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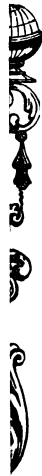




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AN
ELEMENTARY COURSE
OF
GYMNASTIC EXERCISES;
INTENDED TO
DEVELOPE AND IMPROVE
THE
PHYSICAL POWERS OF MAN;
WITH
THE REPORT MADE TO THE MEDICAL FACULTY OF PARIS
ON THE SUBJECT;
AND
A NEW AND COMPLETE TREATISE
ON THE
ART OF SWIMMING.

BY CAPTAIN P. H. CLIAS,

*Superintendent of Gymnastics in the Royal Military College, Sandhurst; the Royal
Military Academy, Woolwich; Royal Military Asylum, Chelsea;
Royal Naval Asylum, Greenwich; and in the
Public School of the Charter House.*

WITH SEVENTY-ONE ENGRAVINGS,

FOURTH EDITION.

c London:

PRINTED FOR SHERWOOD, GILBERT, AND PIPER,
PATERNOSTER-ROW;
AND J. HEARNE, 81, STRAND

1825.

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TO HIS

ROYAL HIGHNESS

Frederick, Duke of York and Albany,

*Commander in Chief of the British Army,
K.G. G.C.B. &c. &c. &c.*

SIR,

IN presuming to lay at your Royal Highness's feet a work, the principal object of which is the melioration of the Human Race, I feel that I am claiming for it that protection which a noble-minded and generous Prince is at all times ready to accord to every establishment of public utility.

Deign, Sir, to look with an eye of approbation on the efforts I have made to introduce into this country a system of Physical Exercises, tending to develope, in their greatest extent and perfection, the powers of the human frame; under the influence of which, the soldiers and sailors of Great Britain would soon become as renowned for adroitness and activity, as

they are already for undaunted courage and obstinate perseverance, amidst the most appalling difficulties and dangers.

When I reflect, Sir, that the taste of this nation, more than that of any other, evidently inclines to such exercises, and that it has within it already all the elements of Gymnastic Science, I feel that there wants only the introduction of a well-organized system to make them become popular and universally sought after. I feel also, that, with the recommendation and fostering protection of your Royal Highness, their success could not for a moment be doubtful.

Excuse, Sir, the freedom with which a very humble individual thus presumes to address your Royal Highness, and allow him to subscribe himself, with all humility and respect,

SIR,

Your Royal Highness's

Very obliged, and very obedient,

Humble Servant,

P. CLIAS.

INTRODUCTION.

Bodily exercise in general strengthens, and a sedentary life weakens the constitution. Therefore it is necessary to keep up the balance between body and mind.*

HAVING been occupied for several years in considering the manner of introducing Gymnastic Exercises into schools of elementary instruction, without interrupting the ordinary progress of lessons, and having repeatedly made the experiment in different establishments, we have the satisfaction to find, that our undertaking has been crowned with the most happy success.

In several trials we have made in England, we feel convinced that, in order to render this instruction practicable to the youth of both sexes, it is essential to present only the most simple movements; yet sufficient to develope their physical faculties, without occasioning any additional expense to the parents, and even without depriving the children of one moment of that time destined to their intellectual studies.

* Spurzheim's Elementary Principles of Education.

It is principally for that class of people the most numerous, as well as the most useful, that this abridgement is intended, because we are convinced, that physical education is to them particularly necessary. Their manner of life, and daily occupations, require a robust body and invariable state of health; and where shall they find the source of this precious treasure, if it be not in complete education, where, according to the most celebrated physicians in England, the exercises of the body, and those of the mind, will always assist in relieving each other.

The first course of exercises which we propose, is intended to awaken and augment the physical powers, which often remain torpid in the greater part of children brought up in large towns, where they seldom find an opportunity of developing their strength. Although each of these exercises, taken separately, present only the most simple movements, it is nevertheless advantageous in performing them to follow the order in which they are arranged. The experience of many years has produced abundant evidence, that the frequent repetition of these exercises would be attended with the greatest advantages. It produces much elasticity in the joints, and the frequent extension and contraction of the articular ligaments, render these parts much more supple, give them greater consistence, and produce in the different members of the body the greatest flexibility, without the

risk of any accident whatever. All the individual* and progressive exercises described in this work, are susceptible of being every where introduced : they may be performed in the smallest apartment, and require no particular preparation, expense, or place. With the superintendence of one master, each of these exercises may be performed at the same time, by a great number of children, and they may be arranged in such a manner, that the instructor, without changing his position, may in a short time fatigue the most robust boy, or manage him according to his will.

Besides promoting the health, these exercises have the advantage of imparting an agreeable air and easy manners, which never fail to prepossess much in our favour. It cannot be denied, that, in every situation of life, these qualities give much relief to the mind ; whilst an unfavourable exterior and awkward manners, often throw ridicule even on a man of distinguished merit.

It may be said, that modern Gymnastic Exercises, as well as mutual instruction, is one of the improvements of the present age. If the benevolent authors of Elementary Instructions have had the noble intention of giving to the poor as well

* By individual exercises are meant all those which are performed without the assistance of foreign agents, such as the movements which require only the simple action of the muscles.

as the rich the key of human science in developing their understanding, it cannot be denied that physical education would be a most useful addition, by furnishing them with the means of self-preservation in the various occurrences incidental to life.

The elementary principles of this art are calculated to discover to man all the physical resources he possesses in himself, and if in mature age he should desire to practise the lessons he received in his youth, the whole field of nature offers, without expense, the most certain manner of preserving or re-establishing his health by agreeable exercises.

It would be superfluous to repeat here all that has been said in favour of Gymnastics; the principal design being the developement of all the corporal faculties with which nature has endowed us, no one can deny its immediate influence on the physical, as well as moral state of man.*

We will only add, that every one must have had

* It is known, says Cabanis, that a good physical education fortifies the body, cures many diseases, and gives to the organs a much greater aptitude to execute the movements required by our various wants; besides greater strength and extension of the faculties of the mind, greater equilibrium in the sensations, and those just ideas and elevated passions, which are connected with habitual sentiment, and to the regular exercise of a much greater force.

Rapport du physique et du moral de l'homme.

frequent occasion to observe, that the body is often only a feeble instrument, and sometimes even a burthen, to him whose corporal faculties have never been sufficiently developed. The individual being composed of two parts, each of them ought to be alternately exercised, in order to attain at the same time to the general developement of the individual.

Are we not every day convinced, by sad experience, that the greater part of the misfortunes which happen are occasioned by want of foresight, by awkwardness, or by the total failure of force in those who are the victims of them? How many parents would have preserved their children, if they had had the precaution to give them a more masculine education! A great number of those brave soldiers, who have irrecoverably lost their health, or who perished miserably in the late wars, would have been at present the consolation of their parents and the protectors of their families, if, by giving them a more vigorous education in their youth, care had been taken to accustom their bodies to fatigue, and to enable them to find, in their physical qualities, the efficacious means of seconding their courage in the moment of extreme necessity.*

It is easy to perceive, that in whatever condition

* The first knowledge is that of self-preservation. A severe and masculine education is always the best; it is that

nature might have placed man, he absolutely possesses only two methods of preserving himself from danger: one is by carefully avoiding every occasion that might involve him in it: and the other by arming himself against the unforeseen accidental events of life. Though apparently wisdom seems to point out the first of those methods as the safest and the best, yet we shall soon be convinced of the contrary, if we consider in how many difficult situations the most circumspect man might be unexpectedly and unavoidably placed, and consequently how often he may become the victim of his own incapacity. He, who has never been familiarized to danger, finds every where obstacles to encounter, and if urgent necessity, or false self-love, induce him to surmount his fears, he has infinite pains to overcome these obstacles; whilst the man whose bodily powers are completely developed, (possessing ordinarily a spirit which nothing can depress,) is much less affected by the events of life, however

only which forms superior men; and of this the history of every age furnishes a multitude of examples.

