with the *anterior* part of the foot; only the upper part of the body is inclined a little forward, the forearms slightly raised, and kept loosely near the hips. The usual speed is about 150 paces per minute. At the order **QUICKER!** the number of steps is increased per minute, more or less.



The short run is also ordered as a run during a definite time, without stopping. Caution should be used in not having too much running on the same day. At the beginning, periods of about five minutes are enough, and as the pupil gets accustomed to the exercise, a few minutes more may be added. During the run in a definite time, it is not only allowable, but advisable, to fix the hips. In confined exercising-places, the time of the run must be diminished, because the repeated turnings rendered necessary are very fatiguing.

The *quick run* can not be practiced except in open places. It differs from the *short run* by the greater speed, which is effected by paces at once larger and quicker, by a greater inclination of the upper part of the body, and a freer motion of the arms. The exercises are to be done in such a way that a certain distance must be run through in a short and defined time; or it may be done as a race between two or several individuals. The distance should be at first about 50 paces, and be gradually increased to 200 paces.

With regard to the direction of the running and other conditions, the run exercises (in short run) are to be done in the following order:

*a. In straight lines, combined with single turnings, etc.*

1. In rows or files; that is, one behind another.
2. In rank, with loose touch.

*b. In a circle, one after another.* If "turn round" is ordered, the turning is done toward the interior of the circle.

*c. In serpentine lines.*

1. The pupils are placed in distance, and run in a winding direction each round the rest.

2. The pupils are led by the teacher, or by one chosen for this purpose, and run simultaneously, following exactly the more or less sharp turnings of the leader.

The order for the short run is, **IN SHORT RUN: MARCH!** and each turning and evolution is to be done at the word of command. In the circular and serpentine run, the order **IN CIRCLE! IN SERPENTINE LINE!** must precede the usual order.

**LEAP-EXERCISES.**—Besides a repetition of the leap movements on the spot, heretofore described, the following preparatory movements are to precede the special leap-exercises; and they are to be executed by the appropriate word of command.

1. **CLOSE-LEAP ON THE SPOT: LEAP!**

The form of execution is similar to that already described, only that the upper part of the body is a little inclined forward in the first motion, and the body is moved forward by a bound about an ordinary

pace. This is a sufficient distance, as the object in these exercises is to make the different motions with accuracy, and not to leap great distances.

2. STRIDE-LEAP FROM THE SPOT: LEAP!

The execution is similar to that already mentioned, with the difference that the pupils leap fairly away from the spot.

3. LATERAL-LEAP TO THE RIGHT (LEFT): LEAP!

This leap is a stride-leap to one side, and consists in the right (left) leg being in a stride position sideways, while the left (right) foot carries the body with an energetic spring to the right (left). In the second motion the right (left) leg, which was in the stride position, is placed on the ground, while in the third motion the left (right) leg is brought quickly to the right (left) leg. This leap is repeated several times to the right at the order "*leap*," and then repeatedly to the left.

4. PACE-LEAP FROM THE SPOT: LEAP!

In this leap the first motion consists of a quick forward flinging of one leg, while the body springs into the air by the action of the other foot and leg, and the second motion, which of course is not separated from the first by a special pause, consists of the simultaneous setting down of both feet while the knee flexion is made; the third motion is the stretching of the feet and knee joints, by which the raising of the body into the fundamental position is effected.

These four leap-exercises are done with hips fixed, in order to prevent the twisting of the body, which would be caused by the arms swinging loosely. Here, as in all leaps, it is strictly to be observed that the down-leap (that is, the setting down of the feet after the leap) should be done with the anterior part of the foot, the ball and toes, and never with the heels.

The leap with a run in combination with the stride and pace leap is practiced at the word—

(1.) STRIDE-LEAP FROM THE SPOT, WITH THREE PACES RUN, AND RIGHT (LEFT) FOOT FOREMOST: LEAP!

At the word ONE! the foot named is placed briskly in front, and the upper part of the body inclined forward. At the word two! the other foot is brought in front one pace, while the upper part of the body is still more inclined forward. At THREE! the first foot is again advanced, and the pupil at the same moment springs from the ground; at the next moment he alights on both feet, and then, without further counting, the "*stride-leap from the spot*" is done, and constitutes the fourth motion.

(2.) PACE-LEAP, WITH THREE PACES RUN, AND RIGHT (LEFT) FOOT FOREMOST: LEAP!

At the words ONE! and two! the motions are performed as in the previous exercises; at THREE! another step is taken, and at FOUR! which need not be counted, follows the pace-leap as described above.

When the preparatory exercises are sufficiently practiced, then follows the exercise of the leap to a greater distance.

First, three paces run, and then with a much farther and freer run. The special leaps in the height or in the depth (upward and downward), belonging to the free exercises, are described in another place. In the exercise of long leaps it is not sufficient to learn to leap great distances—this can be done without any systematized instruction; but in the practice of gymnastics the objects in view are correctness and precision, which are very difficult to acquire alone, as we are not aware of the faults we ourselves commit. At the commencement, the distance must not be farther than can be leaped over with a moderate effort, and then gradually the leap distances are to be increased. In general, we may begin with the length of the body, and this leap distance is gradually to be augmented a foot length at a time. When the distance is equal to the double length of the body, it is enough for any purpose; a longer distance might do harm.

The execution of the long-leap is similar to the pace-leap; there is no special order for it, and it is done by the pupils in turn. The teacher must not only correct faults, but also observe that the down-leap is done simultaneously with both feet, closed heels, and great elasticity. Further, that the indicated leap distance should be exactly cleared; this is not merely a formality, but has a practical value. It is often necessary to leap over a gap, of which the edge on the other side is but narrow. The exercises for long-leaps may be varied by the leap being done not only by a single individual, but by two or more at the same time.

WALK-AND-RUN EXERCISES IN DEFINITE SPACE AND TIME.—The following may be considered as transition exercises to the æsthetic gymnastics. They not only develop the limbs and body, and give suppleness and grace, but they serve also more than the exercises in A and B to develop the sense of space, time, and order. These exercises are done more or less at word of command, but in a less sharp, formal, and detailed manner; they have some resemblance in their execution to the contre-dance and quadrille, etc. When these run-and-walk exercises are done in such a way that the pupils take hold of one another's hands, which is done at the command HANDS GRASP! they form the *chain-walk* or *chain-run*. Frequently the grasping of the hands is done by the pupils in pairs only.

In several of the following exercises a series of movements once performed is immediately continued, and repeats itself; such a combination of movements, forming a complete whole, is called a "tour." It must be observed that the exercises given in the following paragraphs are only instances of similar movements.

**WALK, OR SHORT RUN, WITH RHYTHM,** marked by a heavy pace, or by clapping the hands, or both.

This exercise is to be done in walk or in short run, the pupils keeping step. If done in walk, the gait must be easy, elastic, and graceful; in the short run the unaccented steps must be as light as possible. The teacher must first indicate which step is to be marked by a strong tread, say the third or fourth. The advertising order will be **WALK (OR SHORT RUN) WITH RHYTHMICAL HEAVY STEP—THIRD (FOURTH) PACE MARKED BY HEAVY TREAD (CLAPPING HANDS),** and then the command is, **SECTION: MARCH! OR, IN SHORT RUN: MARCH!**

If the heavy step is to be marked by clapping the hands, these can be brought together on the side on which the foot makes the heavy step; the upper part of the body may also make an easy flexion to this side.

The exercise is done in rank or file.

**THE HOP RUN.** It consists in one foot only advancing, while the other is always drawn up to the first till it touches, with the middle of its inner edge, the heel of the first. Both feet tread only with the ball and toes, and with as much elasticity as possible. The paces must not be too large, and not quicker than in the usual short run. It is executed in the chain or otherwise. The direction of this run is given in the order—

1. **HOP RUN FORWARD, WITH RIGHT (LEFT) FOOT FIRST: MARCH!**

The direction of the run is forward at a right angle to the front line. The shoulders are not twisted.

2. **HOP RUN BACKWARD, WITH RIGHT (LEFT) FOOT FIRST: MARCH!**

The execution is similar to the preceding, but backward.

3. **HOP RUN TO THE RIGHT (LEFT) SIDEWAYS: MARCH!**

The movement is done sideways in the prolongation of the front line; the shoulders are kept in the same direction.

4. **HOP RUN TO THE HALF-RIGHT (HALF-LEFT) FORWARD: MARCH!**

The direction of the run is at half a right angle to the front line.

5. **HOP RUN TO THE HALF-RIGHT (HALF LEFT) BACKWARD: MARCH!**

Similar to the preceding, but backward.

6. **COMBINATIONS.**

The hop run, even in an open place, must not last too long, and should continue only for a few paces in the same direction; for instance, ten or twelve. When it is sufficiently practiced in each of the direc-

tions, a combination of the whole is performed in the opposite directions. The teacher announces the combination and the number of the hop steps to be made, and then follows the execution order, HOP RUN: MARCH! As soon as the last step is done in one direction, the advancing foot is placed firmly on the ground, and the other, which now becomes the advancing foot, continues the movement in the new direction, etc. In the combination of the half-right and the half-left, the run forms a zig-zag line, the branches of which are more or less long, according to the number of paces taken in each direction. This change of the direction, which is at the same time a change of the step, can be ordered for the second pace; but it is best at first to make the paces as many as from eight to ten.

The *chain passage* is an exercise which is done in the short run or in the hop run.

The pupils are divided into two sections (A and B), which are placed at a convenient distance (about twenty paces), face to face, in a chain, and the usual distance between the pupils of each chain. At the order, CHAIN PASSAGE: MARCH! the sections advance in a graceful walk, keeping time and pace till they are close to each other. At this moment the section A raise their arms, and those in B loose themselves from each other, pass under the arms of A, and immediately form the chain again; each section then proceeds onward till it arrives at the spot from which the other section set out; here they face about, walk forward as before, and once more the B section passes under the arms of section A; the walk is continued till all are standing in the original positions, when they stop and face about. In the passage under the arms, the pupils pass one another, each to his right hand. Two of such passages form a *tour* of the "*chain passage*." This exercise can be also combined with other movements which precede it, in the following manner:

1. Both sections approach, then face about, and return to the first position, and face about again, and

2. Immediately approach once more, and on meeting, each pupil claps hands with his opposite, then face about and return, and then immediately

3. Approach third time, and pass through, repeating once more the process just described.

All the movements of the third periods, executed in this way, so as to form a whole, constitute a *tour*.

Another variation can be made by the execution of the movements of the first period in the hop run, of the second in the short run, and of the third in the usual walk.

If there are too many pupils to be conveniently divided into two sections, they can be divided into four (A, B, a, b), and placed in such a manner as to form four sides of a square, so arranging that the sections a and b begin to approach each other as soon as A and B, after meeting, face about to return.

In the *satellite run*, all the pupils are placed in one rank, and are told off in *ones* and *twos*; they face to the right at the word of command, and are led, at an even step, so as to walk in the circumference of a circle, in the center of which the leader places himself. At the words *SATELLITE RUN: MARCH!* the *ones* continue to walk in the circumference as before, in quick steps, while each of the *twos*, setting off at a quick, short run, goes round to his No. *one*, who advances all the while. Each *two* forms a circle like the moon round the earth. At the words *IN FACE!* which should be given in a drawing way, so that the voice dwells on them, the *twos* cease to run, and take up the pace of the *ones*,

and then fall in with them in the circle. Afterward the run is done by the *ones* around the *twos*.

That these exercises may be done with accuracy, the whole section should not contain more than from ten to twenty pupils; if there are more, they must be divided into two or three sections. The circle must be described of such a size that there is sufficient interval for the satellites to move freely; for instance, three to six paces between the *ones*; and the *ones* must take care to preserve the same distance from each other. When the whole exercise is done correctly, each No. *two* will be at any moment on a similar point of the satellite's orbit. The *run tour* must not last too long, so as to fatigue the satellites. This exercise has different variations; for instance the satellites may move in the same or in the opposite direction to their principals,



or the principals may move in the marked step, etc.

The weaver's run (fig. 36) is done by two sections, the *ones* (fig. A, B, C, D) stand in a chain with distance in front, the *twos* (*a, b, c*) stand in a row one after the other, sideways with regard to the *ones*, and a few paces in advance. At the word WEAVER'S RUN: MARCH! the *ones* walk abreast in chain walk straight forward at quick step, the *twos* at the same moment begin the short run in a transversal direction, passing the front of the *ones*, when the last *two* (that is *c*) comes in front of the interval between A and B, and the other *twos* in front of the other intervals, they turn sharply and pass between A, B, C, D, the *ones* breaking the chain for a moment; as soon as they have passed the intervals, they turn behind A, B, C, D, and run round D, so as to come once more in front of A, B, C, D; they then pass through the same intervals, and then turning sharply, pass round A, and come once more in front. When this has been done five to ten times (according to the space at disposal), the sections change in the movements. To do this exercise with one section, there must not be less than seven persons, and not more than from twenty to twenty-four, and they must be divided in such a way that those who advance straight on should consist of one more than the others, that there may be an interval for each *two*. That the

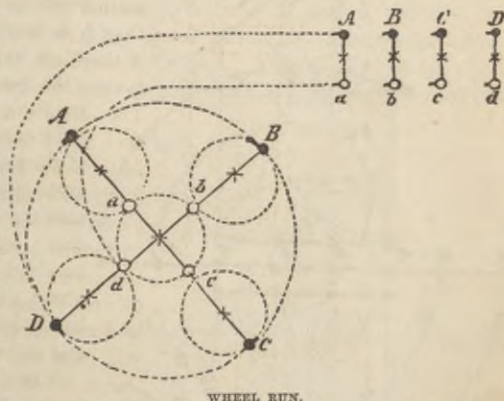
interval passage may be done uniformly, the *ones* must for several seconds *mark time\** with the feet, while the others run round and come in front.

The wheel run or wheel walk (fig. 37) is executed by sections of eight or twelve individuals. If

there are eight, they are divided into pairs; if twelve, they are divided into *threes*. We will describe here the movement as done by four pairs. As soon as the pupils are placed in line, and told off in *ones* and *twos*, the exercise proceeds according to the following orders:

1. TWOS: DOUBLE FILES!

Fig. 37.



\* This signifies that the feet are moved as if walking, but no advance is made.

2. SECTION: TO THE RIGHT FACE! HANDS GRASP! (in pairs).

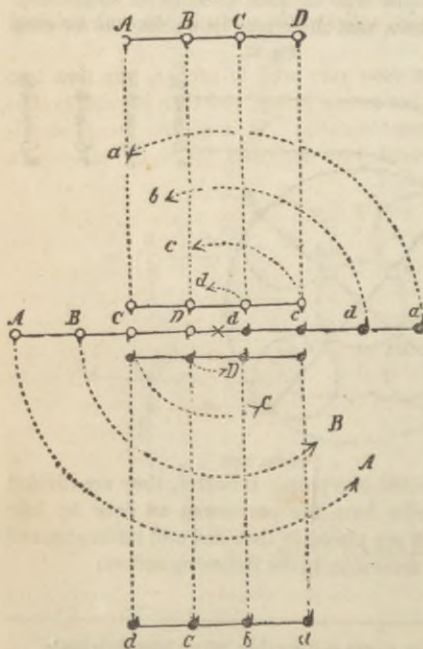
3. WHEEL WALK: MARCH!

The pairs advance, keeping time and step, and moving gracefully and easily, six paces forward; then the first pair faces to the half-left, and proceeds again six paces (the other pairs still following), then faces on the spot to the left about in a full circle, and the other pairs, on arriving at the turning point, also face to the left. Meanwhile the first pair having done the second six paces, again face to the left and move in the circumference of a circle, and each pair, on arriving at the same point, turn and describe the same course, so that a line drawn from the first pair to the third, or from the second to the fourth, will be a diameter of the circle, and then the inner one of the first and third pair, and the second and fourth pair, take each other's hands across. When the wheel is formed, the order is—

4. SHORT RUN: MARCH!

On which the *short run* commences. After several runs in the same

Fig. 88.



CHAIN DOUBLE TURN.

direction, the run is done in the opposite direction, for which purpose the order is—

5. SECTION: FACE ABOUT!  
OR, IN PAIRS: FACE ABOUT!

In the first case, all let go their hold, and each pupil turns independently of the rest; the hands are again grasped, and the run continued. In the second case, only the crossed hands let go, each pair face about as a pair, and the hands are again grasped, and so on.

When the exercise is to be closed, the order is given drawingly—

6. PACE!

And as soon as all are in an even pace, follows:

7. FIRST PAIR STRAIGHT FORWARD!



The crossed hands release themselves, and the first pair advances straight forward in a direction which leads to the original formation, the other pairs follow, and then the whole section halts in front.

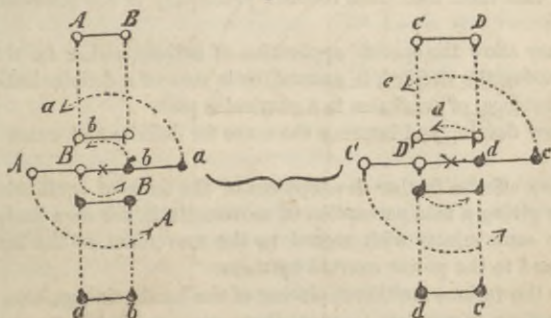
It is advisable to execute the whole *tour* of the *wheel run* several times at the walking pace only, before we try the short run.