(Beranger Vertus de Peuple.)

“Warriors full of courage,” says BALLY, “and politicians full of craftiness, may frequently be met with; but, of those men who have a great and noble character, the result of their sentiment and their strength, no one would have become famous on the earth, if his moral education had not been fortified by an excellent physical one.”

Dictionnaire des Sciences médicales.

unforeseen, melancholy, or terrible they may be. Habituated to danger from his infancy, he places greater confidence in his strength and address. He is inaccessible to fear, and the daring courage which we often admire in such a man, is absolutely nothing but the result of a conviction of his own powers. We may therefore conclude, without fear of deceiving ourselves, that he who has the means of preserving himself safe in all the accidental circumstances of life, ought consequently to be more capable of great actions, than he whose courage is paralyzed by want of force and dexterity.

The general practice of bodily exertion which prevails among the People of England, and the just estimation in which excellence in the Physical powers are held by all persons, suggested to us the idea of attempting to introduce our system of *Gymnastic Exercises* to the British nation.

The present arrangement is published with a view to enable every person to judge of the merits of our plan by practice. From a short perseverance in exemplifying the exercises here described, he will be enabled to judge how far the general purpose is likely to be successful in developing the physical faculties of man.

Should the present sketch meet with public approbation, we shall be encouraged to publish the details of our System in a more finished manner.

May this feeble production, which we now offer

to the public, attract the attention of enlightened fathers and instructors; and at the same time engage every man of influence to protect a science which has for its principal end the establishment of a perfect equilibrium between the faculties of the body and those of the mind.

This publication being particularly intended to afford directions to the reader, by which he may either learn to exercise himself, or to teach others, we have arranged the various movements according to the system which we have now for some time followed in several of the great Establishments and Schools of this country. Admittance during the hours of exercise is easily obtained, and every one will be able to form his own judgment of the benefits to be derived from the Gymnastic System, and to see the actual practice of the movements which are described in the printed work. It has never been our wish to make any secret of our mode of instruction, and gratitude to the English nation especially, from whom we have received such liberal encouragement, makes us anxious to impart to them, as extensively as possible, these advantages, which have been highly appreciated on the Continent.

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*The attention of Parents is particularly requested to the following
Articles concerning the system of Captain Clias.*

“The Gymnastics of Captain Clias unite every advantage ; and, if considered minutely, will be seen to possess everything that is essentially useful in correcting numerous deformities, and in eradicating obstinate diseases. They are perfectly adapted to the exigencies of life, and to the rules of living economy ; they increase the energies of useful properties, and insure their duration. The Author, always animated by a desire of extending the resources of the Art, is continually improving his System, in order to call those organs into action which ordinary means would have permitted to remain dormant and useless. That wise direction, so well calculated to the wants of nature, will always render the System of Captain Clias worthy of recommendation.”—*Dictionary of Medical Science*, vol. 52, p. 28 and 29.

“Captain Clias has long been known on the Continent as the active promoter of all those Exercises tending to develope and increase the physical powers of man. The regular and systematic method, thus taught in England by Captain Clias, is not only well calculated to give to the body its full degree of strength and activity, but, by the mode of teaching, precludes every possibility of the occurrence of any accident.”—*Page 172 of the London Medical and Physical Journal*, February, 1824.

“The forms of Captain Clias are by far the most perfect of any man who has ever been exhibited in England. In him we discovered all those markings which we see in the *antique*, and which did not appear on the living models, from their body not being sufficiently developed, by a regular system of Scientific Exercises, such as Captain Clias’s.”—*Literary Gazette*, February 15, 1823.

REPORT
MADE TO
THE FACULTY AT PARIS,
FROM
A MANUSCRIPT BY MR. CLIAS,
ENTITLED
*Elementary Gymnastic Exercises.**

GENTLEMEN,

You have appointed, as Commissioners, Mr. Naquart, Mérat, Roux, Villermay, Esquirole, Gasc, and myself, to examine a manuscript on Gymnastics, which the Professor of the academy at Berne intends to publish.

Before he gives his book to the press, this Gymnasiarch has manifested a desire to conciliate the suffrages of several learned men, who will be able to appreciate duly the fruit of his labours.

His choice could not be doubtful: it is to you, Gentlemen, that he has addressed himself.

Gymnastics is the art of regulating the movements of the body, in order to develop its strength,

* Of which this publication is the first part.

to improve its agility, its pliancy, and its powers ; to preserve, or to re-establish health ; it is intended, in fact, to enlarge the moral and physical faculties. —It presents itself to us in four different points of view.

1st. *This art considered in general.*

2d. *The description of the means and process.*

3d. *Its application to the study of the Olympic games, and Military exercises.*

4th. *Its use in Hygeina and Therapeutics.*

We could not minutely lay before you the description of the means, although each exercise can, by its relation to the Dynamics, attract a peculiar attention ; but to give a clear idea of it one ought to read the whole of the manuscript of the Professor at Berne, and you have not leisure to hear so minute a detail, nor have we an intention of diverting you with objects foreign to your present purpose. We will say only in favour of the work, that the style appeared to us simple, clear, precise, and consequently very well adapted to the subject of which he treats. Twelve plates, engraved with outline figures, and shewing about a hundred and twenty subjects, augment still more its merit, by delineating the principal exercises, the various instruments, and thus concurring to enlighten the text. As to the general view, we will add, that the title belongs to the history of this art,

of which the origin is lost in antiquity and considerations of an important class, which are inseparable from political morals, from philosophy, and from the interests of society in general.

The history of Gymnastics being inseparable from that of medicine, we here ask your permission to sketch the picture of it on a large scale. It reckons among its inventors one of the ancestors of Hippocrates, whom the Greeks of the heroic times made a god, because they knew then no other way of immortalizing their gratitude.

Esculapius recommended his patients the Equestrian exercises, which he desired they would practise in armour, and after having determined what sort of arms they were to make use of, he subjected them to peculiar motions proportioned to the nature of their disorders.* The learned Curt Sprengel thinks that the education and mode of living of the Greeks, at the same time that they had a very important influence upon the development of their minds, led to the perfection of medicine.† He states also that the wrestling school had the same influence with respect to the improvement in that science.

Gymnastics appeared to act upon the euexia,‡ as medicine does on the restoration of health. It is

* Galen ad Trasybulum.

† Sec. 3, Chap. 1, No. 6.

‡ State of the body.

for this reason that Gymnastics was dedicated to Apollo, god of medicine, and that the directors of these schools were qualified with the title of physician, because they were accustomed to treat diseases and slight wounds. Thus they delivered themselves by degrees from the monopoly, and the juggleries, exercised by the priests, who took into their own hands the exclusive right of practising the art of healing. Between Esculapius, and Herodicus, of Selivré, there is a great void in history. Gymnastics seem to have lost their medicinal character; it ceases to be the means of the art of healing, and is become necessary for political and warlike purposes only. The Greeks, surrounded by savage nations, and subjected to Asiatic despotism, applied themselves to multiply their moral and physical forces, and it is by these means that three hundred Spartans learnt to conquer five millions of slaves!

Herodicus, who had the honour of restoring Gymnastics to their former vigour, had also that of being master to Hippocrates, and was the director of a Gymnastic school. He remarked that his pupils gained an extraordinary degree of strength in the Olympic games; and also that those who were ill, were very soon restored to health. Valetudinary himself, according to Plato, and affected by a disease reputed incurable, he got rid of it by practising the exercises of his academy. His first observations and successes decided his vocation; after having formed a resolution to renounce teach-

ing the Isthmic games, he conceived the plan of a medicinal Gymnastic, of which he traced the rules. But blinded by his enthusiasm, besides knowing very little about the application of the laws of simple medicine, he overstepped the precepts. Notwithstanding, Galen speaks of the rules which he had thought of, and he affirms that they were relative, in one part, to the practice required in a state of health, and in the other, to the precautions which are required with respect to the temperaments, the ages, the sexes, the climate, the seasons, and the complaints. Nevertheless, if you remember that Herodicus made his patients leave Athens to go to Eleusis, in passing through Megara, which distance was thirty-six miles, and that he made them return without nourishment, and without repose, you will see by that one of the most singular exaggerations of this sophist.

With that penetrating spirit which was to create medicine, Hippocrates could not fail to perceive what was defective in his master's system, and he reproaches him with having killed his aguish patients sometimes by too long walks, and sometimes by wrestling and fomentations.

After Herodicus it appears that they look upon Icus, of Tarentum, as one of the inventors of medicinal Gymnastics, since he contrived to substitute for the bad athletic regimen, a better regulated sobriety. On the models of the academies of Herodicus and Icus, similar institutions were incessantly

established. The art of healing leaving the temples, went to take refuge in the Gymnastic schools, and the Exoterics became the principal operators. Three classes of performers were proposed for this business, the Gymnasiarcs, or the Palestrophylox, were charged with the regimen of the Neophytes; the Gymnastes, or assistants, were called to cure the different complaints of the patients; and the Alypts, which were afterwards called Iatralypts, whose functions were confined to bleeding and dressing the wounds of those who came accidentally into their schools.

The doctors of the ancients were soon struck with the invaluable advantages of the new system, and they no longer separated them from the art of healing. Hippocrates recommends them in twenty different places, and particularly in the books of diet, of regimen, and of dreams. Celse never ends a chapter without pointing out the Gymnastic application required for the kind of sickness of which he gives the art of curing.

We owe to Galen numberless precepts on the application of methodical exercise; he has made them known in the book of his commentary upon diet, in his treatise on the preservation of health, and in the book addressed to Tracybulus: he cites also, as partizans of the same methods, Diocles, Pradagores, Phylotemes, Erasitrates, Erophylyus, and Theon, whose names time has swallowed up, scarcely respecting their memories. After these first

masters, all the physicians who knew and respected the learned antiquity, appreciated the utility of these lessons. Ætius, Oribasse, Mercurialis, Sanctorius, Fabricius of Hilden, Sthal, Baglivi, Plempius, Johnstone, Sydenham, Fuller, Boerhaave, and Van Swieten, owed their successes to the happy application of bodily exercise ; among them Mercurialis and Fuller published learned treatises, *ex-professo*, on the same subject.

Mercurialis is placed in the first order, by his work, entitled “*De Arte Gymnastica*,” published in 1587, and dedicated to Maximilian II. This book does not recommend itself by the good logic of its style ; it is tiresome to read, and filled with details foreign to the subject of which it treats.

Its numerous theoretical explanations are refuted by a plain physiology. But these defects are redeemed by its learned researches and excellent practical observations, the author never ceasing to work at it during his sojourn of seven years at Rome, where he put all the libraries and precious manuscripts under contribution that this ancient capital of the world possessed. The engravings with which Mercurialis embellished his work, although executed in the infancy of the art, and upon wood, are striking, from the simplicity and precision of the drawing. They suggest the idea of several means, neglected in our days, the wise use of which would be proper to increase the relative strength of our organs. We find in it, also, very minute plans

of the ancient *Palestrum*. The treatise of Francis Fuller was undoubtedly very much sought after in England, as, in the year 1780, it was in its sixth edition. In spite of these works, in spite of several attempts at Dessau, in 1776, by Mr. J. E. Simon, of Strasbourg, and although some distinguished authors had given the impulse in showing the necessity of a regular system of exercise, Europe remained without *Palestrum*, since the invasion of the barbarians. At length, Gentlemen, we quit the history of this part of the medical science, to arrive at that point which, in so many respects, interests the scientific man: we intend speaking only of its application to the laws of *Hygeina* and *Therapeutics*.

However extended may be the resources of medicine, you regret that you have not the power of multiplying them on account of the importance of their objects; in order to extend their sphere, you have seized with eagerness the opportunity of acquiring new instruments of preservation, in applying to the known methods, the theory of movements, and all the springs of the muscular dynamics. Thus the memorable epoch in which vaccination, well appreciated in its constant effects, prolongs the chances of life, the *Gymnastics*, better known and more wisely applied, will insure the salutary influence of the *Hygeina*, and will improve the precepts of *Therapeutics*. *Gymnastics* comprehends a field without bounds, since it takes the

individual from his infancy, and, like a vigilant mother, follows him in all the periods of life. Towards the decline of his career she does not yet abandon him ; but with a liberal hand she pours out the treasures of hope, in making him anticipate a longer period of existence, and an old age free from infirmities. What subject, Gentlemen, can there be more worthy of your meditations? You did not expect from us a dry and barren abstract, from a manuscript which only contains descriptions. You wished that we should be eye witnesses of the practices of which the academician of Berne offered the theory, and that we should give you an account of those which would be useful in the art of healing. Once this wish expressed, Mr. Clias offered himself, with a complaisance not to be surpassed, to all our wishes, and performed his principal exercises. We then remarked that he had founded his edifice upon a large scale, perfectly appropriated to the wants of life, and to the laws of living economy. His constant study seems to have been to determine the most convenient methods for strengthening each organ, and to increase the energies of the vital properties. With this view he has conceived different kinds of exercise fit to communicate a peculiar action to each part of the body, and he begins at first by the most simple motions, to arrive progressively at the most complicated. You already perceive that, although Mr.

Clia be not a physician, he has given his work quite a medical turn, interesting above all, in its application to Therapeutics.

The academical games require a vast and commodious place, and well arranged ; it is supposed, also, that this place is provided with instruments for all the exercises in general : such is the idea we conceive of it, whether it is by the model under our eyes, or those which have been transmitted to us by Virtruve or Mercurialis, or whether it is by carrying our imaginations back to the flourishing ages of Greece, where the Gymnastes or Palestres were never separated from education. We have formed to ourselves gigantic plans upon this subject, or ideas more or less near the truth.

But on examining the series of practices pointed out in the work of the Academician of Berne, we have found out that it was necessary to divide into two different branches the Gymnastics applicable to Invalids. Both the one and the other are subordinate to the means they employ, and being thus distinguished by the names of instrumental and individual.

That which is produced alone by the muscular action of the convalescent and infirm, without the aid of foreign agents, is equally adapted to the valetudinarian, as to him who is possessed of good health ; to the man of the world as to the studious ; to the rich as to the poor ; finally, it is practicable

in the smallest apartment of an individual, and requires neither preparation, expense, nor particular space.