The *chain double turn* (fig. 38). The number of pupils must be from eight to ten. They are subdivided into two sections of four (or five), which are placed opposite each other, and facing each other, about twenty paces apart, each section forming a chain (fig 38, A—D, and a—d). From this formation the *tour* of the double turn is done in the following manner:

- (1.) *Both sections approach in chain walk*: at the moment of meeting—
- (2.) *Hop run to the right sideways*: till the left-wing men D and *d* clasp their left hands; then, without interrupting the movement—
- (3.) *To the left face, in the short run, one and a half circle*, and then—
- (4.) Immediately D and *d* again let go their hands, and the sections, turning their backs to each other, move to the left in the hop run, and, finally—
- (5.) *Straight forward in chain*, the whole returning to their original place of formation.

This exercise can also be done very well in such a way that two pairs stand opposite each other as one group, and then several groups in the same front at a sufficient distance. Then all the groups simultaneously make the movement just described for eight individuals (fig. 39).

Fig. 39.



FORWARD IN CHAINS.

## EXERCISES WITH SUPPORT (OR ASSISTANCE).

It has already been mentioned that the support which we want in the free exercises is a living one, and given mutually by the pupils, and that the word "*support*" inadequately expresses the nature of the action, inasmuch as its aim is not only to assist or fix a limb, but the so-called supporter must, by an appropriate placing of the hands on the limbs of the other pupils, not only fix and steady them, but also frequently oppose a certain amount of resistance to the action of the other, or produce actively a movement in another person, while this latter resists; or it may be required to produce, by the application of a living support, those movements which, in Ling's system, are called combined active movements.

With regard to combined movements, in which one resists while the other makes the movement, it may be mentioned, that to prescribe and exactly apply them requires a perfect knowledge of Ling's system, and the necessary accessory sciences. By their abuse or their false application, or a bad execution, great damage may be done to the pupil, while they are of the greatest use and importance under skillful direction.

Only a few of the most simple combined movements, and such as are easily understood, will be given here; they will serve as instances of the exercises meant, and show that Ling's free exercises form a complete series, having no gap or deficiency.

With regard to the movements with support, we must remark, in general, that their usefulness consists principally in the following particulars:

1. They allow the specific application of actions, either for the sake of increasing the strength in general, or in case of a definite indication, as, for instance, of weakness in a particular part.
2. They develop and improve the sense for definite and exact movement.
3. They effect a further development of the sense of equilibrium.
4. By giving a nice perception of movement in our own limbs, they give the same nicety with regard to the movement of the limbs of others, and to the power exerted by them.
5. By the various multiform placing of the hands, fixings, etc., which must be done in a quick, prompt, clever way, we habituate the pupil to sharp and ready action, and give him the aptitude to afford prompt and ready assistance to others in the vicissitudes of life.
6. We learn by these exercises to apply our strength and direct our movements, in concert with others, for one and the same purpose.

The support given during the free exercises by a single individual will be called "*single support*," to distinguish it from that given by two or more persons.

For the exercises with a single support, the pupils are told off in *ones* and *twos*, and then the order is—

1. **TWOS DOUBLE FILE!** The *twos* take one pace backward with the left foot, and then one pace to the right with the right foot, *i. e.*, behind No. 1, and then bring the left foot up to it. In this way the *ones* and *twos* stand behind each other, forming two deep. Or it is ordered—

2. **TWOS: OPENINGS COVER!** on which the *twos* step one pace back, and stand behind the interval between the *ones*. If the full front is to be re-established from one of these two positions, the order is—

**TWOS FRONT RANK: MARCH!** on which the *twos* take up their position between the *ones*.

The formation for the exercises with the double and manifold support is done in a similar way.

As to the *hand-placings* which are to be used during the exercises, with support, we mention only the most simple and frequent, observing that when a hand is said to be placed on a joint, it is in reality placed in the immediate neighborhood only, so as not to interfere with the free movements of the joint. The hold must be free and easy, without fettering the joint.

*a. Placing the hand to the head.* The place where the hands are put on the head is the circle above the eyebrows, and the upper edges of the ears.

1. **THE HEAD FORWARD SUPPORTED!** The hands are placed transversely toward the forehead.

2. **THE HEAD BACKWARD SUPPORTED!** The hands transversely on the back part of the head.

3. **THE HEAD TO THE RIGHT (LEFT) SUPPORTED!** The hands are placed transversely on the respective side of the cranium.

4. **THE NECK SUPPORTED!** The hand, with the tips of the fingers upward, and the fingers on the back part of the head: the palm of the hand on the neck, and the forearm along the spine.

*b. Placing of the hands on the trunk.*

(*a*) *Hand-placings on the upper part of the trunk.*

1. **THE SHOULDER FORWARD SUPPORTED!** The hand, with the fingers upward, is placed on the anterior or chest side of the shoulder.

2. **THE SHOULDER BACKWARD SUPPORTED!** The hand, with the fingers upward, placed on the posterior or back part of the shoulder.

3. **THE SHOULDER UPWARD ASSISTED!** The hand placed on the

shoulder from above, with the thumb separated from the other fingers, and placed either before or behind.

4. **THE SHOULDER BELOW SUPPORTED!** The hand placed from below in the armpit, the thumb separated from the other fingers, and placed either before or behind.

5. **THE SHOULDER OUTWARD SUPPORTED!** The hand placed on the external side of the shoulder on the upper arm, with the thumb either before or behind.

6. **THE RIGHT (LEFT) SHOULDER-BLADE SUPPORTED!** The extended flat hand placed on the designated shoulder-blade, with the fingers upward.

7. **SUPPORT BETWEEN THE SHOULDER-BLADES!** The extended flat hand, with the fingers upward, is placed between the shoulder-blades on the spine.

( $\beta$ ) *Placing of the hands on the lower part of the trunk.*

1. **ABDOMEN SUPPORTED!** The hands placed transversely on the region of the navel.

2. **THE HIPS RIGHT (LEFT) SUPPORTED!** The hand placed transversely on the respective hip-bone and on its upper edge.

3. **THE CHINE SUPPORTED!** The hands placed transversely on the chine-bone and lowest lumbar vertebrae.

*Placing of the hands on the upper limbs.*

c. *Supports on the arms.*

Fig. 40.



ELBOW EXERCISE.

1. **THE ELBOW BACKWARD (FORWARD) SUPPORTED!** The hand encircles, with the thumb before or behind, the lower part of the upper arm, the little finger being near the joint itself (fig. 40).

2. **THE ELBOW INWARD SUPPORTED!** The hand encircles the lower part of the upper arm in front, the thumb being next the joint.

3. **HAND-JOINT SUPPORTED!** The hand encircles the forearm near the hand-joint, so

Fig. 41.



that the thumb and forefinger are next the joint (fig. 41).

4. THE HAND-JOINT INWARD SUPPORTED! so that the little finger is next the hand-joint (fig. 42).

5. THE HAND-JOINT UPWARD SUPPORTED! The hand of the support passes from behind, under the half-forward bent arms of the pupil, and then, by an upward side movement, takes hold from above of the forearms, so that the thumb and forefinger are on the hand-joint, the rest of the fingers on the forearms (fig. 43).

*d. Supports on the hand.*

1. HANDS SUPPORTED! (also, HANDS GRASPED!)

The two pupils grasp each other's hands in such a manner that one flat hand lies in the other flat hand, the thumb of each behind the knuckles of the other's hand, and the rest of the fingers encircling it.

2. HAND INWARD SUPPORTED!

The supporter places his flat hand with the back part toward the inner surface of the forward-stretched hand of the other pupil (fig. 44).

3. HANDS OUTWARD: SUPPORTED!

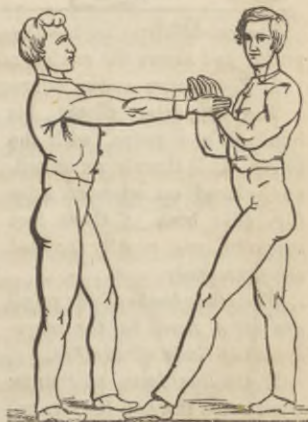
Fig. 42.



Fig. 48.



Fig. 44.



The supporter places his hands with their inner surfaces on the back of the other's hands.

4. FINGERS SUPPORTED!

Each pupil applies his fingers by their palm surfaces to those of the other, either straight or crooked, so as to hook together.

*Placing of the hands on the lower limbs.**c. Hand support for the knee.*1. **KNEES FIRM!**

The pupil takes hold of his own knees, immediately above the knee-pan, with the thumb and fingers on opposite sides, and the arms stemmed on the knee.

2. **KNEES FIXED WITH THE BACK OF THE HAND!**

The pupil places the back of the hand on his knees, immediately above the knee-pan. The inner part of each hand being bent a little hollow (fig. 45).

Fig. 45.

3. **KNEES INWARD (OUTWARD, UPWARD, DOWNWARD) SUPPORTED!**

The pupil places his hand on the designated side of the knee; at the order **KNEES DOWN: SUPPORT!** the hand is so far placed under the raised thigh that the fingers encircle the inner side of the thigh, and the thigh presses partly on the forearm.

*f. Hand supports on the foot.*1. **FOOT-JOINT BELOW SUPPORTED!**

The raised lower leg is encircled from below by the hand of the supporter just above the ankles, and held suspended by it.

2. **FOOT-JOINT ABOVE SUPPORTED!**

The supporter places his hand on the instep, with the finger and thumb separated, and placed on opposite sides (fig. 46); both of these foot supports are usually applied simultaneously.

*The lower limbs of one pupil are often fixed by the corresponding limbs of another.*

1. **On the knee, at "KNEE WITH KNEE INWARD (OUTWARD) ASSISTED!"**

The supporter places his knee with the inner side against the inner side of the other's knee, or with the outer side against the outer side.

Fig. 46.



2. *On the foot*, at "FOOT WITH FOOT INWARD (OUTWARD) ASSISTED!"

The supporter places his foot with the inner (outer) edge against the inner (outer) edge of the foot (or respectively of the heel) of the other pupil.

As soon as the teacher has shown and explained these and similar applications of the hands, etc., and the pupils are familiar with them, then commence the combined movements, of which we give here only a few instances.

## INSTANCES OF EXERCISES WITH SINGLE ASSISTANCE.

1. We must observe beforehand that the formation is, if not otherwise ordered, the double file, or, after the front is closed, the flank position to the right or left.

2. The sign W. R. means that the movement is done with resistance. The signs 1 R., 2 R., that the pupil designated by the number resists while the other moves.

3. That the *ones* and *twos* may both go through the whole of a movement, they must change places after the exercise is finished, and commence again.

4. Resistance is to be given steadily, and in proportion to the power of the person resisted; there must be no violence, and the resistance must not be so strong as to stop the movement of a limb altogether.

The aim is not to determine the relative strength of the two parties, but gradually to develop and increase the strength of each.

5. As soon as the commencing position is taken and the support set up, the supporter must fix his feet and so ply the upper part of his body as to accommodate himself to the movement of the other pupil, and be always prepared to oppose.

6. When the action is finished, the *ones* and *twos* change places. At the word POSITION! all assume the fundamental position, and at ASSISTANCE PLACE! (OR, ASSISTANCE AND COMMENCING POSITION CHANGE!) the *ones* and *twos* change places.

## a. INSTANCES OF SINGLE LIMB MOVEMENTS.

First instance. *Backward and forward guiding of the upper arms*, W. R. (fig. 40.) The order is—

No. 1. HIPS FIRM!

No. 2. LEFT FOOT FORWARD AND ELBOW (BEHIND) ASSIST! (SUPPORT!)

No. 2. ARMS BACKWARD: GUIDE! (1 R.)

The *ones* hold their hands firmly on the hips; the backward guiding

of their arms by the *twos*, while the *ones* resist, is not carried so far as to bring the elbows together.

No. 1. ARMS FORWARD: GUIDE! (2 R.)

No. 1 brings his arms again forward into the front line; then follows—  
POSITION!—WHOLE SECTION FACE ABOUT!—ASSISTANTS PLACE! etc  
(i. e., *twos* take the position of the *ones*.)

Second instance. *Stretching upward of the arms*, W. R. (fig. 41.)

No. 1. ARMS UPWARD: BEND!

No. 2. LEFT FOOT FORWARD, and HAND-JOINTS ASSIST!

No. 1. ARMS UPWARD: STRETCH! (2 R.)

The stretching is done slowly, No. 2 resisting.

No. 2. ARMS DOWNWARD: BEND! (1 R.)

The arms of No. 1 are bent down by No. 2 into the commencing position, while No. 1 resists; then follows—

POSITION:—WHOLE SECTION FACE ABOUT!—ASSISTANTS PLACE! etc.

Third instance. *Bringing downward and upward of the arms sideways* (W. R.)

a. *From stretch position* (fig. 42).

No. 1. ARMS UPWARD: STRETCH!

No. 2. LEFT FOOT FORWARD, and HAND-JOINT INSIDE: ASSIST!

No. 2. ARMS DOWNWARD: BRING! (1 R.)

No. 2 brings the stretched arms of No. 1 sideways down to the horizontal position; then—

No. 1. ARMS UPWARD: BRING! (2 R.)

No. 1 brings his stretched arms again into the commencing position.

POSITION!—WHOLE SECTION FACE ABOUT!—ASSISTANTS PLACE! etc.

b. *From yard position*.

No. 1. ARMS SIDEWAYS: STRETCH!

The hands are turned palms downward. The rest is similar to the preceding, only the bringing downward of the arms is continued to the thighs, and the carrying upward to the horizontal line of the shoulders.

Fourth instance. *Bringing down and upward of the forearms*, W. R. (fig. 43.)

No. 1. ARMS HALF FORWARD: BEND!

No. 2. LEFT FOOT FORWARD and HAND-JOINTS UPWARD: ASSIST!

No. 2 puts his arms beneath the arms of No. 1, and then takes hold from above of the hand-joints of No. 1.

No. 2. ARMS DOWNWARD: BRING! (1 R.) The movement is done only so far that the forearms of No. 1 hang down vertically.

No. 1. ARMS UPWARD: BRING! (2 R.) The movement is done till the forearms are in the horizontal position.

POSITION!—WHOLE SECTION FACE ABOUT!—ASSISTANTS PLACE: etc.



Fifth instance. *Backward and forward bringing of the arms, W. R.* (figs. 44, 47.)

This action is done from open position, and a turn of one eighth of a circle; the order for this position is—

No. 2. OPENINGS COVER!

No. 1. FACE ABOUT.

Nos. 1 and 2. HALF RIGHT: FACE! then follows—

No. 1. RIGHT FOOT BACKWARD, and ARMS FORWARD: STRETCH!

No. 2. LEFT FOOT FORWARD, and HAND-JOINTS INWARD SUPPORT!

No. 2. ARMS BACKWARD: BRING! (1 R.)

No. 2 gradually bends the upper part of his body forward. The movement is continued to yard position.

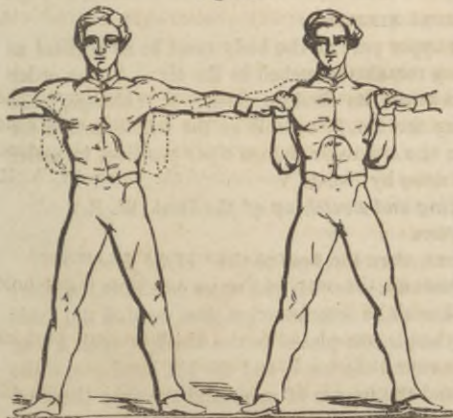
No. 1. ARMS FORWARD: BRING! (2 R.)

No. 2 brings the upper part of his body gradually back into the upright position.

POSITION!—ASSISTANCE, and COMMENCING POSITION CHANGE! etc.

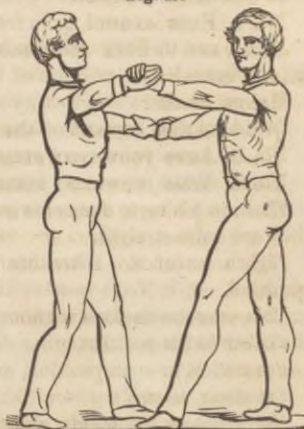
Sixth instance. *Drawing the arms sideways to and fro, W. R.* (fig. 48.)

Fig. 48.



executed by No. 1, while No. 2 resists.

Fig. 47.



Formation in line, with distance, then FEET SIDEWAYS: PLACE!

No. 1. ARMS UPWARD: BEND! and No. 2, HANDS GRASP!

No. 2. ARMS SIDEWAYS: PULL!

This pulling is done with resistance till the arms of No. 2 are in the best position, and the arms of No. 1 are stretched.

No. 1. ARMS SIDEWAYS: PULL!

The same movement

## POSITION!

Seventh instance. *Stemming\* of the arms* (W. R.).

In double file position.

No. 1. FACE ABOUT!

Nos. 1 and 2. LEFT FOOT BACKWARD: PLACE! and ARMS HALF FORWARD: BEND!

HANDS GRASP!

In this mutual support of the hands they are a little bent backward.

No. 1. ARMS FORWARD: STEM! (2 R.)

No. 2. ARMS FORWARD: STEM! (1 R.)

Each, in his turn, stems his own arms toward those of the other till they are quite straight.

Eighth instance. *Alternate knee flexion while one leg is raised forward.*

This exercise is done without resistance, one pupil merely securing the other in his position.

Formation in open position, and No. 1, "*face about.*"

FINGERS: ASSIST!

No. 1 places his hands, a little bent and with the knuckles turned downward, so far forward that No. 2 can conveniently reach them.

No. 2 places his fingers on the offered hands. Then follows the order for the commencing position—

No. 2. RIGHT LEG FORWARD: RAISE!

The leg is stretched to about forty-five degrees, then follows the exercise itself—

No. 2. LEFT KNEE: BEND! STRETCH!

During this flexion the upper part of the body must be as vertical as possible, and the raised leg remains stretched in the air. At the order "*stretch,*" the left leg resumes its straight form; at "*change,*" the change of the feet follows for No. 2, as well as the whole action for his right knee; and then the numbers change their position, in order that the exercise may be done by No. 1.

Ninth instance. *Bending and stretching of the head* (W. R.).

a. *In the lateral direction.*

Formation in closed front, then the *twos* to the "*right face.*"

No. 2. RIGHT FOOT FORWARD: PLACE! and HEAD ON RIGHT: ASSIST!

The right foot is placed with its internal edge close behind the heels of No. 1. The assisting hands are placed to the head in such a way that the right hand passes round the back, and the left hand round the forehead, till they meet, and the fingers of one hand are over those of

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\* Stem, to thrust or push against.

the other, so that the right side of the head lies imbedded in the hollowed palms. The right hand is that which assists principally, therefore the right elbow is made to lean firmly on the back of No. 1. As soon as the assistance is given, follows—

No. 2. HEAD TO THE LEFT SIDEWAYS: BEND! (1 R.)

No. 1. HEAD STRETCH! and TO THE RIGHT SIDEWAYS BEND! (2 R.)

After the flexion to the left, the assisting hands leave the head, which No. 1 steadily brings back to the upright position. By this action with resistance, only the muscles of the right side of the neck of No. 1 are brought into action; in order that the muscles of the left side should also come into action, then follows—

No. 1. FACE ABOUT!

No. 2. GIVE ASSISTANCE! etc.

After this change of the assistants, the movement of the head for No. 1 is done similarly to the previous. In order that the *twos* may go through the same movement, the order is for the *ones*, who still stand in the "face about" position—

No. 1. TO THE RIGHT FACE!—ASSISTANTS PLACE! etc.

(β) *In the direction from forward to backward.*

*Head bending and stretching.*

The formation is either the flank position or the file position for all.

This exercise is similar to the previous, but the assistant places his right foot close to the right of the other, and the assistance on the head is given with both hands on the forehead, or the back part of the head.

b. INSTANCES OF OTHER EXERCISES WITH SINGLE ASSISTANCE.

The following instances belong to another series of exercises, the aim of which is not, as in the preceding, to strengthen single limbs, or produce a specific effect on certain parts, but to give suppleness and strength to the body generally, to develop the sense of equilibrium, and to habituate the pupil to maintain his body firmly and steadily in a defined position, even when pressed by weights, or acted on by sudden and violent impulses from without.

Tenth instance. *Leap with assistance in the hang position with support.*

To be done in the file position.

RIGHT (LEFT) FOOT FORWARD: PLACE!

No. 1. HIPS FIRM! and No. 2, ON THE SHOULDERS: LEAN!

No. 2 places his hands, with the elbows raised, on the shoulders of No. 1.

No. 2. IN THE HANG POSITION WITH SUPPORT: LEAP!

No. 2. leaps upward, and remains propped up by his own arms upon the shoulders of No. 1.

No. 2. Down!

No. 2 leaps down, his hands remaining on the shoulders of No. 1, in readiness to repeat the leap, if ordered, which is usually done several times.

POSITION!—WHOLE SECTION FACE ABOUT! etc.

Eleventh instance. *Double arm bending and stretching in the hang position with support.*

The formation is the open position.

No. 1. FEET SIDEWAYS: PLACE! and HANDS GRASP!

No. 2. RIGHT (LEFT) FOOT FORWARD: PLACE! and ON THE SHOULDERS LEAN!

The leaning with the hand on the shoulder is done in such a manner that the *twos* are afterward between two *ones*, in the hang position with support (fig. 49).

Fig. 49.



No. 2. IN THE HANG POSITION WITH SUPPORT: LEAP! No. 2 raises himself with a leap and with the assistance of his arms into the hang position with support, so that his body hangs vertically between two *ones*.

No. 2. ARMS BEND!—STRETCH!

The arms are bent to a right angle at the elbow, and then straightened.

No. 2. Down!—POSITION!—WHOLE SECTION FACE ABOUT! etc., on which the *ones* make the same movement.

If the two *ones* between whom the No. 2 has to take his hanging position with support are of a very different height, this inequality must be compensated by the foot position, or by the greater flexion of the knee of the taller individual.

Assistance for the double arm flexion may also be given at first by the supporters, who can assist No. 2 to leap, at the order, **SHOULDERS DOWN: ASSIST!** and by the same means the arm bending and stretching can be made easier.

Twelfth instance. *Stride-leap with support.*

The formation is file position, and then the No. 2 **THREE (OR MORE) PACES BACKWARD: MARCH!** Then follows—

No. 1. **GIVE SUPPORT.**

No. 1 places one foot a little in advance, bends himself somewhat forward, and stems his hands at **KNEES FIRM!**

No. 2. **STRIDE-LEAP WITH SUPPORT: LEAP!**

No. 2 with a run approaches the supporters from behind, and then, leaning with his hands on the shoulders of two *ones*, he makes the stride-leap, so as to go right over the head of No. 1, and alights on his closed feet beyond.

No. 2 then places himself a few paces from No. 1 as a supporter, and then No. 1 leaps in the same manner over No. 2. This exercise can be done also in other formations; for instance, in the open flank position, in which case the last in the line has to leap over all those who are before him. It is advisable to practice this leap for some time as first described.

Thirteenth instance. *Catch-and-throw leap.*

Formation as above, in the twelfth instance. Then—

No. 1. **FACE ABOUT!** and **GIVE SUPPORT!**

As soon as No. 1 has faced about, he places one foot, with a little flexion of the knee, in advance; the upper part of the body is bent a little forward, and the arms raised in front, ready to grasp with the hands.

No. 2. **LEAP!**

No. 2 approaches with a vigorous run, leaps simultaneously with both feet from the floor over No. 1, and about two paces beyond; he bends the upper part of his body strongly forward, and with the arms raised, he leans immediately (just at the moment of up-leaping) on the shoulders of No. 1, and is caught by him, at the same moment, by the thighs. In this supported position, in which his perfectly stretched body is almost horizontal, No. 2 remains for a few moments. At the order—

No. 2 **Down!** he presses vigorously with his own arms, and thus impels himself backward, No. 1 at the same time throwing him back.

Then follows immediately, without change of the formation, the leap by No. 1, No. 2 placing himself as a support. When this leap is sufficiently practiced, it can be repeated several times without pause, and also alternately by *one* and *two*.

Fourteenth instance. *Climbing on the shoulders and deep leap.*

This exercise, besides being useful to increase the general strength, serves as a balancing exercise, and is one likely to be practically useful in life. Besides, the position on the shoulders of another person gives an opportunity of enlisting the deep leap among the free exercises. The formation is double file position.

GIVE ASSISTANCE!

Nos. 1 and 2 place the right (left) foot forward.

No. 1, with his arms hanging down, turns the palms backward, and curls up his fingers, so that No. 2 can put his foot in the hand as in a stirrup.

No. 2 leans his hands on the shoulders of No. 1, and places the left (right) foot gently in the respective hand of No. 1. Then the order is—

No. 2. CLIMB ON THE SHOULDERS!

No. 2 raises himself quickly with the assistance of his own arms, and places his right foot immediately on the right shoulder of No. 1, while he takes his right hand from the shoulder of No. 1, and grasps with it the hand of No. 1, raised up for the purpose. He then takes his left hand from the shoulder, and grasps the left hand of No. 1, raised for the purpose. At the same time he draws up the left foot toward the left shoulder of No. 1. Leaning in this way on both hands of No. 1, he raises himself, by a gradual and cautious stretching of the knees, till he stands upright, and without any hand-support.

After a few moments, the order is—

No. 2. FORWARD: DOWN! OR BACKWARD: DOWN!

On which he leaps down on both feet in the prescribed direction; then—

CHANGE OF THE NOS., etc.

This exercise can be done in such a way that No. 2 climbs on the shoulders of No. 1 in front. In this case the supporter makes a greater flexion of the knee of the advanced leg, and places his hands forward; then—

1. The other takes hold of the offered hands, and places the foot gently on the bent knee.

2. In the second motion he raises himself on this knee, assisting himself with his arms, and places the other foot on the other shoulder of the supporter.

3. In the third motion he raises the first foot on the corresponding

shoulder, and brings himself cautiously into the upright position, facing in the opposite direction to the supporter.

The leap down and backward can be easily done from this position with mutual hand assistance.

Besides the above-mentioned exercises with single support, many other heaving, lifting, and bearing exercises and leaps could be described, all belonging to the same series. These instances may, however, suffice, and the more so as many similar exercises, but more easy and effective, can be executed with double assistance.

#### c. INSTANCES OF EXERCISES WITH DOUBLE ASSISTANCE.

The pupils standing in front are told off in "*one, two, three,*" so as to form groups of threes. The change of the numbers, by which each pupil is made to go through all the parts of a movement, takes place when the exercise is finished. The more simple and easy exercises can be done by all the groups at once. The more difficult exercises should be practiced first by each group separately, till the pupils are familiar with all the positions.

The exercises with double and manifold assistance must be also executed and commanded according to certain rules, but the order is given only for the principal features of the action, and not for each single foot position, hand-placing, etc.

First instance. *Double arm bending and stretching in the inclined standing position, with or without resistance.*

The formation for this exercise is the close-front position with loose touch. Then at an order the *ones* face to the left, the *threes* to the right. Then follows—

GIVE ASSISTANCE!

No. 1, THE RIGHT FOOT, and No. 3, THE LEFT FOOT IN THE PASS POSITION, FORWARD PLACE, and KNEES FIX WITH THE BACK OF THE HAND! Then No. 2 bends forward with stretched arms, places his hands on those of *one* and *three*, while his feet are placed so far backward that the body is perfectly stretched in the inclined position, and rests only on the hands and toes (fig. 45).

No. 2. ARMS: BEND!—STRETCH!

He bends his arms at the elbow to a right angle, or even a little more, and then again straightens them.

If this movement is to be done with resistance, Nos. 1 and 3 place their free hands in the shoulder-support position, and resist by a proportionate uniform pressure.

POSITION! (that is, return to the formation.)

Nos. 1 and 2 CHANGE!—GIVE ASSISTANCE! etc., and as soon as No. 2 has made the movement, then follows—

Nos. 1 and 3 CHANGE!—GIVE ASSISTANCE! etc.

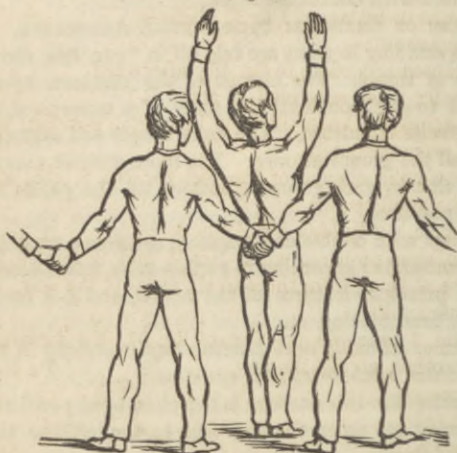
Second instance. *Trunk backward bending, and stretching in stretch-standing position.*

Formation, close front with loose touch; then

No. 1, THE LEFT FOOT, No. 3, THE RIGHT BACKWARD: PLACE! Then follows, GIVE ASSISTANCE!

No. 2 stretches his arms upward, Nos. 1 and 3 place their respective hands on the chine of No. 2 (fig. 50).

Fig. 50.



No. 2. TRUNK BACKWARD: BEND!

He bends the trunk gradually back, Nos. 1 and 3 bending their bodies a little forward, so that the support may have a greater firmness, and that No. 2 may be able, with perfect security, to execute the backward flexion, made more difficult by the stretch position. After the stretching is done, the order is—

POSITION! etc.

Third instance. *Down pressure and raising of the thigh with resistance.*

Formation as in Instances 1 and 2; then—

GIVE ASSISTANCE! etc.

No. 1 places the right, No. 3 the left foot, forward.

No. 2 leans with his hands on the back shoulder of Nos. 1 and 3, and bends the right knee upward, upon which No. 1 immediately makes the knee support upward.

No. 1. KNEE PRESS DOWN! (2 R.)



The pressing is done while No. 2 resists, till the thigh is in a vertical position.

No. 2. **KNEES RAISE!** (1 R.)

No. 2 again raises the knee, while there is a proportionate resistance given by No. 1; then—

No. 2. **FEET CHANGE!**

He places the right foot down and raises the left knee, on which No. 3 resists, etc.

Fourth instance. *Stretching of the lower leg with resistance.*

Formation as in Instances 1 to 3; then—

**GIVE ASSISTANCE!**

To be executed according to fig. 46; afterward

No. 2. **RIGHT KNEE STRETCH!** (1 and 3 R.)

No. 2 stretches the knee till it is in stretch position, while Nos. 1 and 3 resist proportionately.

Then follows the change of the feet for No. 2, etc., and then the change of the numbers, etc.

Fifth instance. *The high leap.*

Formation, open position, while Nos. 1 and 3 remain in the front line, and Nos. 2 being from three to six paces in the rear.

**GIVE ASSISTANCE!**

Nos. 1 and 3 take the position of fig. 51, the forearms stretched toward each other, giving the fingers assistance.

Fig. 51.

No. 2. **LEAP!**

No. 2 approaches with a run, and leaps freely over the arms of Nos. 1 and 3, which at first should be held about the height of the knees, and later in the exercise be gradually raised to the height of the stride, of the hips, of the chest, etc.

Nos. 1 and 3 hold the free arms in readiness to catch No. 2, should he stumble.

The high leap can, in this position of the assistant, be also practiced as a close leap from the spot, while the leaper approaches so near his supporters that he can leap from the spot with closed heels, over the arms extended before him.

Sixth instance. *Round leap with support.*

Formation, the open position, as in the fifth instance; then—



## GIVE ASSISTANCE!

Nos. 1 and 3 take the position as in fig. 52; No. 2 advances a little, and leans his hands, with the thumb-grasp, on the assisting hands of Nos. 1 and 3, whose elbows are placed firmly on the hips.

Fig. 52.



No. 2. LEAP!  
He springs with both feet from the floor in such a way that the feet (closed) are up in the air, and the head downward; by the impulse the whole body is turned over and the feet come down again on the floor, on the further side of the support. The supporting arms thus form an axis of rotation, and the supporting Nos. assist by an adjustment of the body to the movement, and hold their free arms and hands in readiness to assist the leaper, if necessary, on coming down.

It is advisable that this exercise should be first done by each group separately.

When the exercise is sufficiently practiced in the manner just described, it may be performed with the preparatory run.

The leap exercises described in 5 and 6, and many other exercises, may be done by groups of three; as, for instance—

1. *The leap in the hang position with support, with double arm flexion.*

2. *The through-leap with support from the spot, or with a run.*

3. *The climbing on the shoulders, with deep leap.*

The climbing is to be ordered in such a way that the climber is to stand with a foot on one shoulder of each supporter.

*Heaving exercises.*

These can be also done by groups of two, consequently with single assistance (but more easily by groups of three, with double assistance). These exercises may be done in different ways.

Seventh instance. *Burden-heaving (deep).*

Formation in front, the *twos* one pace forward, No. 1 face to the left, and No. 3 to the right.

## GIVE ASSISTANCE!

Nos. 1 and 3 take each other's hands in such a way that the hands

of No. 1 are flat, and with the palms upward, and No. 3 takes hold of them at the order—

HAND-JOINT DOWN: SUPPORT:

As soon as this is done, No. 2 bends backward, and lies horizontally and perfectly stretched upon the arms of the supporting numbers.

Nos. 1 and 3. KNEES: BEND!—STRETCH!

The supporters bend their knees and then straighten them again, by which the burden is lowered and raised.

Eighth instance. *Burden-heaving (high).*

No. 2 leans with his hands on those of No. 1, who has bent and raised his forearms. On this No. 3 grasps the legs of No. 2 at the knees, and raises them till each leg lies on one of his shoulders. At the order RAISE! Nos. 1 and 3 stretch their arms upward, and thus lift No. 2, who is lying stretched; at the order SINK! he is brought slowly down, etc.

*Carrying-exercises.*

These also can be done in different ways, for instance—

Ninth instance. *Carrying on the arms.*

Formation as in the seventh instance. Then—

GIVE ASSISTANCE!