Under these simple indications, we have obtained some good results in advising some of the exercises which Mr. Clias has made before us. A student in medicine, attacked with a cerebral affection which kept him in a sleepless state, owed his complete cure to the movements of the superior extremities, practised twice a day until he was fatigued. A man of fifty, attacked by a complete sciatica, did not receive any relief from the most appropriate medicines which had been administered unto him, nor even from blisters; by means of a series of movements, executed in his room, he regained in three days his pliability, he was able to go out, to walk, and to arrange his affairs, in a fortnight. Mr. Clias communicated to us a known fact, which deserves to be related to you.—A child, aged three years, could scarcely stand, at five he walked badly, and supported by leading strings, and it was only after dentition, at seven years old, that he could walk without assistance, but he fell frequently and could not rise again. Given up by the physicians, he continued in this state till the age of seventeen, when the loins and lower extremities could scarcely support the upper part of his body, the arms were extremely weak and contracted, the approximation of the shoulders contracted the chest and impeded respiration, the moral faculties were quite torpid, in short,

nature was at a stand still. In the month of November, 1815, this unfortunate youth was presented to Mr. Clias, by several students, who intreated him to receive him into his academy ; on admission, his strength was tried, that of pressure by the dynamometer was only equal to that of children of seven or eight years. The strength of pulling, ascending, and of jumping, was completely void.

He ran over the space of an hundred feet, with great difficulty, in a minute and two seconds, and could not stand when he had finished.

Carrying a weight of fifteen pounds made him totter, and a child, of seven years old, threw him with the greatest facility. Five months after he had been submitted to the Gymnastic regimen, he could press fifty degrees in the dynamometer ; by the strength of his arms, he raised himself three inches from the ground, and remained thus suspended for three seconds ; he leapt a distance of three feet, ran 163 yards in a minute, and carried on his shoulders, in the same space of time, a weight of thirty-five pounds. Finally, in 1817, in the presence of several thousand spectators, he climbed to the top of a single rope, twenty-five feet high ; he did the same exercise on the climbing pole, jumped, with a run, six feet, and ran over five hundred feet in two minutes and a half. Now that he is a clergyman, in a village near Berne, he can walk twenty-four miles on foot, without incommoding himself, and the exercises, which he has

always continued, have occasioned, instead of his valetudinary state, a vigorous constitution.

The manuscript, which has been submitted to you, is divided into three chapters : the first has for its subject, the lower extremities ; the second, the upper extremities ; the third treats of those exercises which require the assistance of the muscles of the trunk and limbs.

You are quite convinced of the difficulty there is to bring into action one of the larger extremities, without the neighbouring parts experiencing the effects, or even of participating in it ; you will even conceive that there are some actions, though considered very simple, that belong, nevertheless, to several species of organs, by their anatomical relation. At all times, when there is a disease over an articulation, you will choose, in preference, the remedy which will act more especially on the affected part. From this principle, we have deduced the necessity of forming three grand divisions of the diseases to which Gymnastics can afford relief. We will class them by injuries :—1st, of the lower extremities :—2nd, of the upper extremities :—3rd, from the trunk and the organs belonging to it. You see that we make an abstract from what belongs to Hygeina. It is not here necessary to prove the utility of exercise for the preservation of health ; nobody has contested the truth of this doctrine, which is of all ages, and of all places : but what is most important, is to regulate

the exercise here mentioned, to multiply them, and to establish a proper species applicable in all the different kinds of dangerous and morbid disorders. Among the injuries which appear to us capable of yielding to a well combined and methodical movement of the legs and thighs, we will place the lumbago and the sciatica, diseases so stubborn, and so difficult to be cured; the imperfect anchiloses, sprains, a bad construction of the legs, the thighs and the basin, of which the perfect developement merits so much attention in women; some incomplete palsies, stiffness, certain rheumatisms, the gout, &c. &c. The greater number of morbid affections, before mentioned, ought to give way to a frequent motion of the arms, when they have taken their direction towards the upper regions; but as the action of the muscles of the arms is almost always simultaneous with those of the thorax, the same exercises will naturally correct a number of disorders and deformities with which the chest is threatened. Thus obstinate coughs, recent asthma, tendency to a curved spine, and the vicious formation of the thorax, &c. &c. would find in the great variety of movements for the arms, an advantage that would be vainly sought for in the usual mode of treatment.

So we are confident of the salutary effects resulting from the same practice on the viscera of the abdomen; we did not mention them, because the diseases of this organ ought to yield to the complicated

exercises of the third division. Notwithstanding, Selde recommended those of the upper extremities, in a progressive manner, for stomachelical affections.

By the more complicated practices of this third division it would be easy to overcome a great many diseases.

The process of Gymnastics, methodically employed, could not be advantageously recommended, if it be not proportioned to the age, the sex, the constitution, to the season, and calculated to the degree of state of the patient, and to its irritable disposition. The work, which has been submitted to you, presents a description of two hundred and seven different exercises, of which not one can be classed among the ordinary games. The end of each is to increase the elasticity of the articulation, to favour the developement of the muscular power, to straighten the body, to facilitate standing and moving in any attitude, without losing the equilibrium; these exercises teach you, at the same time, to brave and avoid dangers, and to overcome obstacles.

Chapter the First. Lower extremities.—In this first section, walking has been described, and is divided into nine different exercises; the balancing in the vaulting beam, the passage upon the elastic bridge, the equilibrium on the ground, running in fourteen exercises, and leaping, which is practised in twenty-one different ways.

Chapter the Second. Upper extremities.—This

second section treats of the various movements of the arms, the exercises on the cross-pole, on the triangle, of those which augment the strength and pliability of the last articulation of the fingers, the passage of the iron bar, and single-stick.

Chapter the Third. Complicated exercises.—

In fact, we find in this third series, twelve different ways of climbing, either by means of the climbing pole, rope ladders, or by making use of the sledge or the haspel; then come the various descriptions of wrestling, the exercise of the Indian club, throwing the discus or quoit, swimming, the different preparatory movements of vaulting, those for vaulting on the wooden horse, and the living one. The way to run against the wall, the different trials of the dynamometer for measuring the strength of the fingers, arms, chest, and trunk, equally belong to this section.

You see, Gentlemen, it is not possible to lay before you a long succession of descriptions, depending on each combination; but we may allow ourselves to trace one or two of the plates which most struck us.

We have, for example, distinguished in the exercises of the upper extremities, those which are done by means of the moving triangle, as capable of developing powerfully the strength of the hands, fore-arms, arms, and thorax.

This instrument is composed of a strong stick, four feet in length, supported at each end by means

of a rope. The ropes, which are fifteen feet long, are united at the top, and attached to a cross-beam. Upon this triangle, Captain Clias has given proof of the greatest vigour, suspending himself sometimes by both arms, sometimes by one, either on the stick or ropes, and often head downwards. He has been seen to remain a long time in this last position, with his arms turned behind.

It is then that we saw all the muscular power is capable of when well exercised; and it is then that we figured to ourselves those athletic forms so common among the ancients, but which are lost to the moderns. Captain Clias has also shown us what he calls *piaffer*,* a gradual movement of the lower extremities, and done in the same place. This exercise of his appears to us to be borrowed from horsemanship, to be applied to the human species; it is done in three ways, the walking step, trotting, and galloping. It appears principally applicable in cases of sciatica, lumbago, &c. &c.