Nos. 1 and 3 take each other's back hands, and hold firmly; No. 2 sits on the arm-support, and places his arms round the neck, upon the outer shoulder of the supporters. At FORWARD: MARCH! the supporters carry No. 2 in pace, or later, in a short run, a certain distance.

Tenth instance. *Carrying on the side.*

Formation, open-flank-position; then No. 2 steps a little to the right (left) sideways.

GIVE ASSISTANCE!

No. 2 bends backward, and is held round the upper part of his body by the right arm of No. 3, the forearms supporting his back.

Afterward No. 1 takes hold of the knees of No. 2, and raises the legs till No. 2 lies horizontally on his right side.

The burden is carried forward, as in the last, at the command FORWARD: MARCH!

No. 2 may also be placed with the back downward, outward, or inward.

Eleventh instance. *Swinging up and down on the arm-support.*

Formation, open position, No. 2, however, being a little in the rear.

GIVE ASSISTANCE!

No. 1 brings the right foot, No. 3 the left foot, forward, and both give the arm-support to No. 2. This support is made by Nos. 1 and 3 raising their near arms sideways, and laying them along each other

and then fixing them mutually by the thumb-grasp on the upper arm near the shoulder.

When this is done, No. 2 places himself to swing up, grasping with the hands under the arm-support. Then follows the order—

UPWARD SWING: SWING!

On this No. 2 springs from the ground forward upon the supporting arms, which form the turning axis, and swings round into the hang position with support. At the order DOWN! he leaps backward, down, or at the order—

DOWNWARD SWING: SWING! he changes the position of the grasp (so that the thumb is placed forward and the other fingers backward), and swings himself forward, round, down.

Before the down swinging is done, immediately after the upward swinging, it is better to practice the down swinging by itself. No. 2 leaps immediately from the standing position into the hang position with support, and then executes the down swinging.

If space permitted, many other exercises might be here enumerated. The following may be briefly mentioned:

1. *The stride-leap in a distance with support.*

Here the support is given by two pupils, over whom the third leaps as over a vaulting horse.

2. *The knee-hang position*, executed on an arm-support as mentioned in the eleventh instance.

3. *The tumble-standing position upon the hands.*

The same position, with double-arm-flexion, can also be well executed on the knees of the two supporters.

The exercises with three or more supporters, the pupils being divided into groups of four, belong to a more extensive work. We will merely mention *the placing in pyramids*, an exercise which develops strength, flexibility, the sense of equilibrium, etc., and which may also be of practical value in the chances of life.

If we consider the exercises mentioned in C, many may think that several of them are altogether superfluous and inadmissible; as, for instance, those with the turning-over and tumble position. But there are good reasons for including even these and similar exercises. If we wish, by the free exercises alone, to attain the direct object of all gymnastics, namely, the harmonious development in all directions of the man as man, then in the organic influence of the position and movements no essential gap can be allowed, as would be the case if the free exercises did not contain some of this kind. The tumble position and the swinging-round movements have a particular specific influence on the human body, and indirectly on the psyche of man, so that they can

not be substituted by any other free exercises. We will, however, observe that if, besides the free exercises, those with apparatus are also practiced, the kind of positions supposed to be objected to can be omitted in the course of the free exercises. When, however, they are used, considerable care and caution are necessary.

### WRESTLING EXERCISES.

THE pupils range themselves according to their height in one rank, and are told off in *ones* and *twos*. The *ones* form the first, and the *twos* the second section. It is advisable in the school exercises, and at first in the contra-exercises, that each wrestling pair should consist of two as near as possible of the same height.

The school exercises must be done on level ground, and the last lessons, as well as the contra-wrestling, on a soft or loose soil.

The wrestling exercises, and indeed all gymnastic exercises, should be done equally to the right and left side; here, therefore, as in the fencing exercise, the change of the guard must be noticed.

First lesson. *Formation: taking up the guard position, change of the guard, approaching and taking distance.*

The two sections face each other at a distance of ten to twenty paces; each section with a distance between the pupils. Then the order is—

WRESTLING FIGHT RIGHT FORWARD: GUARD!

Fig. 53.



GUARD.

The two wrestlers standing opposite each other, and facing half to the left, place the right foot two distances forward. The left knee is bent, so that the point of the knee is vertical over the toes. The knee of the right foot is also bent, but not so much as the other; the upright trunk rests on the back leg, and is a little twisted to the right, and the head still more so. The forward arm is bent, so that while the upper arm is a little removed from the body, the forearm is vertical; the back upper arm is placed a little forward, near the left side, and the forearm is kept at a right angle with it, which the hands are ready to grasp. This position is taken as soon as the wrestlers are three paces distant from each other.

The guard position is taken by all (fig. 53).

The taking of the guard position is practiced several times successively at the order **FUNDAMENTAL POSITION!** the pupils resume that position.

**FORWARD CHANGE: GUARD!**

The pupils turn on the heel of the forward foot, and bring the other foot in advance, so that the other side of the body is now in front, and the position of the arms changed.

**BACKWARD CHANGE: GUARD!**

The turn is made on the heel of the back foot, the forward leg is brought back, so that the side which had been previously in advance is thrown back.

**FACE ABOUT: GUARD!**

The facing is done on the heels of both feet, about the fourth part of a circle; the trunk is at the same time turned so that the pupil faces in the opposite direction.

In each of these exercises, it is advisable, when the guard position is taken, to order from time to time the so-called *appel treading*. By *appel treading* is meant a short, quick, lively raising and dropping of the forward foot two or three times (tapping the floor with the foot), the back foot remaining immovable, and the whole body resting well balanced upon it; as also the facings to the right and left, which are done by turning on the back foot. Then follows the order—

**WRESTLING RIGHT (LEFT) FOOT FORWARD: MARCH!**

The sections approach and take their distance, walking freely and resolutely toward their opponents, till about three paces distant; then all place themselves in the designated guard position, and approach with very short paces and ready for the struggle, till the opponent can be

Fig. 54.



seized with the stretched arm; and this is the *distance* generally to be understood as taken in these exercises. At this moment the teacher orders several times the change of the guard, and then—

**FACE ABOUT: MARCH!**

On which each section returns to its previous place. This exercise is several times repeated.

Second lesson. *Practice of the arm-grasp* (fig. 54).

1. **WRESTLE WITH ARM-GRASP!**  
**RIGHT (LEFT) FOOT FORWARD:**  
**MARCH!**

Approaching, taking up guard position, and distance, as in first lesson.

2. GRASP!—GUARD!

At "grasp," follows the arm-grasp. The arm-grasp is made by each wrestler seizing firmly the arms of his opponent just above the elbow (fig. 54). At "guard," they quickly let go their hold, and again take the guard position and distance. The grasping and letting go are done two or three times, and repeated after the change of the guard. The antagonists may also, without giving up the guard position, go back at the order **THREE PACES BACKWARD: MARCH!** and again advance at the order **TAKE DISTANCE!**

Fig. 55.



3. FACE ABOUT!—MARCH!

They return to their original position, as in the first lesson.

Third lesson. *Practice of the grasp of the back* (fig. 55).

1. WRESTLE WITH BACK-GRASP!

The back-grasp is made by each wrestler taking hold of his opponent round the body, so that his hands are nearly or quite together on the lumbar region of the vertebræ of the opponent.

RIGHT (LEFT) FOOT, FORWARD: MARCH!

Approaching, taking up the guard position and distance, as in the first lesson.

Fig. 56.



2. GRASP!—GUARD!

Done in the same way in the second lesson, only that now the back-grasp is executed uniformly by the respective opponents.

3. FACE ABOUT! MARCH! (as before.)

Fourth lesson. *Practice of the stride-grasp* (fig. 56).

1. WRESTLE WITH STRIDE-GRASP!

The stride-grasp is made by the pupil specified placing his forward arm and hand between the thighs of his opponent, and endeavoring to lift him from the ground.

RIGHT (LEFT) MARCH! (as in the previous lessons.)

## 2. NO 1 GRASP!—GUARD!

As the stride-grasp is always done by one person only, the pupil who executes the grasp must be specified. When the grasp from the same guard position has been several times repeated, the opponent removes at the order **THREE PACES BACKWARD!** the distance is again taken, and then follows—

## 3. NO. 2 GRASP!—GUARD!

On which No. 2 grasps. Then follows the change of the guard and the repetition of the grasp, first, of No. 1 and then of No. 2.

## 4. FACE ABOUT! MARCH!

Fifth lesson.

An exercise consisting of mutual stemming and pulling, with repetition of the previous lessons.

## 1. STEM WITH ARM-GRASP RIGHT (LEFT) FOOT FORWARD: MARCH!

As in the previous lessons.

## 2. GRASP!—STEM!

The opponents take hold of each other with the arm-grasp, and at the order, "*stem*," begin to thrust each other from the place by mutual straight stemming (with arms and feet). When this has lasted a few seconds, the order is—

## 3. HALT!—GUARD!

At "*halt*," the stemming ceases, but at "*stem*" it again begins. At "*guard*," the wrestlers let go, place themselves on guard position, and take the distance.

Then follows the change of the guard, and the stemming is resumed; the order is—

## 4. FACE ABOUT!—MARCH!

## 5. PULL WITH ARM-GRASP, RIGHT (OR LEFT) FOOT FORWARD: MARCH!

Approaching, etc.

## 6. GRASP!—PULL!

As in 2, with this difference, that the opponents now try to pull each other from the spot; the rest as in 3 and 4.

The stemming and pulling are combined with arm-grasp, because this exercise is used later under this form in the contra-wrestling; but it can be practiced also under other forms, as, for instance, the stemming can be done by the mutual placing of the hands on the shoulders forward also, and the pulling with the hands grasped.

In the following lessons the exercises are done as in the previous lessons, but the wrestling itself follows at an order; therefore the pupils of each section are to be placed at a little greater distance, so that, after the approaching, the wrestling pairs are about three paces from each other.

Sixth lesson. *Wrestling at the word of command.*



*a. With arm-grasp.*

1. WRESTLE WITH ARM-GRASP RIGHT (LEFT) FOOT FORWARD: MARCH!
2. GRASP!
3. WRESTLE!—HALT!

After "halt," follows (after a short pause) either the command "wrestle," or—

4. GUARD! and then—
5. GUARD CHANGE!—GRASP! WRESTLE! etc.
6. FACE ABOUT!—MARCH!

*b. With the grasp of the back.*

As in *a*, only done with the grasp of the back.

*c. With stride-grasp.*

As in *a*, only when GRASP! is ordered, the No. that has to execute the stride-grasp must be specified.

## CONTRA-WRESTLING.

THE contra-wrestling consists in this, that each wrestler tries to throw his opponent down, or to compel him to acknowledge himself vanquished. It is advisable in these exercises to allow only one pair, or at most two or three, to wrestle at once, partly for the sake of order and necessary superintendence, and partly that there may be alternate recreation for the single wrestling pairs. At the commencement, each pair of wrestlers should be as near as possible of the same height; afterward they should be of unequal height, so that even the shortest and the tallest should form one wrestling pair. Care must be taken that the struggle shall not be a vulgar street fight, but a real wrestling, the antagonists trying, by the strength and flexibility of their limbs, by pulling, stemming, jerking, pushing, heaving, bending sideways, pressing, and similar actions, to throw each other down, and to keep themselves firm on the ground. All unnecessary grasps, all pushing with the feet toward the limbs or body of the opponent, all pinching, scratching, tearing, must be avoided. If the teacher should observe any fault committed against the rules, he must instantly stop the fight by the order HALT!

First lesson. *Contra-wrestling, with the application of a previously-determined grasp.*

*a. CONTRA-WRESTLE WITH ARM-GRASP: MARCH!*

The opponents approach each other, and, without waiting for a

further order, they place themselves on guard at a distance, and it depends upon each of them to choose the moment of attack.

*b.* CONTRA-WRESTLE WITH BACK GRASP: MARCH!

Executed as in *a*, with the application of the grasp of the back, and it depends upon each of the wrestlers to make this grasp inside or outside of the arms of his opponent, or inside of one and outside of the other.

Second lesson. *Free contra-wrestling.*

CONTRA-WRESTLE: MARCH!

The opponents approach other without a further order, and begin the fight, each choosing the moment and the manner of attack (with the permitted grasp). During wrestling each pupil may pass to another method of attack, and he may try to liberate himself in order to make this new attack.

As a further exercise, a fight between several wrestlers may be ordered, so that each may choose his opponent in the opposite party; a mutual assistance may take place, etc.; but to prevent this exercise becoming a common street fight, not more than from six to eight wrestlers should be formed, into two parties of from three to four each.

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### ÆSTHETIC GYMNASTICS.

UNDER this head will be mentioned only a few elementary exercises of the æsthetic gymnastics, although these consist entirely of free exercises, and therefore an explanation of this part of gymnastics is very incomplete when restricted only to the following paragraphs.

We must observe that the exercises of the æsthetic gymnastics in general, and these elementary exercises, are not done at the word of command, but the teacher, after having explained and even shown the exercise which is to be done, designates it only by a clear and intelligible expression, and by a second expression (for instance, PLACE!) he directs the action to be commenced.

If the exercises consist of several parts, they are to be distinguished by ONE, TWO, THREE, etc.

Instead of this counting of the parts and the directions to begin, the teacher may also give suitable hints by looks and gestures; thus, by the direction of his arm, or the quickness and manner of its motion, he may point out the exercise which is to be done.

The execution of the following elementary exercises is done by all

the pupils simultaneously and equally, so that each action is begun by all at the same moment, and is executed in the same time.

First lesson. *Foot positions.*

In all the following foot positions, the feet must be placed at a right angle to each other.

1. *Pace positions.*

At ONE, TO THE RIGHT FORWARD! TWO, RIGHT BACKWARD! THREE, LEFT FORWARD! FOUR, LEFT BACKWARD! FIVE, FUNDAMENTAL POSITION! The movements must be neither stiff nor heavy. An interval of the length of the foot should be strictly kept from heel to heel.

2. *Walk positions* (fig. 57).

Fig. 57.



ONE! Right foot is placed forward in a curve, with an easy and moderately quick swing, while the heel is raised forward in such a way that when set down it is one length of the foot distant from the toes of the left foot, which has remained still. The weight of the body is thus thrown on the forward foot, and the heel of the back foot is a little raised.

TWO! The right foot is brought in a curve, and with the heel raised so far backward that its toe is distant one length of the foot from the heel of the foot which remained fixed; then follows a sinking of the right heel, while the weight of the body is thrown on the same foot, and the heel of the anterior foot is a little raised.

THREE! From position *two*; the left foot is brought in a curve behind the right, in a similar manner as in *two*.

FOUR! The left foot in a curve before the right foot, and finally—

FIVE! The left foot in the fundamental position.

3. *Standing positions* (fig. 58).

Fig. 58.



ONE! The right foot is brought from the fundamental position in a short curve, in such a manner before the left that its heel touches the middle of the inner edge of the left foot.

TWO! The right foot in a curve behind the left, so that it touches the heel of the latter with its own middle part.

THREE! The left foot from position *two*, in a curve behind the right, so that it touches with its middle part the heel of the right.

FOUR! The left foot in a curve forward till it touches with its heel the middle of the inner edge of the right foot.

FIVE! The left foot in fundamental position.

In all standing positions the weight of the body is to be thrown on the foot which is placed forward.

Second lesson. *Head turning.*

1. *Turning of the head to the right and to the left.*

The head turns with the face to the specified side, first with the eyes in the same direction, and then with the eyes in the opposite direction.

2. *Turning of the head to the right upward, and to the left upward.*

The movement consists of turning and backward flexion of the head done simultaneously; the eyes following the movement.

3. *Turning of the head to the right downward, and to the left downward.*

The movement consists of turning and forward bending of the head; the eyes following.

Third lesson. *Hand twisting.*

Executed with the arms raised easily forward as high as the chest, first with one hand, then with both.

ONE! The arms are raised without straining, the hands horizontal (knuckles down).

TWO! The hands are turned knuckles up.

THREE! The hands are turned with the knuckles outward, and the thumbs upward.

FOUR! The hands are turned knuckles inward, and thumbs downward.

FIVE! Turn back the hands into the position *one*, and then bring down the arms into the fundamental position. All movements are well rounded, and the hands must not be kept stiff.

Fourth lesson. *Raising of the arms.*

ONE! Parallel forward at the height of the chest.

TWO! Parallel to the left at the height of the chest.

THREE! Parallel to the right at the height of the chest.

FOUR! Parallel upward at the height of the head.

FIVE! Diverging sideways at the height of the chest.

Six! The fundamental position.

The bringing of the arms from one position into another is done in flat curves; the arms are neither stretched firmly nor bent at an angle. The hands are gently and naturally arched or vaulted, and in the first-turn position. The eyes generally follow the direction of the arms; in *five*, they are directed straight forward.

The position of the feet, either the fundamental or the first-standing position.

We must observe that the elementary movements for the arms are not at all exhausted by these instances.

The arm movements form in the æsthetic gymnastics a very large field of exercises.

The movements of the trunk which belong to this division are the same as those mentioned in L., D, but they are modified in different ways, principally by compositions of the different directions of the movement.

We mention here a few combinations in which the trunk participates.

Fifth lesson. *Bows.*

*a. Bows on the spot.*

1. *In the first stand position.*

ONE! The upper part of the body bends gently forward, without twisting the shoulders; the knees stretched; the arms slightly bent, and hanging down a little in front; the hands slightly curved; the eyes directed first straight forward, and then, during the bow, downward. When the bow is finished, the upper part of the body is raised, and the eyes again directed forward.

TWO! The bow is done in a similar manner to the right, the body being turned a little in this direction (but only the eighth part of a circle). In the last moments of the turning the bow begins. As soon as the body is again raised, follows—

THREE! Turn and bow to the left, and when the body is again raised, return to the fundamental position, or second stand position.

2. *In the first walk position.*

ONE! While the right foot is being placed in the first walk position, in the last moments of this movement, the bow begins (straight forward) as in the stand position; but the knee of the anterior foot is a little bent, and only the right arm hangs down as before, while the other is slightly raised and the hand brought near the chest, or it may press easily against it. During the raising of the body, the forward foot is brought backward into the fundamental or second stand position.

*b. Bow with stepping forward.*

1. *With three paces forward.*

Begin with the left foot; walk forward three paces. As soon as the third pace is done, and consequently the left foot is in advance, instead of the fourth pace the right foot is drawn forward in a slight curve to the second stand position, and at the same moment the bow is performed, and is finished as soon as the right foot is fairly placed on the ground; then immediately this foot is brought back in a curve in the second stand or fundamental position, while the upper part of the body raises itself from the bow.

2. *With unlimited stepping.*

As in 1, only that the pupil walks forward from a farther distance, in a free and graceful walk.

Sixth lesson. *Arm and hand movements, with foot positions.*

1. *Pace positions, with arm raising* (figs. 59, 60).

Fig. 59.

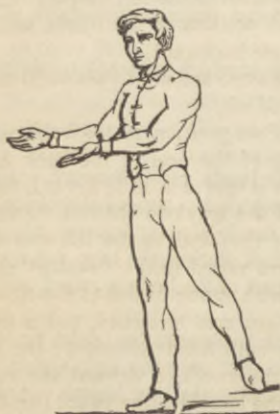


Fig. 60.



ONE! Place into the pace position to the right forward. While the right foot is put down, the heel of the left is raised and turned inward, so that the foot is directed a little outward. At the same time the weight of the body is thrown on the forward (right) foot, the arms are slightly raised, and brought into the first position of arm raising, the hands in the first position of the hand turning, but forming at the joint a small angle downward. The upper part of the body and the eyes are turned in the direction of the anterior foot.

Two! This action consists of two parts, viz., first return into the fundamental position, and, secondly, take the pace position to the right backward. The weight of the body is on the back (right) foot, and the heel of the forward (left) foot raised and turned inward (forward). The

arms are raised as before, but the hands are turned in the second position of the hand-turning, and at an angle directed a little backward (fig. 60).

THREE! and FOUR! are executed respectively as *one* and *two*, only the left foot makes here the movements.

Seventh lesson. *Other easy combinations.*

1. *Pass position to the half right*, with turning of the trunk to the right backward, and the arms parallel downward in the second hand-position. The head is turned with the trunk; face and eyes directed downward.

The same action in the pass position to the half left.

2. *Pass position to the half right*, with twisting of the trunk to the left forward, and turning of the head to the left upward; parallel raising

Fig. 61.



of the arms to the left upward in the second position of the hands, and at an angle backward.

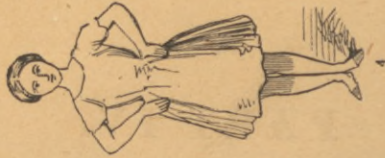
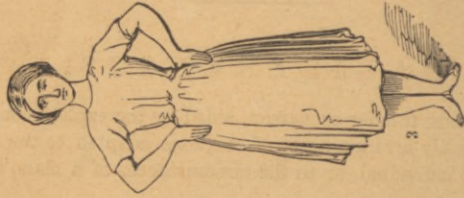
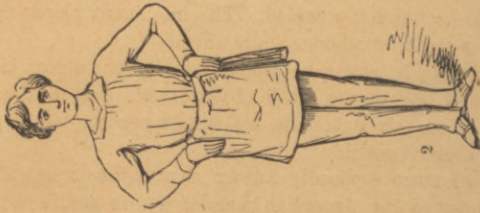
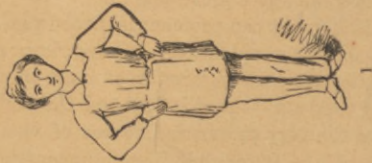
The same action in pass position to the half left.

3. *Pass position to the half right*, raising of the heel of the back foot, which is turned a little inward, turning of the trunk to the left forward, and of the head to the left upward; left arm raised in the "shelter" position, with strong flexion at the elbow; the right arm stretched, and a little back; both hands clenched; the left with the knuckles upward, the right with the knuckles downward (fig. 61).









FEET IN FIRST POSITION—HANDS AT REST.

## PART IV.

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### CALISTHENICS.

ANY ingenious teacher or person, aided by the explanations already given, can readily arrange a set of exercises adapted to the condition of almost any individual, or to the circumstances of a class, family, or school.

The following examples are, therefore, presented as specimens of calisthenic exercises which *may* be conveniently adopted, rather than as examples to be implicitly copied. The intelligent physiologist can easily suggest a hundred others equally valuable.

It should always, however, be recollected that the object in view is to give all parts and organs their proportionate degree of exercise; hence, in all of our arrangements, we should contemplate as great a variety of motions as possible.

The exercises more especially known as calisthenic are peculiarly adapted to those of our American females whose contracted chests, "waspish waists," and dyspeptic stomachs are the sad diagnostics of deficient exercise and imperfect breathing.

No observing physiologist can promenade Broadway, nor, probably, any other fashionable thoroughfare of an American city or village, without noticing the artificial *deformity* of most of the females he passes. Generally they are "caved in" around the region of digestion and respiration—at the very center and source of vitality—where, of all places, they should be round, full, plump, unconstrained, and well developed; and they are just to that extent insured a feeble frame and morbid tendency, with an absolutely sure passport to a premature grave.

If these unfortunate victims of disease, ignorance, folly, or fashion

would be restored to renewed vigor of constitution, with a promise of a reasonable length of days, and the capacity to propagate a healthy and virtuous, instead of a sickly and vicious race, they must at the same time recover symmetry and beauty of form and figure.

To accomplish this general result, notwithstanding the great benefit to be derived from such auxiliaries as diet, bathing, etc., calisthenic exercises ought never to be omitted. Indeed, the term is derived from two Greek words signifying *beauty* and *strength*.

The apparatus usually employed in these exercises consists of dumb-bells, backboard, clubs, wands or poles, triangles, and the elastic cord, weights, etc.

It is, however, better for the pupil not to resort to apparatus of any description until a proficiency is acquired in the various exercises which are performed without; hence we may conveniently distinguish calisthenic exercises into those which are performed without, and those which are performed with, apparatus.

### EXERCISES WITHOUT APPARATUS.

WHEN these exercises are performed in classes, the leader or teacher should arrange the pupils so that each will have room without hitting each other's hands, and give the word of command, to be repeated

for each movement, until all members of the class can perform it with the nicest precision and exactitude.

Fig. 1.



ATTENTION

#### *First Position*—“*Attention!*”

When this command is given, the pupil is to square the shoulders, place the heels slightly apart in line, the toes out to an angle of sixty degrees, the knees straight, the arms hanging easily by the side, and the hands open to the front. The chest must be slightly inclined forward, the abdomen moderately drawn in, the head erect, the eyes looking directly forward, and the

Fig. 2.



MILITARY POSITION.

weight of the body resting more on the fore part of the feet than on the heels (fig. 1).

The preceding is substantially the "*military position*," which brings the ear, shoulder, hip, knee, and ankle into a line, as seen in fig. 2.

**FIRST EXERCISE.**—"Chest Expansion!"

The object here is to expand the lungs and increase the flexibility of



all the muscles of the chest, and those of the abdominal and dorsal region which are concerned in respiration.

Take full, deep inspirations, retain the air in the lungs when fully inflated as long as possible, and then let the breath go out steadily and slowly; at the time beat the chest, abdomen, and back with the hands, gently in front, but smartly on the sides and back, as represented in figs. 3 and 4.

This exercise may be kept up during two to six respirations.



**CHEST EXPANSION.** This move, combined with local **CHEST EXPANSION.** gymnastics, is one of the best preventives of consumption.

**SECOND EXERCISE.**—"Chest Extension!"



This exercise comprehends several movements of the arms, all of which are intended to stretch the muscles, ligaments, etc., more particularly of the upper portion of the chest. The most important movements consist in holding the arms as nearly perpendicular to the body as possible, and then throwing the hands and arms backward a num-



ber of times with considerable force. It is useful for the pupils to count aloud with each backward motion, till the number of counts reaches twenty, thirty, or forty. Fig. 5 shows the commencing position, the hands being open and the palms together. When the word is given, the hands and arms are to be thrown violently backward, striking the backs of them together behind, if possible, as in fig. 6. Then, from the same commencing position, strike the elbows together behind, or endeavor so to do, as in fig. 7. These motions expand the chest in the line of the "collar" bone, flatten the shoulder-blades, and thus tend to cure the deformity of too "round shoulders," as well as enlarge the breathing capacity.

Females who have contracted the diameter of the chest by tight lacing will find this exercise particularly serviceable. I have had many patients whose *vital circumference* was increased three and four inches in as many months by these exercises, combined with other appropriate hygienic medication.

Fig. 7.



### THIRD EXERCISE.—"Arms Down!"

Fig. 8.



Place the arms as in the position of "attention" (fig. 1); then, at the word of command, throw them forcibly downward (the hand being closed meanwhile), as in fig. 8. The movement may be repeated from ten to twenty times, and if the pupil counts with each downward motion, the voice is also improved as well as the breathing.

Fig. 9.



### FOURTH EXERCISE.—"Hands to Breast!"

This exercise commences with the "arms down," as shown in the preceding figure, from which position they are brought forcibly up the breast, as in fig. 9, repeating the motion several times with counting.

### FIFTH EXERCISE.—"Arms Outward!"

Place the arms as in the preceding position, and, at the word of

command, throw them out laterally as far as possible, as in fig. 10. The counting may be done with the *outward motion*, which may be from ten to twenty times repeated.

SIXTH EXERCISE.—“Arms Upward!”

Place the arms as in the “hands to breast” position; then, at the word of command, throw the arms upward as far as possible, without raising the heels from the floor, as in fig. 11.

Fig. 10.



Fig. 11.



This movement may be repeated with counting, as in the preceding cases; and then all of these arm exercises, and others yet to be mentioned, may be made in rapid succession.

Fig. 13.

SEVENTH EXERCISE.—“Hands to Shoulders!”

At the word of command, the hands being in the *first position* (see “Attention!”), raise the hands and bring the points of the fingers in a line with, and pointing toward the shoulders, as in fig. 12.

Fig. 12.



The head should be kept erect, the shoulders well back, the elbows close to the side, and the body slightly inclined forward.

EIGHTH EXERCISE.—“Hands Perpendicularly!”

Place the hands in any of



the preceding positions; then, on the word being given, carry one hand and arm in front of the waist, a few inches from the body, and the other six inches above and over the head, and as far back as possible, as in fig. 13.

Then reverse the positions of the hands, counting at each change. Begin these motions very slowly, and, after a little practice, gradually increase in rapidity, and ultimately perform them as rapidly as possible.

#### NINTH EXERCISE.—“Arms Circularly!”

This movement stretches the shoulder and elbow-joint, and is performed by extending the arms forward at right angles with the body, the palms of the hands turned toward each other, then rotate the arm on the shoulder-joint, as in figs. 14 and 15.

Fig. 14.



Fig. 15.



Count one at each rotation, and turn the hands, during the movement, as far as possible both ways, so as to secure the rolling motion of the muscles of the arm and joints. After the movements have been performed several times in one direction, reverse it, and make as many motions in the opposite direction. Keep the palm of the hand down whenever the arm is raised.

The “elbow whirl” may be performed, as a variation of the above. Place the elbows on the hips, and then swing the forearms in a circle, as in fig. 16.

Pedestrians may perform these circular motions with excellent effect in strengthening feeble respiration and improving weak digestion, while walking up hill or on an uneven surface.



## TENTH EXERCISE.—“Lateral Body Swing!”

This movement consists in bending the body from side to side, the arms being extended, as in fig. 17. The movement should be performed very slowly at first, counting in a prolonged monotone to correspond with the bodily motion.

## ELEVENTH EXERCISE.—“Backward Incurvation!”

In this exercise the anterior part of the trunk of the body is extended to the utmost, while the spinal column is correspondingly flexed.

Fig. 18.

Fig. 16.



Fig. 17.



Place the closed hands firmly at the small of the back, then bend backward as far as possible, as in fig. 18. As the trunk is thrown backward, the head must be inclined moderately forward.

Fig. 19.



The counting should be done with the backward motion only. This movement should always be performed slowly.

## ELEVENTH EXERCISE.—“Forward Incurvation!”

After raising the arms and throwing the body moderately backward, throw the body forward (fig. 19). The knees are to be kept straight, and all the flexion done on the hips and vertebral joints.

## TWELFTH EXERCISE.—“First Foot Position: Sink!”

The “foot positions,” of which *five* are recognized by teachers as

important, are calculated to give strength and elasticity to the feet and legs, and, indirectly, ease, grace, and elegance to the whole carriage. They are also good preparatory exercises for walking or dancing.

The first position is shown in fig. 20; the heels are placed together,

Fig. 20.



and the toes turned out, so as to form a straight line. When the word of command, "Sink!" is given, the pupil bends the knees as much as possible without throwing the feet out of line. The bending may be repeated several times, and it is useful also to count.

On first commencing this exercise the pupil may not be able to throw the toes quite out to a straight line, and in this case they should be turned only so far as may be without rendering the body unsteady. A little practice will, however, soon enable almost any person to assume

the position with ease and comfort.

Fig. 21.



#### THIRTEENTH EXERCISE.—"Second Foot Position: Sink!"

Place the feet as in the preceding position; move one foot sidewise about its length (fig. 21), then bring the other foot to the heel of the advanced one, and bend the knees as before. This may be repeated

several times. Then reverse the feet and repeat the same movement an equal number of times.

Fig. 22.



#### FOURTEENTH EXERCISE.—"Third Foot Position: Sink!"

Place the feet as represented in the figure of the second foot position, then draw the heel of the right foot to the ankle of the left, resting it on the floor, as in fig. 22.

When the word "sink!" is pronounced, the knees are to be flexed as much as possible, and repeated, with counting, several times. Next change positions of the feet, and re-

Fig. 23.



peat the flexions the same number of times. The toes are to be kept well out, and the instep curved.

**FIFTEENTH EXERCISE.**—"Fourth Foot Position: Sink!"

Assume the third foot position, then move the right foot forward about its own length or a little more, keeping the toe back and the heel forward, as in fig. 23. At the word "sink!" the knees are to be bent as much as possible, as in the preceding positions. After repeating the flexions several times, change the feet and repeat the same number of times.

Fig. 24.



**SIXTEENTH EXERCISE.**—"Fifth Foot Position: Sink!"

Take the first foot position, draw the heel of the right foot so that it shall touch the toes of the left as nearly as possible, as in fig. 24; then bend the knees, as in the preceding positions. This position, and also the first, should be practiced much by those whose toes are turned too much inward.

When the pupils have become proficient in all of the five positions, they should perform them successively, first with one foot, then the other, several times, counting with each movement.

**SEVENTEENTH EXERCISE.**—"Front Leg Angle!"

Place the hands on the hips, then raise them, and extend the right

Fig. 25.



Fig. 26.



foot forward, as nearly at right angles with the body as possible, as in fig. 25, and then the left, and so alternating ten or twelve times.

Counting should be performed in this and the three succeeding exercises.

**EIGHTEENTH EXERCISE.**—"Side Leg Angle!"

Place the hands on the hips as before, then raise the right and left leg alternately, as in fig. 26, repeating ten or twelve times.

**NINETEENTH EXERCISE.**—"Back Leg Angle!"

With the hands on the hips, raise the right and left knee alternately as high as the hips, as in fig. 27, and then throw it backward as far as possible, repeating ten or twelve times.

Fig. 27.



**NINETEENTH EXERCISE.**—"Cross Legs!"

With the hands on the hips, throw the right leg across the left in front, as in fig. 28, then across behind, and so alternating ten or twelve times. Next

stand on the right leg and repeat the motions with the left.

Some prefer counting one to each front movement, and two to the backward motion, in this exercise.

Fig. 28.



### CALISTHENICS WITH APPARATUS.

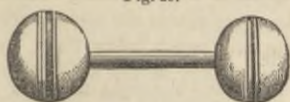
WHEN the pupils have become sufficiently familiar with the exercises already explained, the muscles concerned in the various movements may be still more invigorated by the use of such apparatus as calls them into still more forcible action.