There is this advantage in it, that it can be proportioned either to the nature of the complaint, the sensibility of the individual, to his strength or his age; it has also this merit, already expressed in a more general way, that it requires neither preparation, expense, instrument, nor particular place.

Such, Gentlemen, are the documents we have to offer you on Captain Clias's work, that zealous

* Walking pace exercise.

Apostle, who, convinced of the importance of his subject, always strengthens precept by example. He has found in a wise, paternal, generous, and enlightened government, a protection which animates his efforts, and ensures his success. An immense place has been confided to him at Berne, in the best situation, and five hundred pupils there habitually follow his method. He can there display all the resources of his art, and, for a long time, he has been forming for his country, healthy and robust men and citizens, who know how to unite strength of the mind to that of the body.

GYMNASTIC EXERCISES.

CHAPTER I.

EXERCISES OF THE LOWER EXTREMITIES.

Walking, Running, and Jumping.

OF all the Gymnastic exercises, natation excepted, walking easily and erectly, running, and jumping, deserve the preference; because they are the most natural movements of man, and those which he has most frequently occasion to use. If we consider the physical qualities of a young man destined to a military life, where the success of the greatest enterprises depends oftener on the rapidity with which they are executed, than on the quantity of force employed, we shall be convinced that walking, running, and jumping, carried to a certain degree of perfection, must overcome many obstacles in military expeditions, and in every situation in life produce great advantages to those who are capable of performing them well.

Walking in General.

There are few motions in the human economy, says Barbier,* which habit regulates more powerfully than walking. This mechanical motion, which is first acquired and formed by long practice, becomes in time quite habitual, so that this peculiar motion, voluntary as it is, appears in a manner mechanical. If we are put in motion in consequence of a first determination, habit alone guides us; it hastens, precipitates, or slackens our gait. It is the habit of walking or resting which gives or deprives us of the use of our limbs. Repose, or inaction even, too much indulged, takes away a wish to walk, whereas daily exercise, gradually increased in proportion to the augmentation in strength, generally makes most men good walkers. Thus recruits in infantry regiments, who are very much fatigued by the first march, become so much accustomed to it, that in a short time they are enabled to support the longest journeys. The principal qualities of walking, such as its rapidity, its duration, the capability we have for continuing it, and its peculiar character, do not only vary with respect to the circumstances which we have taken into consideration: we see, in fact, 1st, (for its quickness,) that the harmony of action which is established be-

* Dic. des Sciences Medicales.

tween several persons walking together in the same direction; causes each to acquire, almost insensibly, the same step, consequently, that which is common to one person is more or less accelerated by another; we know, also, that many affections of the mind animate or retard the usual rapidity of the step, according to the peculiar disposition which they affect. In marches, which are regulated by music, the quickness of the step is entirely governed by the time. The general and the charging step accelerate the walk almost to a run, while a different beat of the drum produces quite a contrary effect.

2dly. The duration of the walk influenced by the age, the sex, the temperament, and the peculiar pace, may be abridged or prolonged by several circumstances. Every body knows that pleasant journeys, amusing and interesting exercises, such as hunting, shooting, &c. are continued whole days without, an idea of fatigue, but when we are accompanied by ennui and disgust, we feel, even in the shortest journeys, the necessity of rest. According to Chardin (*Voyage en Perse*,) and Marshal Saxe (*Reveries*,) the charms of music, or even a simple march or sound, executed in time, enlivens the loitering step of men walking in a body, to such a degree, that we see soldiers, who are harassed by the fatigue of a long day's march, apparently regain their strength, and walk gaily on as soon as they feel their steps animated and regulated by the beat of the drum. 3dly, and lastly; let us recall

to mind, with respect to the peculiar character of walking, that it is lively, light, and very irregular in children, women, and nervous persons; slow, like drawling or sleeping, in phlegmatic persons; grave, steady, and with measured steps in old men, in public ceremonies, &c. and it is heavy with the labourer who is accustomed to walk under the pressure of weighty burdens. Walking on the toes, the wolf's-step, the giant's-step, and that which is named, on account of its slowness, the tortoise-step, are so many different modes of progression; the distinct character of each agrees with the name which has been appropriated to it by use. Other locutions still, such as walking proudly, majestically, looking at the feet, walking boldly, with a timid step, &c. prove also, that this infinitely varied action adapts itself, in several circumstances, to our sentiments and ideas.

Walking, so important a part of locomotion, fulfils, in the animal economy, several functions to which we cannot refuse a special attention. It is principally by the help of walking that man, who moves voluntarily wherever he pleases, acquires the facility of satisfying many of his desires, and of divesting himself of the painful impressions which assail him. After prolonged rest, walking becomes more or less pleasing, in as much as it satisfies the internal impulse which induces us to move. Every body knows that if we are fatigued by walking, walking in its turn destroys the bad consequences

we feel from inaction. This motion, accompanied by the exercise of external sensations, which it promotes more or less in several circumstances, is itself under the immediate influence of the sight, as is proved by the impossibility of walking in a straight line, for example, without the help of this sense, the uneasiness we feel, and the dangers by which we fancy ourselves surrounded in the dark. In groping along, we call the sense of feeling to our assistance, and this in some measure replaces sight. We have seen before, that oral impressions, which are produced by music, act powerfully on the character and length of the walk. Walking (and particularly solitary walking,) ripens the ideas, develops the memory, and generally becomes a very good auxiliary to the work of the mind. Most of those who meditate a subject deeply, really feel the necessity of walking. It is a well-known fact, that men who compose, when they are deprived of their usual exercise in the open air, feel their ideas burst forth in pacing their libraries. These sort of square steps as they are called, in relieving the body, leave full liberty to the mind.

This exercise relieves also our moral faculties, it diverts melancholy people, and offers the lazy a great resource against ennui. We know how well this exercise is calculated to dissipate gloomy ideas, the vapours of melancholy, and hypocondriacal affections. Ideas by their particular nature, and

the affections of the soul, re-act in their turn on walking.

We know that hope, desire, and fear, give wings, that terror and fright paralyze the legs, and make us immovable, and that warlike ardor, or the love of glory, which fires the soldier, makes him climb almost inaccessible heights, at which he would shudder in his cooler moments. It is the same influence which accelerates the movements of a victorious army, while every thing seems to retard the progress, and discourage the exertions of the vanquished. Walking is to locomotion, as it is indicated by the order of its progressive motion, the most simple, the most natural, and the most proper, to promote the general development of the strength of the inferior extremities.

As far as regards expression, or the manifestation of the sentiments and ideas, what we have before said of its connexion with thought, proves that it becomes, by the different characters which it takes, according to our moral situation, a principal part of mimicry; it contributes also with the latter in presenting to the attentive physiologist, the distinguishing features of the predominating ideas, as well as those of the constitution, or of the physical and moral temperament. Walking exercises most of the internal functions, and the general motion which it communicates, seems to spread itself over almost all the organic phenomena; it

provokes appetite, assists digestion, &c. it accelerates the general circulation, which loses its quickness by inaction and rest, and it exerts the same influence on respiration. Walking brings forth indirectly, but in a very safe way, the fluids to the skin, and increases the cutaneous exhalation, it augments the calorification, and makes us capable of resisting the most rigorous cold. It is by walking only, that the inhabitants of the north resist the lethargic influence of the frost. By the daily exercise which it procures, walking, in fact, produces the good state of nutrition of all the organs. In considering the connexion which it has with all the functions of animal economy, we can easily conceive that this exercise constitutes a very important part of the dietetic, and that it is prescribed most advantageously to weak persons, to children, to convalescents, and in the greater part of those chronic diseases which depend on the general diminution of the strength. When it is taken in moderation, this is one of the best known exercises ; the abuse of it only can injure and enervate, in the same way that every other exercise does which we take beyond our strength. We can also add, that a measured and continued walk, in consuming a considerable portion of the cerebral action which presides over movement and sensation, diminishes the more the functions which belong to sentiment.

In fatiguing the limbs, the exercise which occupies us gives repose to the senses and the brain.

We see from this remark, how useful walking becomes in the greater part of affections, called nervous, in which the sensitive strength of the animal economy has gained an ascendancy, more or less visible, over the muscular power.

The habit of walking re-establishes the equilibrium, by giving a salutary excitement to the muscular strength.

This exercise, within the reach of every body, ought to be placed among the number of those from which hygeina and practical medicine draw the most useful results.

In speaking of the walk, we mean that graceful and noble movement, by means of which the body, in transporting itself from one place to another, might increase or diminish the rapidity of its movements, without deranging the equilibrium or the union of the parts in action. To walk is to make a progressive movement. The body rests a moment on one foot whilst the other is advanced; then the centre of gravity of the body is made to fall from one foot upon the other, &c. It might be objected that, generally, every body knows how to walk, when not hindered by defects of conformation or accidental misfortunes; but our own experience has convinced us of the contrary; and if we give attention, we shall often have occasion to remark, that we see very few persons, however well formed, who in walking preserve a really erect position and an air of becoming confidence and dignity. This

movement, well executed, evinces not only the force of the body, but, more than it is commonly thought, perhaps, the moral character of the individual. Walking may be considered in three different respects; first, with regard to beauty, secondly, to resistance, and thirdly, to promptitude.

Preparatory Movements.

As force and agility are the principal qualities from which all our mechanical actions proceed, their developement must necessarily have a powerful influence on our daily exercises, and communicate at the same time the power of executing with facility and velocity all sorts of movements in different directions. It is only by possessing these qualities in a certain degree of perfection, that we can acquire an easy, light, and confident gait, be able to support fatigue for a long time, and travel great distances without suffering thereby any material injury or inconvenience. Though these qualities are derived from the source which we have indicated, it is, however, seldom that the same individual possesses them all in an equal degree; and as it is evident that the bodily dispositions and daily habits have the greatest influence on the walk, it will be advantageous to accustom young persons early to a great variety of elementary exercises, in order to destroy in their origin the bad habits which they are

inclined to contract, and to prevent at the same time, many corporal defects.

EXERCISE I.

*Ordinary Step.—Explanation of preparatory Movements.**

At the word of command—"Fall in,"—all the boys advance upon the same line, preserving between each other the distance of the arm's length, At the word,—“ Dress,”—each boy places his right hand on the left shoulder of the next, extending his arm at full length, and turning his head to the right. At the word,—“ Attention,”—the arms fall down by the side, and the head returns to the first position. The master places the boys in the following manner: the head up, the shoulders back, the body erect, the stomach kept in, the knees straight, the heels on the same line, and the toes turned a little outwards. All things being thus arranged, the master, standing in front, announces the exercise they are going to perform, taking care above all to explain clearly the movements which each boy ought to make. For example: Ordinary step, in place, explanation. At the word,—“ Hips,”—each boy places his hands on his sides, extending

* When many boys are to be instructed at the same time, it is indispensably necessary to establish a military discipline, in order that they may execute the greater part of the elementary exercises together. And when these exercises are performed in a room, the boys should be furnished with horse-hair or list shoes.

his fingers round the waist, and remains so.* At the word,—“March,”—each advances his left foot, the knee straight, and the toe inclined towards the ground, and counts one, two, placing his foot on the ground, the toe before the heel, and raising the other immediately, and thus continues to march, keeping time in a low voice, till the word,—“Halt,”—is given. Then all the movements cease, and the hands fall down by the sides. After this explanation, the master standing in front, performs, himself, with exactness, the exercise he proposes, in order that each may imitate him. After he has made each boy singly perform the exercise he has made before them, he makes two or three repeat it together, then four or six, and afterwards the whole, requiring, above all, that they execute each movement altogether, that is, that they lift up and set down the left foot at the same time. The master should carefully observe, that each boy executes this step with ease and agility: he should also strictly require, that they preserve, during all their movements, the above-mentioned erect position of the body.†

* By pressing the hands strongly against the sides, the force of the lower extremities is much augmented, and the body maintains its position with more ease and firmness than when the arms are pendent by the sides.

† In order to supple the joints of the lower extremities, one ought to repeat several times, after every exercise of the legs, the motion of getting down and up, described at the Jump standing.

EXERCISE II.*Changes in Place.*

As soon as the master perceives that his scholars keep themselves well upright, he makes them, while remaining in their places, execute different changes, sometimes to the right, sometimes to the left. Then he makes them march in ordinary time, advancing upon the same line in single or double column,* always observing the position of the body, and requiring that they move all together.

EXERCISE III.*Double Step.*

In the double step, the feet must move twice as quick as in ordinary time. The master must observe the same progression as in the preceding Exercise; that is, he must make them march, and execute the changes in place, till they are able to perform them well; then he makes them march backwards or forwards, sometimes in a column, and sometimes in a line.

EXERCISE IV.*Triple Step.*

This differs from the double step only by the greater rapidity with which the paces succeed each other. The same rules are to be observed as in the preceding Exercises.

* Two files, one upon another.

EXERCISE V.*Oblique Step.*

This is performed from right to left, or from left to right. At the word of command—"Left Oblique," or "Right Oblique,"—all move to the side indicated, each one raising his foot (suppose the right) without deranging the position of the body, and setting it down again flat, counting one, two. One is for moving off the right leg, and two for bringing the left, on which the body rested, up to the right, which, in turn, supports the whole weight of the body.

EXERCISE VI.*Cross Step.*

The cross step serves to render flexible the knees and other articulations, to fix the position of the body, and to give some grace to the shoulders. It is performed in two ways; from left to right, and from right to left, first walking, and afterwards jumping. When it is made to the right, the left leg moves first, passing behind the right; then the left leg moves in the same direction, the centre of gravity of the body falling alternately on each. The contrary takes place when the step is made to the left. This exercise may be varied, by making the leg which crosses pass before the other instead of behind it.

EXERCISE VII.*The French Step, or March, on the points of the Feet.*

This exercise may be regarded as preparatory to running and jumping, as it greatly develops the interior muscles of the legs and thighs, and particularly strengthens the joints of the toes. Besides contributing to make the walk erect and elegant, it has the advantage of habituating those who practise it, to preserve their equilibrium on the narrowest bases. The boys are to be placed on one line in the manner above described. At the word of command—"On tip-toes, in place,"—each boy places his hands on his sides, and waits for the word—"Rise,"—when they all gently raise themselves on their toes, joining the heels together and keeping the knees straight, and remain in this position till the word—"Rest,"—is given, on which they fall back lightly on their heels, their hands at the same time falling down by their sides. Afterwards the different steps, described in the preceding exercises, may be made in this position, advancing, retreating, or marching sideways at pleasure.

EXERCISE VIII.*Walking on the Heels.*

This action has also the advantage of strengthening the lower extremities, and may be performed either advancing or retreating. During this Exer-

cise the knees must be kept straight, and the breast forward.*

EXERCISE IX.