The most convenient, and, for general purposes, the most important, appliances for this purpose are the *weights* or *dumb-bells*.

These are made of iron or lead, and kept in the hardware stores of

various sizes. But a better contrivance are those constructed of a wooden staff, with two hemispheres at each end, opening and closing

Fig. 29.



with screws, so that they may be *loaded* to suit any person, adult, youth, or child. The plan is shown in fig. 29.

The dumb-bells, or any other convenient weight may be employed, while the pupil performs all the movements given in the calisthenic department of this work.

At first, however, it is advisable to practice on those which act more particularly on the chest and upper extremities and the muscles of locomotion, as represented in figs. 30 and 31.

Fig. 30.



Fig. 31.



When the weights are extended horizontally, the pupil may march to counting or music; and in the balancing attitude the pupils can keep time to music or counting by changing the weights up and down, or a word of command, "*right up! left up!*" may be given by the teacher.

Carrying weights on the head is an excellent method of strengthening the spinal column, and giving a perfect and graceful balance to all the muscles of locomotion. A sand-bag or any other convenient contrivance will answer. The pupil may practice walking, and then skipping and dancing, with weights on the head.

In allusion to the practice of the people in some of the Eastern nations, a late writer remarks:

"PEASANT WOMEN OF THE EAST.—Nothing contributes so much to the uprightness and elegance of figure so remarkable in the peasant women of Syria and Egypt as the common practice of carrying water

on their heads. So far from giving a curve to the spine, depressing the neck, or in any wise shortening the trunk of the body, the resistance of the muscles seems to increase in proportion to the pressure, and much elasticity of action is the result. In some places the springs are often a quarter of a mile from the villages, and much below them, so as to render the ascent very toilsome; yet every day in the week may be seen girls and women carrying these jars, containing not less than fifteen quarts of water, on their heads, with a natural pace not exceeded by the studied walk of a stage-dancer. A favorite manner with them, when seen by men and when wishing to be coquettish, is to place both thumbs through the jar handles, which has a very statue-like appearance. When unobserved, they generally tuck up their gowns all round, showing their pantaloons. If in their best clothes, they are seen with silver bracelets instead of glass ones, and with similar rings around their ankles; with a silver relic case hanging at their bosom, with long sleeves to their gowns, and over it, if in winter, a cloth vest; if in summer, one of bombazine, with ear-rings, and with a species of ornament not known in England or France, silver rims of mail or of coins which take in the oval of the face from the temples to the chin, and have a very pretty effect. The girdles are fastened by two silver bosses as large as the bottom of a tumbler, and they wear on their feet a pair of yellow slippers."

For invalids who have weak backs and are troubled with shortness of breath, the practice of carrying weights on the head may be alternated with that of perfect repose in the horizontal position. Lie down on the floor, or on a hard mattress, flat on the back, with the arms extended, and the feet sufficiently apart to afford the utmost quietude of the muscular system.

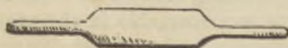
And this position may be advantageously alternated with lying on the belly, the face raised by the backs of the hands placed under the forehead. Each position may be maintained from one to five minutes.

Playing "graces," and ball, and tossing weights are very pleasant variations of exercises.

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### BACKBOARD EXERCISES.

Fig. 32.



THE *long backboard* is represented in fig. 32. The length varies from three and a half to six feet; the flat

part should reach across the back part of the shoulders, and the handles be long enough to hold for the hands to grasp easily when the arms are extended. In some cases of deformity and spinal incurvations they are made short and broad, and fastened to the back and shoulders, and again around the waist, with straps.

The following are the most important of the *longboard* exercises:

Fig. 33.



The pupil is first to take the long backboard by the handle, with the left hand, placing the right hand on its top, while the other end rests on the floor, as in fig. 33.

When the word "attention!" is given, the heels are to be placed in line, and the backboard is to be brought in front, as in fig. 34.

The arms are to be extended as far as possible, with the backs of the hands in front.

Fig. 34.



The word of command may then be "ascend!" when the backboard

Fig. 35.



is to be slowly raised to a horizontal position over the head, as in fig. 35. The body is to be kept perfectly erect, and resting rather more on the fore part of the feet than on the heels.

The word may next be "descend!" at which the backboard is to be brought down gradually across the back part of the shoulders, still keeping the same position, as in fig. 36.

These positions may be repeated and alternated at pleasure, when the command "steady!" may be given, at which the position of *attention* is to be taken by the pupils.

The club practice, as explained in a former part of this work, may be pleasantly alternated with the backboard exercises.

Fig. 36.



## EXERCISES WITH THE TRIANGLE.

THE triangle is a round, smooth bar of wood, attached to a cord at each end, as in fig. 37. The cord, uniting above, is passed over a pulley, so that it may be raised or lowered at pleasure.

The following directions for practice, copied from "Fitzgerald's Exhibition Speaker and Gymnastic Book," are the best I have seen:

"FIRST PRACTICE. *One.* The bar being lowered to a little above the knees, the pupil should be requested to grasp the bar firmly with both hands, the backs of the hands being uppermost, the arms straight, and the body erect.

"*Two.* The arms are to be gradually bent, and the bar raised until it is about breast high; then the pupil should incline the body forward, and step round upon the toes, gradually increasing the speed until a tolerable velocity is acquired, when she must stop herself by throwing the body backward, as in fig. 38, and stepping shorter.

"*Three.* Repeat the last exercise, but incline the body backward, instead of forward, at starting.

"SECOND PRACTICE.—The triangle being raised to the same height as the pupil's head, the bar is to be grasped with both hands, near to the cord, the back of the hands being to the rear, and the thumbs inside. The heels are to be brought in a line and closed, the knees straight, the toes turned out at an angle of sixty degrees, and the head erect.

"*One.* Raise the left heel until the leg is parallel to the floor, both knees in a line, and the sole of the left foot perpendicular, and looking backward.

Fig. 37.

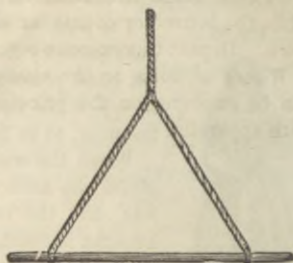


Fig. 38.



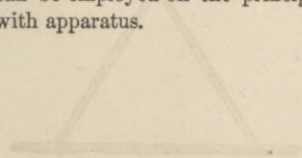


"*Two.* Reverse the last exercise, by raising the right foot instead of the left.

"Repeat the exercise from *two* to *one*, and from *one* to *two*, several times before commencing three, and each time remain in either position for a minute or more.

"*Three.* Raise both heels off the ground, and remain on the toes, while the instructor counts ten slowly; then bring the heels *gradually down*. Repeat this exercise several times for ten minutes."

*Wands or poles*, or the elastic cord, of more modern introduction, can be employed on the principles which regulate the other exercises with apparatus.



The figure shows the light rays as they pass through the prism. The incident ray is shown as a straight line entering the prism from the left. The refracted ray is shown as a line bending towards the normal at the point of incidence. The emergent ray is shown as a line bending away from the normal at the point of emergence. The angle of incidence is labeled as  $i$ , the angle of refraction as  $r$ , and the angle of emergence as  $e$ . The angle of deviation is labeled as  $d$ .

1. To show that the angle of deviation is equal to the angle of incidence minus the angle of refraction plus the angle of emergence.

2. To show that the angle of deviation is independent of the angle of incidence.

3. To show that the angle of deviation is independent of the angle of emergence.

4. To show that the angle of deviation is independent of the angle of refraction.

5. To show that the angle of deviation is independent of the angle of incidence and the angle of emergence.





POSITIONS IN PUBLIC SPEAKING.

## PART V.

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### VOCAL GYMNASTICS.

ALL persons who are not, yet would be, good speakers, readers, or singers, should practice vocal gymnastics. These exercises, when correctly performed, not only give strength, tone, purity, and flexibility to the voice, but are very conducive to general health also.

Very few public speakers are ever injured by the mere amount or degree of vocal efforts; but many, very many, are injured by an erroneous and unphysiological method of exerting the respiratory organs in the acts of speaking, reading, and singing.

Any person can exercise the voice with a power exactly proportioned, other circumstances being equal, to the number of muscles brought into equal and harmonious action.

It is not the *loud* so much as the *clear* voice that is heard at a great distance. Those who make the greatest effort in the act of speaking, and those who almost stun us with a loud, harsh, explosive noise, are never well heard in a large assembly, nor are they ever capable of well sustaining a very prolonged speech, while many persons, with seemingly very little exertion comparatively, will be heard at a much greater distance, and will make a whisper audible to every person in a large crowd, even amid a great amount of noise and confusion on the part of the audience. All this is done simply by using the vocal apparatus to the best advantage.

Hoarseness, bronchitis, "throat ail," "clergyman's sore throat," etc., which so frequently afflict and disable public speakers, are, in nearly every case, the consequences of constipating food, overloaded stomachs, or an improper method of using the vocal organs.

Sometimes all of these causes co-operate, and in many cases the latter cause alone ruins the voice and destroys the health.

I have in several instances been instrumental in restoring clergymen whose voices had so failed as to render preaching impossible, by calling their attention to the process of *natural breathing*, and directing them to apply such exercises and manipulations as would call all the muscles concerned into vigorous action.

It is most unfortunate that so large a proportion of the children of our primary schools, and also the youth in our select and boarding-house schools, are vitiated in their educational exercises and habits. Very few teachers, so far as my observation extends, have any method for the development and cultivation of the elocutionary powers of their pupils, beyond a mere routine of mechanical rules; and fewer still are sufficiently acquainted with the physiology of breathing or the philosophy of voice and speech, to keep their scholars from acquiring false and unnatural habits, which it sometimes requires years of patient and persevering training to overcome.

For these reasons Vocal Gymnastics seem to be among the desiderata in this age of perversions.

Although great improvements in our whole mode of common school education, so far as the principles of physiology and the rules of health are concerned, have been introduced within a few years, still a truly physiological manner of teaching elocution is nowhere, to my knowledge, fully recognized.

The following remarks on the subject of good reading, by that admirable teacher and genuine philanthropist, Hon. Horace Mann, afford food for profitable reflection:

“The idea which came down to me from our ancestors, and which has generally prevailed until within a few years, was, that Common District Schools are places where the mass of the children may learn to read, to write, and to cipher.

“In regard to the first of these studies—Reading—how imperfect was the instruction given! Good reading may be considered under three heads—the *mechanical*, or the ability to speak the names of words on seeing them; the *intellectual*, or a comprehension of an author's ideas; and the *rhetorical*, or the power of giving, by the tones and inflections of the voice and other natural language, an appropriate expression to feeling. Now most men, whose common school education closed twenty or twenty-five years ago, will bear me out in saying that the mechanical part of reading was the only branch of this accomplishment which, in the great majority of our schools, was then attended

to. The intellectual part, which consists in seeing with the mind's eye, and whose subject, broad, ample, unshadowed, just as the author saw it, was mainly neglected. Consider what a wonderful, what an almost magical boon a writer of great genius confers upon us when we read him intelligently. As he proceeds from point to point in his argument or narrative, we seem to be taken up by him, and carried from hill-top to hill-top, where, through an atmosphere of light, we survey a glorious region of thought, looking freely, far and wide, above and below, and gazing in admiration upon all the beauty and grandeur of the scene. But if we read the same author unintelligently, not one of the splendors he would reveal to us is pictured upon the eye. All is blank. The black and white pages of the book are, to our vision, the outside of the universe in that direction. I never attended any but a common school until I was sixteen years of age, and up to that time I had never heard a question asked, either by teacher or scholar, respecting the meaning of a word or sentence in a reading lesson. In spelling, when words were addressed singly to the eye or ear, we uttered a single mechanical sound; and in reading, when the words came in a row, the sounds followed in a row; but it was the work of the organs of speech only—the reflecting and imaginative powers being all the while as stagnant as the Dead Sea. It was the noise of the machinery thrown out of gear, and, of course, performing no work, though it should run on forever. The exercise had no more significancy than the chattering of magpies or the cawing of ravens; for it was no part of the school instruction of those days to illustrate and exemplify the power and copiousness of the English language, and, out of its flexible and bright-colored words, to make wings on which the mind could go abroad, through height and depth and distance, exploring and circumnavigating worlds.

“Nor was our instruction any better in regard to the rhetorical part of reading, which consists in such a compass of voice and inflection of tone as tend to reproduce the feelings of the speaker in the minds of the hearers. There is this difference between the intellectual and the rhetorical part of reading: the intellectual refers to our own ability to perceive and understand ideas, arguments, conclusions; the rhetorical refers to the power of exciting in others, by our own enunciation and manner of delivery, the sentiments and emotions which we feel, or which were felt by the author in whose place we stand.

“Some men have possessed such power, and some men now possess it in such perfection, that when they rise to address a concourse of people—the more numerous the concourse, the better for their purpose—they forthwith migrate, as it were, into the bodies of the whole mul-

itude before them; they dwell, like a spirit, within the spirits of hearers, controlling every emotion and resolve, conjuring up before their minds whatever visions they please, making all imaginations seem substance or reality—rousing, flaming, subduing, so that, if they cry War! every hearer becomes valiant and hot as Mars; but if they cry Peace! the fiercest grow gentle and merciful as a loving child. This is a great art; and when the orator is wise and good, and the audience intelligent, there is no danger, but a delicious illusion and luxury in its employment. Who has not gone beyond the delight, and speculated upon the phenomenon itself, when he has seen a master of the art of music place himself before a musical instrument, and soon, as with nimble fingers he touches the strings, which but a moment before lay voiceless and dead, they pour out living ecstatic harmonies, as though some celestial spirit had fallen asleep amid the chords, but, suddenly awakening, was celebrating its return to life by a song of its native elysium. When such music ceases, it seems hardly a figure of speech to say 'the angel has flown.' But what is this compared with that more potent and more exquisite instrument, the well-trained voice? When Demosthenes or Patrick Henry pealed such a war-cry that all the people, wherever its echoes rang, sprang to their arms, and every peaceful citizen, as he listened, felt the warrior growing big within him, and taking command of all his faculties, what instrument or medium was there, by which the soul of the orator was transferred into the souls of his hearers, but his voice? Yet, while their bodies stood around, as silent and motionless as marble statuary, there raged within their bosoms a turbulence and whirlwind boiling fiercer than if ocean and *Ætna* had embraced. And so, to a great extent, it is even now, when what they uttered is fittingly read. We call it magic, enchantment, sorcery, and so forth; but there is no more magic in it than in balancing an egg on the smaller end—each being equally easy when we have learned how to do it.

"None, however, of the beauties of rhetorical reading can be attained unless the intellectual part is mastered. The mechanical reader is a mere grinder of words. If he reads without any attempt at expression, it is mere see-saw mill-clackery; if he attempts expression, he is sure to mistake its place, and his flourishes become ridiculous rant and extravagance."



GENERAL EXERCISES TO IMPROVE THE RESPIRATION  
AND ARTICULATION.

THE first essential to good reading or speaking is to have perfect command of the breath; in other words, to use all of the expired air to the very best advantage. The following "practical hints" will enable the learner to work out this problem for himself:

1. Read or declaim in a *loud whisper*. This is one of the most fatiguing of the vocal exercises, yet conduces, when judiciously practiced, to impart to the voice a great, and sometimes wonderful mellowness, as well as vigor. Commence the exercise moderately, and gradually increase the exertion and length of time, always ceasing the effort when it becomes really painful.

2. To give still greater flexibility and variety of tone to the voice, the student should read or declaim aloud, "in a low, strong key, passages which require a firm and dignified enunciation, and gradually proceed to the most spirited and impassioned extracts. When the high tones are feeble, those passages should be practiced on which high tones are required, and *vice versa*, always taxing the voice slightly beyond its powers."

3. Guard against the common fault of trying to speak with the teeth nearly closed. Some persons talk and read with a slight motion of the lips, but scarcely any of the jaws. Of course they must appear very awkward, and their speech be very indistinct. Some of the most agreeable sounds of our language can not be pronounced at all without the mouth being freely opened.

This habit may be readily corrected by reciting for ten or fifteen minutes two or three times a day, with a *gag* placed vertically between the teeth. The *gag* may be made of card-board or a thin piece of wood. Commence with one about half an inch in width, and once a week increase it a quarter of an inch, until it becomes a full inch and a half wide.

4. As one of the chief beauties of English pronunciation consists in the accurate articulation of unaccented syllables, great care should be taken in all vocal efforts to enunciate every syllable clearly and distinctly. Every letter, syllable, and word, so far as precise utterance is concerned, is to be regarded as of equal importance. Letters should always have their proper sound, and syllables should never be slurred over nor blended together.

The following examples will serve to illustrate this point; Thus, *first* is often mispronounced *fast*; *truth*, *trufe*; *for-est*, *for-ust*; *vic-tim*,

*vic-tum*; *mer-cy*, *mur-cy*; *in-sists*, *in-sis*; *con-gress*, *cong-us*; *pos-sible*, *pos-u-bul*; *ex-cel-lent*, *ex-ur-lunt*; *con-se-quence*, *con-sur-quince*; *in-tel-lect*, *in-ter-lec*; *dif-fi-cul-ty*, *dif-e-kil-ty*; *par-tic-u-lar*, *pe-tic-lar*; *per-pet-u-al*, *per-pet-ur-al*; *in-di-vis-a-ble*, *in-dur-vis-ur-ble*; *sat-is-fac-to-ri-ly*, *sat-us-fac-tur-ly*; *cir-cum-stan-ti-al-i-ty*, *suck-um-stan-ti-al-ur-ty*, etc.