Kicking.

This exercise consists in throwing the feet alternately straight forward, as if forcibly striking at some object in front, and it may be made either advancing or retreating. When well performed, it acts powerfully on the muscles of the back and other parts of the body. It is also very useful as a means of defence against the attack of an animal, and in many other cases. The inhabitants of the mountains, in many European countries, fight in this manner, without making use of their hands, which they place in their bosoms or on their backs.†

EXERCISE X.

The broken Step.

In the broken step there are three quick paces, and three in a slow trot. This pace possesses great advantages in forced marches, and where it is necessary to travel far in a little time, without

* This exercise, repeated often, will be of great advantage to those whose tendons being too much contracted, find it difficult to put their feet flat on the ground in walking.

† The Highlanders, in Scotland, and the inhabitants of Gouggisberg, in Switzerland.

The Chinese fight entirely by kicking with their feet, and hit their adversaries most severe blows with the heel upon the head.

regarding the local obstacles. After being a little habituated to it, one may travel six miles an hour, and continue at this rate for several hours successively, without being much fatigued; for the alternate change from the quick step to the trot, gives time for the lungs to dilate themselves, without any great effort. During the quick step the muscles, and the articulations of the lower extremities, enjoy a momentary repose, and acquire new power.

EXERCISE XI.

The Tick-Tack.

This is a quick movement, and consists in striking the feet distinctly on the ground. The first consists of four times, the second of five, and the third of seven. It may be performed first, in place, afterwards in any other direction, and with greater or less rapidity. In whatever direction the movement be made, the stamping of the feet should always be continued as it was begun. To execute the first movement, in place, it is essential that the body be kept in the most erect position. The arms are placed a-kimbo, and the heel of the left foot is placed before the hollow of the right, when it is this foot which gives the blow. The first movement consists in throwing all the weight of the body on the left side. In this position, the first time is formed by raising the right foot in a perpendicular direction, placing it plain upon the ground, counting *one*; the left foot, so to speak, finding itself

driven from the side, strikes one blow lightly against the ground with the toe, and another with the heel, and is then placed plain on the ground: then, all the weight of the body resting on the latter, the right foot, which is raised and set down again immediately, forms the fourth time. In this exercise each foot strikes twice. The first time is made by the right foot, which is raised and placed down again immediately. The second and third are made by the left foot, which strikes two quick blows against the ground, and places itself immediately plain; then the right foot, which is quickly raised and placed down again, makes the fourth time. The same exercise, with five times, only differs from the first by the last stroke and the rapidity of the movement. The first three times are performed as above described, but, at the fourth, the foot which gives the blow, strikes twice following, which makes the five times. One with the right, two with the left, and two with the right. The same exercise, of seven times, has this in particular, that, after having executed the five first times in the manner above described, the last two are made by striking two additional blows, the first with the left foot, and the other with the right. In order to perform this exercise with great facility, it is necessary to bend a little on the articulations of the lower extremities of the side where the motion is given, and, at the same time, to make the movements of the feet with great ease and suppleness.

From the description of the Exercises, it is easy to perceive how much they contribute to develop the force, the suppleness, and the agility, of the lower extremities. The hip, the knee, and the muscles of the thigh which make the movement, are the parts which are the most fatigued. The striking of the toe and the heel, as well as the momentary station of the other foot, are very advantageous for augmenting the force of the muscles of the calf, and the suppleness of the instep. In order that one part may not acquire greater force than the other, without acquiring the same agility, it is indispensably necessary often to change the legs for giving the blow.

BALANCING ON THE FEET.

*Introduction to Dancing.**

The following position must precede these Exercises. The body erect, the heels on the same line, the head up, the shoulders back, the arms

* In order to perform these exercises well, the boys must be formed into two ranks, preserving between themselves a sufficient space to prevent their movements from being interrupted. This should also be the case in the greater part of the individual exercises of the superior extremities. When they are placed in a line, at arm's-length, they are counted off by fours, then the word of command is given :—" The odd numbers two paces forward ; march !" —and, by means of this simple evolution, two ranks are formed, and the intervals are doubled.

in the air and parallel with the head, and the hands shut.

EXERCISE I.

Balancing on one Leg.

This movement is made always, in place, sometimes on one leg, and sometimes on the other. At the word of command—"On the left leg balance,"—the arms are raised parallel to the ears, and the right leg, extended, is raised as high as possible, counting *one, two*, in placing it again on the ground, the heel of the right foot before the ankle of the left; this is immediately moved backwards and brought again to its place to raise the other, which is then lifted up, and so on in succession. This movement ought to be executed in equal times. During this action the upper part of the body and the arms are always inclined to the direction opposite to the raised leg. When it is the right leg which is raised before, the upper part of the body leans backward; the contrary takes place when the left leg is raised behind. When it is intended to change the leg without interrupting the measure, that which is behind must be moved forward. It should be carefully observed, that the heel of the foot which is raised, ought always to be placed before the ankle of the foot which is behind. The rapidity of the measure must not be increased till the movement be executed with great facility and exactness.*

* The side-step, balancing-step, and walking-pace, may be executed successively one after another.

EXERCISE II.

The School Step, or Balancing Pace.

To perform this the body must be erect, the arms and breast kept forward, and the head up; then one of the feet, for example, the left, is raised in front, the knee straight, and the toe inclined towards the ground. This position must be preserved a moment, then the foot is placed again on the ground, and the other raised behind, the knee and the instep extended; then, having remained a short time in this position, the leg is gently moved forward, without deranging the upper part of the body, and after balancing an instant in this position, the foot is again placed on the ground, and so on in succession as long as the exercises continue. In order to perform these movements well, not more than three paces in a minute should ever be made.

By these movements, frequently repeated, the habit of moving freely is obtained, and an easy, erect, and confident walk is insensibly acquired.

EXERCISE III.

Pace of three Times.

This exercise can only be performed in two ways: first in walking forwards, secondly in walking backwards. In the first case, one foot is advanced and the heel placed on the ground first, counting *one*, then the toe is placed on the ground, and the heel at the same time raised, counting *two*,

and the heel is again set down, counting *three*, when the foot remains plain. The same movements are afterwards made with the other foot. This exercise, as well as all the others, should be commenced in slow time, in place, sometimes making the step forwards, and sometimes backwards, then the double step, the quick step, in place, and afterwards the same thing may be repeated in advancing or retreating. When this exercise is performed in retreating, the feet act in a manner contrary to that just described. In moving the foot backwards the toe touches the ground first, *one*, then the heel, *two*, and the toe being raised and placed immediately on the ground, makes the *third* time.

These exercises are very advantageous for increasing the force of the active station. The slight vibration which is experienced in the abdomen, by the repeated shakings of the three blows which the feet alternately make on the ground, produce, on persons affected with intestinal obstructions, a movement more gentle, salutary, and various, than the ordinary walking pace.*

EXERCISE IV.

First Balance.

To make this balance, one of the legs, for example, the right, must be slowly raised, taking care

* One can increase the difficulty of almost all the exercises, above described, in performing them, by jumping twice on one leg.

to lift up the heel before the toe, and without deranging the position of the upper part of the body: the knee must be raised to a level with the stomach, then the right hand falls gently down between the thighs, grasps the instep of the raised foot and remains there, the knuckles downward.

EXERCISE V.

To touch the Ground.