Excellency in delivery is incompatible with carelessness in pronunciation.

As the unaccented syllables in long words are most apt to be misenunciated, it is a good practice to exercise the voice frequently in the distinct articulation of such words and phrases as, disingenuousness, transubstantiation, perpendicularity, Michillimackinack, Passamaquoddy, incontestibility, indemnification, the Straits of Gibraltar, Scylla and Charybdis, the Islands of Revillagigedo, squirrel on a rail-fence, can't you catch him? the generality of mankind in general are the generality of mankind in general, Theophilus Thistle the successful thistlesifter, etc.

Prof. Zuchos gives the following excellent hints for securing the perfect command of the whole respiratory apparatus, so essential to the proper expression of the deeper emotions :

"FULL BREATHING.—Stand in an erect position, with the arms akimbo, the hands resting on the hips: slowly draw the breath until the chest is fully expanded; emit it with the utmost slowness.

"AUDIBLE BREATHING.—Draw in the breath as in full breathing, and expire it audibly, as in the prolonged sound of the letter K.

"FORCIBLE BREATHING.—Fill the lungs, and then let out the breath suddenly and forcibly, in the manner of an abrupt and whispered cough.

"SIGHING.—Fill suddenly the lungs with a full breath, and emit as quickly as possible.

"GASPING.—With a convulsive effort inflate the lungs; then send forth the breath more gently.

"PANTING.—Breathe quickly and violently, making the emission of breath loud and forcible."

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#### ANALYSIS OF THE ELEMENTARY SOUNDS.

THERE are forty-four sounds of the English language, represented by the twenty-six letters of the alphabet and their combinations, as in the following table:

1. { a, long, as in ale, pale, national, plaintiff, amen.
2. { a, grave, or Italian, as in ah, far, papa, mamma.
3. { a, broad, or German, as in all, draw, daughter, fraught.
4. { a, short, as in at, hat, attack, malefactor.
5. b, name sound, as in be, bite, bright, tub, hubbub
6. { c, sound of s, as in cent, city, cornice, precipice.
7. { c, sound of k, as in cap, come, occult, ecliptic.
8. { c, sound of z, as in suffice, discern, sacrifice.
9. { c, sound of sh, as in ocean, Phocion, Cappadocia.
10. { d, name sound, as in ride, did, daddy, double-headed.
11. { d, sound of t; as in faced, watched, dipped, escaped.
12. { e, long, as in eel, peel, creed, reveal, precede.
13. { e, short, as in ell, expel, ever-extended.
14. { f, name sound, as in if, rife, fife, faithful, tariff.
15. { f, sound of v, as in of, hereof, whereof, thereof.
16. { g, soft or name sound, as in gem, ginseng, logical.
17. { g, hard, as in go, give, gig, Brobdignag.
18. { g, sound of gh, as in rouge, protege, mirage.
19. h, name sound, as in hale, high, Hannah.
20. { i, long, as in isle, lilac, oblige, iodine.
21. { i, short, as in in, pin, king, distinctive.
22. l, name sound, as in lo, lily, dalliance, lullaby.
23. m, name sound, as in map, mummy, amalgamate.
24. { n, name sound, as in nine, ninny, nobleman, manikin.
25. { n, sound of ng, as in bank, ingot, congress, angular.
26. { o, long, as in old, osier, trophy, sofa, atrocious.
27. { o, close, as in ooze, douceur, accoutre, troubadour.
28. { o, short, as in on, combat, obelisk, holyday.
29. p, name sound, as in pill, pippin, panter, platter.
30. { r, smooth, as in war, afar, tartar, murderer.
31. { r, trilled, as in rough, railroad, recreation.
32. { u, long, as in mute, astute, educate, judicature.
33. { u, short, as in up, mum, ultra, numbskull.
34. { u, full, as in pull, cruel, Prussian, Brutus.
35. w, name sound, as in woo, bewail, wigwam, wormwood.
36. { x, name sound, as in axe, coxcomb, luxury, example.
37. { x, sound of gz, as in exist, exhibit, exuberant.
38. y, name sound, as in ye, yoke, yewyaw, yesterday.
39. ch, name sound, as in charm, church, chickering, Chimborazo.
40. { th, aspirate, as in thin, think, thankless, prothonotary.
41. { th, vocal, as in than, that, beneath, withhold, wherewithal.
42. wh, name sound, as in what, wherefore, whirligig, whimpering

43. oi or oy, diphthongs, or digraphs, as oil, boy, recoil, employ.

44. ou or ow, diphthongs or digraphs, as in our, bow, gouty, trowel.

The student should master all of these sounds, and practice on them until he can repeat them with facility backward or forward; after which he may, with advantage, exercise on the different sounds or groups of sounds, with the view of developing the power of particular portions of the vocal and respiratory apparatus.

### EXERCISES ON THE VOWEL SOUNDS.

THESE exercises are best adapted to calling into action more especially the lower portion of the respiratory apparatus, that is to say, the abdominal and dorsal muscles. They also give increased flexibility and precision to the articulating muscles situated in the larynx, and, at the same time, serve to increase the volume and depth of the voice.

The vowel sounds are sixteen in number, and may be arranged alphabetically, thus:

1. a (long). *James made straight to a cane-brake.*
2. a (grave). *Alms and psalms my mamma demands.*
3. a (broad). *All were appalled when Raleigh bawled.*
4. a (short). *At last and after that attack.*
5. e (long). *Evil eagles shrieked on edile's heath.*
6. e (short). *Excellence depends on exemplary ends.*
7. i (long). *Isaac wisely tries to oblige his eyes.*
8. i (short). *His distinctive sin is in drinking gin.*
9. o (long). *Old ocean roars and overflows.*
10. o (close). *Gourmands and troubadours with boots and shoes.*
11. o (short). *George forgot the knowledge of plot.*
12. u (long). *Curious connoisseurs of cucumber juice.*
13. u (short). *Courteous husbands utter upright words.*
14. u (full). *Faithful Brutus was not a Prussian.*
15. (oi or oy). *The oyster boy adroitly pitches quoits.*
16. (ow or ou). *A drowning mouse swam round a howling owl.*

The vowel sounds should be repeated forward and backward, until they can all be pronounced fifteen or twenty times or more, with a single expiration. The student may then proceed to the practice of declaiming or reading by the vowel sounds alone, that is, by enunciating

all the vowel sounds, and omitting all the consonant sounds. Nothing can better conduce to rapidity of pronunciation and distinctness of utterance than this exercise.

*Speak* the speech, I pray you, as *I* pronounced it to you; *trippingly*  
 e e e , i a u, a i o ou i o u; i i i  
 on the tongue. But if you *mouth* it, as *many* of our players do, I had  
 o e u. u i u ou i, a a i o ou a e o, i a  
 as lief the town-crier had spoke my lines. And do not saw the *air* too  
 a e e ou i e a o i i . a o o a e a o  
 much with your *hand*; but use all *gently*; for in the very *torrent*,  
 u i u a ; u u a e i; o i e e i o e ,  
*tempest*, and, as I may say, *WHIRLWIND* of your passion, you must  
 e e , a , a i a a , i i o u a u , u u  
 acquire and beget a *temperance* that may give it *smoothness*. Oh! it  
 s i a e e a e e a a a i i o e . o i  
 offends me to the *soul* to hear a *robustious periwig*-pated fellow, tear a  
 o e e o e o o e a o u i u e i i a e e o , a a  
 passion to *tatters*, to very *rags*, to split the ears of the *groundlings*.  
 a u o a e , o e i a , o i e e o e o i .

Practicing on the short vowels above will serve to vary the exercises advantageously. They should be repeated forward and backward with as much rapidity as possible, without rendering either sound indistinct.

Thus, a e i o u—u o i e a.

Another very useful exercise for the vocal organs, while it cultivates also the phrenological organs of weight, time, and tune, is the repetition of the vowel sounds, so that the first and each alternate sound shall be accented, and each accented sound dwelt upon as long as two unaccented.

A (as in ale)	a a a a a a a a.
A (as in ah)	a a a a a a a a.
A (as in all)	a a a a a a a a.
A (as in at)	a a a a a a a a.
E (as in eel)	e e e e e e e e.
E (as in ell)	e e e e e e e e.
I (as in isle)	i i i i i i i i.
I (as in ill)	i i i i i i i i.
O (as in old)	o o o o o o o o.
O (as in move)	o o o o o o o o.
O (as in ou)	o o o o o o o o.
U (as in use)	u u u u u u u u.
U (as in ut)	u u u u u u u u.
U (as in pull)	u u u u u u u u.

*Oi* or *Oy* (oil, boy) oi oi oy oi oi oy oi oi oy.  
*Ou* or *Ow* (thou, how) ou ou ow ou ou ow ou ou ow.

The above exercise is admirably adapted for dyspeptics and other invalids with weak lungs, and especially those who are easily fatigued by vocal efforts. The voluntary exertion should be very gentle at first, and gradually increased as the condition of the respiratory apparatus improves. Consumptives would profit much by exercising in this way for a few minutes at a time, in the open air, several times a day.

Singing may be practiced on the vowel sounds in the same manner as reading, and is very serviceable to those who have an inability to "turn the tune."

Friends of freedom, swell the song;  
 e o e u, e e o ;  
 Young and old the strain prolong;  
 u a o e a o o ;  
 Make the temp'rance army strong;  
 a e e a a i o ;  
 And on to victory.  
 a o o i o i.  
 Raise the cry in every spot;  
 a e i i e i o ;  
 Touch not, taste not, handle not;  
 u o, a o, a e o ;  
 Who would be a drunken sot;  
 o o e a u e o ;  
 The worst of miseries.  
 e u o i e i .

### EXERCISES ON THE CONSONANT SOUNDS.

THERE are twenty-eight consonant sounds in our language, seventeen of which are vocal and eleven aspirate.

The *vocal* consonants are, b, as in bite; c, as in discern; d, as in dome; f, as in thereof; g, as in gem; g, as in go; g, as in menagerie; l, as in line; m, as in manna; n, as in not; n, as in clank; r, as in jar; r, as in bright; w, as in twist; x, as in exile; y, as in youth; th, as in thee.

The *aspirates* are, c, as in cent; c, as in cap; c, as in gracious; d, as in embraced; f, as in fit; h, as in hand; p, as in pop; x, as in extant; ch, as in chance; th, as in thin; wh, as in whine.

The consonant sounds are again divided into simple and compound.

There are thirteen simple consonant sounds, as follows: b, as in *bibber*; c, as in *circle*; c, as in *Connecticut*; d, as in *day*; d, as in *tripp'd*; f, as in *foe*; g, as in *give*; h, as in *hope*; l, as in *live*; m, as in *man*; n, as in *ton*; p, as in *poppy*; r, as in *more*.

Of the *compound* consonant sounds there are fifteen, as follows: c, sound of z, as in *suffice*; c, sound of sh, as in *judicial*; f, sound of v, as in *hereof*; g, soft, as in *ginger*; g, sound of zh, as in *rouge*; n, sound of ng, as in *frank*; r, rough or trilled, as in *crash*; w, name sound, as in *wool*; x, sound of ks, as in *excel*; x, sound of gz, as in *example*; y, name sound, as in *yam*; ch, sound of tch, as in *much*; th, soft or aspirate, as in *theme*; th, vocal, as in *thou*; wh, name sound, as in *when*.

The following lines are examples for exercising all the consonant sounds in the order heretofore named:

1. Bob beat Ben Brindle's bramble bushes.
2. Celibacy and society are useless without supper.
3. The croaking skeptic is a crude spectacle.
4. It sufficeth to discern the law for sacrificing.
5. Capacious ocean is rapacious, too.
6. Dukes, ducks, dogs, and dandies are depredators.
7. He scratched his blanched face, and escaped the vexed cook.
8. Fitful fools are sometimes frightful fellows.
9. Thereof, whereof, hereof, nephews, never.
10. Giant geniuses suggest genteel gingerbread.
11. Grandmother's giggling girls have goggles get.
12. Rouge and badinage on the charge-d'affaire.
13. He hies himself home with his hands and heart whole.
14. Lemuel listens to the lovely lady's lullaby.
15. Meek murmuring men are minimum manikins.
16. Ninety-nine noblemen denominated ninnies.
17. Sanguine knuckles jingle well-ringed fingers.
18. Peter Prickle Prandle picked three pecks of pears.
19. Our forefathers were Northerners, and farmers, too.
20. A ragged rascal ran around a rugged rock.
21. Wanton wags with woful words the winds bewail.
22. Anxiously expecting the explanation of the excellent axiom.
23. Existing in exile to be exonerated from examinations.
24. Mr. Yew, did you say what Mr. Yewyaw said you said?
25. Charmed with the chit-chat of the chubby children dear.
26. Thrilling thunder thriftless throngs the Frith of Forth.
27. They gather wreaths where truths are theirs and thine.
28. Whim-whams, whirligigs, an l whimpering whirlwinds.

## EXERCISES IN EMPHASIS.

**STRESS.**—The *first* three, and the *last* two verses, or volumes; not the *three* first and the *two* last; there can be only *one first* thing.

**QUANTITY.**—Roll on, thou dark and deep blue ocean—roll! Ten thousand fleets sweep over thee in vain. Hail!—universal Lord!

**EXPULSIVE STRESS.**—Aim at nothing higher until you can read and speak deliberately, clearly, distinctly, and with the appropriate emphasis.

**STRESS AND HIGHER PITCH.**—O man, tyrannic lord! how long—how long, shall prostrate nature groan beneath your rage!

**PROLONGATION AND MONOTONE.**—I appeal to you—O ye hills and groves of Alba, and your demolished altars! I call you to witness!—and thou—O holy Jupiter!

**RHETORICAL PAUSE.**—Will all great Neptune's ocean wash this blood—clean—from my hands? No, these, my hands, will rather the multitudinous sea incarnadine, making the green—one red.

**CHANGE OF THE SEAT OF ACCENT.**—Temperance and virtue raise men above themselves to angels; intemperance and vice sink them below themselves to the level of brutes.

## SHOUTING.

Charge! Chester! charge! on, Stanley, on;

Liberty, freedom—tyranny is dead;

Run hence; proclaim it in the streets—

The combat deepens! *ox, ye brave!*

## EXAMPLES OF INTONATIONS.

**RISEING.**—Are you desirous of becoming a good reader, speaker, and singer? Then learn and practice the principles herein taught and demonstrated.

**FALLING.**—A mind properly disciplined to submit to a small present evil, to obtain a greater distant good, will often reap victory from defeat and honor from repulse.

**RISEING AND FALLING.**—To whom the goblin, full of wrath, replied: Art thou traitor angel? Art thou he who first broke peace in heaven, and faith till then unbroken? Back to the punishment—false fugitive!

The man who is in the daily use of ardent spirits, if he does not become a drunkard, is in danger of losing his health and character.



## EXAMPLES OF WAVES OR CIRCUMFLEXES.

**RISING.**—The love of approbation—produces excellent effects on men of sense; a strong desire for praise in weak minds conduces to little else than vanity.

**FALLING.**—It is not prudent to trust your secrets to a man who can not keep his own. If you had made that affirmation, I might perhaps have believed it.

**COMBINATION.**—Mere hirelings and time-servers—are always opposed to improvements and originality: so are tyrants—to liberty and republicanism.

## CADENCE.

Ye nymphs of Solyma, begin the song;  
To heavenly themes sublimer strains belong.  
Such honors Ilion to her lover paid,  
And peaceful slept the mighty Hector's shade.

## EXAMPLES OF DYNAMICS.

**LOUD.**—With mighty crash the noise astounds; amid Carnarvon's mountains rages loud, the repercussive roar; and Thule bellows through her utmost isles.

**ROUGH.**—The tempest growls; the unconquerable lightning struggles through, ragged and fierce, and—raging, strikes the aggravating rocks.

## SOFT.

Soft roll your incense, herbs, and fruits, and flowers  
Ye softer floods, that lead the humid maze  
Along the vale. Breathe your still song  
Into the reaper's heart.

## SMOOTH.

Perfumes as of Eden flowed sweetly along,  
And a voice as of angels enchantingly sung.  
And the smooth stream in smoother numbers flowed.

**HARSH.**—On a sudden, open fly with impetuous recoil and jarring sound the infernal doors, and on their groaning hinges grate harsh thunder.

**FORCIBLE.**—Now storming fury rose, and clamor, such as heard in heaven, till now, was never; arms on armor clashing, brayed horrible discord.

HARMONIOUS.—As earth asleep, unconscious lies; effuse your mildest beams, ye constellations, while your angels strike, amid the spangled sky, the silver lyre.

STRONG.—Him the Almighty power hurled headlong, flaming from the ethereal skies, with hideous ruin and combustion down to bottomless perdition.

### SELECTIONS FOR GENERAL PRACTICE.

Give me that man

That is not *passion's* slave, and I will wear him  
In my *heart's* core, ay, my *heart* of hearts.

O marriage! marriage! what a *curse*—is *thine*,  
Where *hands*, alone, *consent*, and *hearts*—*abhor*,

*They*—never *fail*, who die

In a *good* cause; the *block* may soak their *gore*,  
Their *heads*—may sodden in the *sun*, their *limbs*,  
Be strung to *city* gates and *CASTLE* walls,  
But still, their *spirits*—walk abroad.

*Why* shrinks the soul

*Back* on *herself*, and startles at *destruction*?  
'Tis the *Divinity*—that stirs within us.

Far along,

From *peak* to *peak*, the rattling *crags* among,  
Leaps the live thunder; not from one *lone* cloud,  
But every *mountain*, now, hath found a *tongue*,  
And *Jura*—answers through her misty *shroud*,  
Back to the joyous *Alps*, who called aloud.

In the midst of all this peace, this innocence, and this tranquillity, this feast of the mind, this pure banquet of the heart—the *destroyer* comes—he comes to turn this *paradise*—into a hell.

All that I *am*, all that I *have*, and all that I *hope* for, I am now ready here to *stake* upon it; and I leave *off* as I began; sink or swim, live or die, *survive* or *perish*, I am for the declaration; it is my living sentiment, and, by the blessing of God, it shall be my *dying* sentiment—*independence now!* and *independence*—FOREVER!

O thou, that rollest above, round as the shield of my fathers! whence are thy beams, O sun! thy everlasting light? Thou comest forth in thy awful beauty; the moon, cold and pale, sinks in the western wave.

*Press on!* never despair; never be discouraged, however stormy the heavens, however dark the way, however great the difficulties, and repeated the failures—PRESS ON.

What constitutes the center of every home? Whither do our thoughts turn, when our feet are weary with wandering, and our hearts sick with disappointment? Where shall the truant and forgetful husband go—for sympathy, unalloyed and without design, but to the bosom of *her* who is ever ready, and waiting to share in his adversity or prosperity? And if there *be* a tribunal, where the sins and follies of a froward child—may hope for pardon and forgiveness, this side *heaven*, *that* tribunal—is the heart of a fond and devoted mother.

Ah! whence you glare  
That fires the arch of heaven? that dark red smoke,  
Blotting the silver moon? The stars are quenched  
In darkness, and the pure spangling snow  
Gleams faintly through the gloam that gathers round.  
Hark to that roar, whose swift and deafening peals,  
In countless echoes through the mountains ring,  
Startling pale midnight on her starry throne!  
Now swells the intermingling din; the Jar,  
Frequent and frightful, of the bursting bomb;  
The falling beam, the shriek, the groan, the shout,  
The ceaseless clang, and the rush of men  
Inebriate with rage!

This high, constitutional privilege I shall defend, and exercise, *within* this house, and *without* this house, and in all places; in time of *peace*, and in all *times*, living, I shall assert it; and, should I leave no *other* inheritance to my children, by the blessing of God, I will leave them the inheritance of free principles, and the example of a manly, independent, and constitutional defense of them.

It is vain, sir, to *extenuate* this matter. Gentlemen may cry—PEACE—PEACE—but there is NO peace. The war is already *begun*! The next gale that sweeps from the *north*, will bring to our ears the *clash* of resounding *arms*! Our *brethren* are *already* in the field! Why stand we here idle? What is it, that gentlemen *wish*? what would they *have*? Is *life—so—dear*, or *peace—so—sweet*, as to be *purchased*—at the price of *chains—and slavery*? *Forbid* it—Almighty God—I *know* not—what course *others* may take—but, as for *me*, give me LIBERTY—or *give* me—*death*.

*Hast* thou, in *feverish*, and unquiet *sleep*—  
Dreamt—that some *merciless* DEMON of the air,  
Raised thee *aloft*—and held thee by the *hair*,  
Over the *brow*—of a *down-looking* steep,  
*Gaping*, *below*, into a CHASM—so deep,  
That, by the utmost *straining* of thine eye,  
Thou canst *no resting-place* descry;  
Not e'en a *bush*—to *save* thee, should'st thou sweep  
A *down* the black *descent*; that *then*, the *hand*  
Suddenly *parted* thee, and *left* thee there,

*Holding*—but by *finger-tips*, the bare  
 And *jagged ridge* above, that seems as *sand*,  
 To *crumble* 'neath thy *touch*? If so, I deem  
 That thou hast had rather an *ugly dream*.

### EXERCISES TO EXHIBIT VARIOUS EMOTIONS.

ADMIRATION.—What a piece of work—is *man*! How *noble* in *reason*! How *infinite* in *faculties*! In *form* and *moving*, how *express* and *admirable*! In *action*, how like an *angel*! In *apprehension*, how like a *God*!

#### MIRTHFULNESS.

*Haste* thee, nymph, and *bring* with thee  
*Jest* and youthful *jollity*,  
*Quips*, and *cranks*, and wanton *wiles*,  
*Nods*, and *becks*, and wreathed *smiles*,  
 Such as hang on *Hebe's* cheek,  
 And love to live in *dimple* sleek;  
*Sport*, that wrinkled *Care* derides,  
 And *Laughter*, holding both his *sides*;  
 Come, and *trip* it as you *go*,  
 On the light *fantastic toe*,  
 And in thy *right hand*—lead with thee  
 The mountain-nymph, sweet *Liberty*.

#### PITY.

*Mercy*—is the becoming *smile* of *justice*;  
*This*—makes her *lovely*, as her *rigor*—*dreadful*;  
*Either*, *alone*, *defe tive*;—but, when *joined*,  
 Like *clay* and *water* in the potter's hands,  
 They *mingle influence*, and *together rise*,  
 In form, which *neither*, *separate*, could bestow.

#### RAPTURE.

What followed, was all *ecstasy* and *trances*:  
 Immortal *pleasures* round my *swimming eyes* did *dance*.

#### CHEERFULNESS.

Here—feel we but the *penalty* of *Adam*;  
 The *season's* difference; the *icy fang*,  
 And *churlish chiding* of the winter's wind;  
 Which, when it *bites* and *blows* upon my body,  
 Ev'n till I shrink with *cold*, I smile and say,  
 This is no *flattery*; these are *counselors*.

#### HOPE.

But thou, O *hope*! with eyes so fair,  
 What was thy *delightful measure*?  
 Still it *whispered*—promised *pleasure*,  
 And bade the *lovely scenes* at *distance* *hall*.

## HATRED.

*Poisons*—be their drink,  
*Gall*, worse than gall, the daintiest *meat* they taste  
 Their sweetest *shade*, a grove of *cypress* trees;  
 Their sweetest *prospects*, murdering *basilisks*;  
 Their *music*—frightful as the SERPENT'S hiss.

REVENGE.—If a *Jew* wrong a *Christian*, what is *his* humility? *Revenge*. If a *Christian* wrong a *Jew*, what should *his* sufferance be by *Christian* example? Why, REVENGE. The villainy *you* teach me, *I* will *execute*; and it shall go hard, but I will *better* the *instruction*.

## RAGE.

Since thou hast striven to make us break our vow,  
 Which, nor our nature, nor our place can bear,  
 We banish thee forever from our sight,  
 And our kingdom. If when three days are expired,  
 Thy hated trunk be found in our dominions,  
 That moment is thy last—Away!

## REPROACH.

Thou slave, thou wretch, thou coward!  
 Thou little valiant, great in villainy,  
 Thou ever strong upon the stronger side;  
 Thou fortune's champion, thou dost never fight  
 But when her humorous ladyship is by,  
 To teach thee safety.

## ANGER.

Hence, from my sight!  
 Thy father can not *bear* thee;  
 Fly with thy infamy to some dark cell,  
 Where, on the confines of eternal night,  
 Mourning, misfortunes, cares, and anguish dwell.

TERROR.—Oh! *mercy* on my soul! what is that? my old friend's *ghost*? They say none but *wicked* folks walk; I wish I were at the bottom of a coal-pit. See! how *long* and *pale* his face has grown since his death; he never was handsome; and death has improved him very much the wrong way. Pray do not come *near* me! I *wished* you well when you were *alive*; but I could *never* abide a *dead* man, *cheek* by *jowl* with me.

REMORSE.—O that men should put an enemy into their mouths to steal away their brains! that we should with joy, pleasure, revel, applause, transform ourselves to beasts: I will ask him for my place again: he shall tell me—I am a drunkard: had I as many mouths as Hydra, *such* an answer would stop them all.

## DESPAIR.

Oh! *torture* me no more, I will *confess*—  
*Alive* again? then *show* me where he *is*,

I'll give a *thousand* pounds to look upon him—  
 He hath no *eyes*, the dust hath blinded them—  
 Comb down his *hair*: look! look! it stands upright.  
 Like *lime*-twigs set to catch my winged *soul*!  
 Give me some *drink*, and bid the apothecary  
 Bring the strong *poison* that I bought of him.

## FEAR.

First, Fear—his hand its *skill* to try,  
 Amid the cords bewildered laid;  
 And *back* recoiled, he knew not *why*,  
 E'en at the sound *himself* had made.

WEeping.—I am *robbed*! I am ruined! O my *money*! my *guineas*!  
 my *support*! my *all* is gone! Oh! who has *robbed* me? *who* has got  
 my *money*? where is the *thief*? A *thousand* guineas of *gold*! hoo,  
 hoo, hoo, hoo!

## HORROR.

Hark!—the death-denouncing *trumpet*—sounds  
 The fatal *charge*, and *shouts* proclaim the *onset*.  
*Destruction*—*rushes* dreadful to the field,  
 And *bathes* itself in *blood*. Havoc let loose,  
 Now *undistinguished*—rages all around;  
 While *RUIN*, seated on her dreary *throne*,  
 Sees the plain strewed with *subjects truly* hers,  
*Breathless* and *cold*!

MADAME ROLAND'S DEFENSE.—Minds which have any claim to  
 greatness are capable of divesting themselves of selfish considerations;  
 they feel that they belong to the whole human race, and their views  
 are directed to posterity alone. I was the friend of men who have  
 been proscribed and immolated by delusion, and the hatred of jealous  
 mediocrity. It is necessary that I should perish in my turn, because it  
 is a rule with tyranny to sacrifice those whom it has grievously op-  
 pressed, and to annihilate the very witnesses of its misdeeds. I have  
 this *double claim* to death from your hands, and I *expect* it.

When innocence walks to the scaffold, at the command of error and  
 perversity, every step she takes is an advance toward glory. May I be  
 the last victim sacrificed to the furious spirit of party! I shall quit  
 with joy this unfortunate earth which swallows up the friends of vir-  
 tue, and drinks the blood of the just. Truth! Friendship! my Coun-  
 try! sacred objects, sentiments dear to my heart, accept my last sacri-  
 fice. My life was devoted to you, and you will render my death easy  
 and glorious.

METAPHYSICS.—*Professor*. What is a salt-box?

*Student*. It is a box made to contain salt.

*P*. How is it divided?

*S*. Into a salt-box, and a box of salt.

P. Very well!—show the distinction.

S. A salt-box may be where there is no salt; but salt is absolutely necessary to the existence of a box of salt.

P. Are not salt-boxes otherwise divided?

S. Yes: by a partition.

P. What is the use of this partition?

S. To separate the coarse salt from the fine.

P. How?—think a little.

S. To separate the fine salt from the coarse.

P. To be sure:—it is to separate the fine from the coarse; but are not salt-boxes otherwise distinguished?

S. Yes: into *possible*, *probable*, and *positive*.

P. Define these several kinds of salt-boxes.

S. A *possible* salt-box is a salt-box yet unsold in the hands of the joiner.

P. Why so?

S. Because it hath never yet become a salt-box *in fact*, having never had any salt in it; and it may possibly be applied to some other use.

P. Very true:—for a salt-box which never had, hath not now, and perhaps never may have any salt in it, can only be termed a *possible* salt-box. What is a *probable* salt-box?

S. It is a salt-box in the hand of one going to a shop to buy salt, and who hath sixpence in his pocket to pay the grocer; and a *positive* salt-box is one which hath actually and *bona fide* got salt in it.

P. Very good:—but is there no instance of a *positive* salt-box which hath no salt in it?

S. I know of none.

P. Yes: there is one mentioned by some authors: it is when a box hath by long use been so impregnated with salt, that although all the salt hath been long since emptied out, it may yet be called a salt-box, with the same propriety that we say a salt herring, salt beef, etc. And, in this sense, any box that may have accidentally or otherwise been long steeped in brine, may be termed *positively* a salt-box, although never designed for the purpose of keeping salt. But tell me, what other divisions of salt-boxes do you recollect?

S. They are further divided into *substantive* and *pendant*; a *substantive* salt-box is that which stands by itself on the table or dresser; and a *pendant* is that which hangs upon a nail against the wall.

P. What is the idea of a salt-box?

S. It is that image which the mind conceives of a salt-box, when no salt-box is present.

P. What is the abstract idea of a salt-box?

*S.* It is the idea of a salt-box abstracted from the idea of a box, or of salt, or of a salt-box, or of a box of salt.

*P.* Very right:—and by these means you acquire a most perfect knowledge of a salt-box; but tell me, is the idea of a salt-box a salt idea?

*S.* Not unless the ideal box hath ideal salt in it.

*P.* True:—and therefore an abstract idea can not be either salt or fresh; round or square; long or short; for a true abstract idea must be entirely free from all adjuncts. And this shows the difference between a salt idea, and an idea of salt. Is an aptitude to hold salt an *essential* or an *accidental* property of a salt-box.

*S.* It is *essential*; but if there should be a crack in the bottom of the box, the aptitude to spill salt would be termed an *accidental* property of a salt-box.

*P.* Very well! very well, indeed!—What is the salt called with respect to the box?

*S.* It is called its contents.

*P.* And why so?

*S.* Because the cook is content *quoad hoc* to find plenty of salt in the box.

*P.* You are very right:—I see you have not misspent your time.

## SONG OF THE HOOPS.

SAILING down the crowded street,  
 Scraping every one they meet,  
 With a rushing, whirling sound,  
 Muffled belles around about,  
     Hoop! hoop! hoop!  
 What a vast, expansive swoop!

Hoops of whalebone, short and crisp,  
 Hoops of wire, thin as a wisp;  
 Hoops of brass, thirteen yards long,  
 Hoops of steel, confirm'd and strong;  
 Hoops of rubber, soft and slick,  
 Hoops of lampwick, cord, and leather,  
 Hoops that languish in wet weather;  
 Hoops that spread out silken skirts,  
 Hanging *off from* silly flirts.

Sweeping off the public lands,  
 Turning over apple-stands;  
 Felling children to the ground,  
 As they flaunt and whirl around.

Hoop! hoop! hoop  
 What a vast, expansive swoop!

Jolly hoops, that wriggle round,  
 Sober hoops, that sway profound;  
 Springy hoops, that shake and wag,  
 Broken hoops, that droop and drag;  
 Monster hoops, all overgrown,  
 Junior hoops, of smaller bone;  
 Hoops that ravish lover's eyes,  
 Hoops that rend their breasts with *size*;  
 Hoops that shock their feeble legs,  
 Like a crowd of giant kegs.

What gallant ships! what swelling sails!  
 How they resist opposing gales!  
 With what a full, relentless waft,  
 They overwhelm each smaller craft!  
     Hoop! hoop! hoop!  
 What a vast, expansive swoop!



## THE OLD CONTINENTALS.

THE following lines stir the blood and almost bring before us the picture of the fight. The measure admirably imitates the sound of martial music :

In their ragged regimentals  
 Stood the old Continentals,  
     Yielding not.  
 While the grenadiers were lunging,  
 And like hailstones fell the plunging  
     Cannon shot;  
     Where the files  
     Of the isles  
 From the smoky night encampment  
 Bore the banner of the rampant  
     Unicorn;  
 And grummer, grummer, grummer  
 Rolled the "roll" of the drummer  
     Through the morn.

Then with eyes in the front of all  
 And with guns horizontal,  
     Stood our sires;  
 And the balls whistled deadly,  
 And the flames flashed redly,  
     Blazed the fires;  
     As the swift  
     Billows drift  
 Drove the dark battle breakers  
 O'er the greed-sodded acres  
     Of the plain;  
 And louder, louder, louder  
 Cracked the black gunpowder  
     All amain!

Then like the smiths at their forges  
 Labored the red St. George's  
     Cannoneers.  
 And the villainous saltpeter  
 Rung a fierce, discordant meter,  
     Round their ears;  
     Like the roar  
     On the shore  
 Rose the horse-guard's clangor  
 As they rode in roaring anger  
     On our flanks;  
 And higher, higher, higher  
 Burned the old-fashioned fire  
     Through the ranks.

Then the old-fashioned Colonel  
 Galloped through the white infernal  
     Powder-cloud;  
 And his broad sword was swinging,  
 And his brazen throat was ringing  
     Trumpet loud;  
     And the blue  
     Bullets flew,  
 And the trooper jackets redden  
 At the touch of the leaden  
     Rifle's breath!  
 And rounder, rounder, rounder  
 Roared the iron six-pounder,  
     Hurling death!

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