Being placed as we have seen, one leans the upper part of the body forward, bends upon the leg, which supports it, and endeavours to touch the ground with the knee of the leg which is raised.* Having touched the ground, one must raise himself again, without letting go the leg or losing the balance, and return to the first position.

EXERCISE VI.

The Cross Touch.

Without deranging the position of the body the left leg is raised gently behind, and the right hand falling back, seizes the instep of the left foot, then, bending gently on the right side, one touches the ground with the left knee, and raises again, without letting go the foot.

EXERCISE VII.

The touch of the Toe.

After having gracefully extended the arms, almost

* Here the weight of the body rests upon the left leg, whilst the knee of the right lightly touches the ground.

parallel to the ears, one of the legs, for example, the right, is raised and extended backwards, the knee and the instep being kept straight, and the arms and upper part of the body inclined forwards. When the raised leg, horizontal with the hip, has gained its highest point of elevation, the body bends upon the other, till the toe of the foot which is raised touches the ground, without being obliged to lower very much the leg. As the toe touches the ground the breast will rest on the left knee. The balance must be still preserved, and the body raised again very steadily, till it has recovered its first erect position, or touch with the heel, as described before.

EXERCISE VIII.

The touch of the Heel.

From the position indicated in the preceding exercise, one leg is stretched forwards, and by bending the other, the body is gently lowered till the heel of the extended foot touches the ground; then the body is again raised up, without losing the balance or changing the position of the extended leg.* These exercises, as well as the preceding ones, may be considered as the best introduction to dancing, because the greater part of them tend to accustom young persons to assume and preserve different balances, whilst, in every sense, they

* It is understood that all these exercises are executed with the two legs alternately.

gracefully develope and move all their members with agility.

EXERCISE IX.

Changing the Guard.

This exercise is made alternately on both sides. Its use is to increase the force of station, and the correctness of the view. Placed on guard to the right, that is, in the same position in which one is placed for taking a fencing lesson on the right hand, and especially standing firm on the legs, the change is made from the right by bending a little on the lower extremities, and, by means of an impulse, or spring, changing places with the feet by raising them, and setting them down at the same time, the right in the place of the left, and the left in the place of the right. The position is then on guard to the left.* In the beginning it is necessary to give the body a little impulse, by extending the arms first in the opposite direction, and then throwing them forcibly that way in which the body is moved. This preparatory movement serves to collect the forces before making the spring. In order to be placed again on guard to the right, the movements which have been made in changing to the left, must all be made in the reverse order. In the first change it is the right foot which is behind; now it is the left which takes its place, and by this evolution the

* The hand may be changed also, by quickly moving back the foot which is before, and taking the foil in the other hand, without, as it were, letting go the sword.

boy finds himself in the same position in which he was at the beginning, that is, on guard to the right. This change ought to be made with great promptitude and confidence, and several times successively. In this, as in all other exercises, the quickness must be increased in proportion to the progress that is made. In the beginning, particular care must be taken to fall with exactness, that is, the two feet on the same line, and the body erect.*

EXERCISE X.

The Walk near the Ground.

This is a repetition of the preceding exercises. It serves particularly to increase the strength and elasticity of the muscles and joints of the lower extremities. The tiresome position the scholar is obliged to keep during that movement has the advantage of preparing him for exercises still more difficult. Being placed on the beam, or on a bench, as on horseback, he raises the foot, (for example the right,) which he places flat on the beam, the

* Besides the advantages that may arise from this movement in an attack made with arms, when one thrusts indifferently with both hands, we have observed in this evolution the merit of an excellent gymnastic exercise. The spontaneous action which it produces on the whole body, greatly fortifies the lower extremities and the loins; and the habit which is contracted of falling with exactness on both feet at the same time, and of quickly changing the hand, notwithstanding the violence of the movements, is a great resource in an obstinate defence.

heel as near the upper part of his thigh as possible : he then raises himself on the point of the foot, in carrying the weight of the body before him, without touching the beam with his hands; the left leg ought to hang perpendicularly, the point of the toe towards the ground, the arms stretched forward. In this position he must keep the balance for some minutes ; after which he must stretch his leg out before him, place the heel on the middle of the beam; carry, with the assistance of the point of the right foot, the whole weight of the body on the other leg, observing still the same position, and this alternately till he comes to the end of the beam.

As soon as he can thus, with easiness, go forwards on the beam, without the assistance of the master, the scholar should try to go backward, keeping the same balance as in the preceding exercise. Going forward, it was the point of the heel which acted; now he is supported by the toes. The leg which hangs is stretched backward, till the toes are so placed on the middle of the beam, that he can on them carry the whole weight of his body.

To execute this movement well, and to act so that the toes can easily find the middle of the beam, it is indispensable to observe to the scholar, that his hip, his knee, and heel, forming a right angle, the point of his foot will infallibly find the middle of the beam, if his body is well placed, and he keeps a just balance.

*Running in General.**

Running only differs from walking by the rapidity of the movements. It may be seen by that how useful and natural it is to man. The advantages which this exercise produces are incalculable: its salutary effects operate in a very visible manner on the individual who practises it, and are reproduced in a great many circumstances of life. Running favours the development of the chest, dilates the lungs, and, when it is moderate, † preserves this precious organ from the most dangerous and inveterate diseases.

This exercise, in contributing much to render us healthy and vigorous, may also enable us to avoid innumerable dangers. In effect, how many persons have been victims to their incapacity in this exercise! How many unhappy soldiers would have

* Since our arrival in this Country, we have found that the exercise of walking and running are carried to an extent of which we had previously no idea. The celebrated Capt. Barclay's walking 180 miles without resting; and still more, his hitherto unparalleled exertion of doing 1000 miles in 1000 successive hours, are truly surprising, and afford strong proofs of what may be effected by persevering exercise.

† It is necessary to observe here, that if one individual succeeds in performing such feats, without any ill consequence to his constitution; there are a great many who kill themselves by endeavouring to attain Capt. B.'s perfection; for immoderate walking or running, will cause great debility in the whole animal economy, and, if carried to excess, will be highly injurious to the human frame.

escaped a hard captivity, and even a cruel death, if they had been accustomed in their youth to run fast and long. Often do unforeseen circumstances oblige us to hold our breath a long time, and to run with the greatest possible rapidity, when our dearest interests force us to the rescue of those whom we most dearly cherish ; and our own preservation may frequently depend on the celerity with which we pass over any given distance. What are the consequences of an exercise so violent, when we have not been previously prepared for it? Sometimes the most serious diseases, the vexation to see an enterprise fail on which our welfare depended ; or, what is still more cruel, to see persons the most dear to us perish before our eyes, whom we might have saved had we arrived a few seconds sooner. Without the fear of hazarding too much, we may assert, that it is the same with running as it is with walking. If we see but very few persons run with grace and agility, we see still fewer run fast, and continue it for a long time. There are many who can scarcely run a few hundred paces without being out of breath and unable to go farther, because they perform that movement under a real disadvantage. Some, by swinging their arms with too much violence, agitate the muscles of the breast, and thereby compress the movement of respiration ; others, by bending their knees and throwing them forward, and by making long paces, fatigue themselves very soon, and also

lose a great deal of time. Those who raise their legs too high behind, advance but very little, though they labour very much. It is also very disadvantageous whilst running, to throw the upper part of the body backward, to take too large strides, to press too hard upon the ground, and to respire too rapidly. To run fast and gracefully, one should, as it were, graze the ground with the feet, by keeping the legs as straight as possible whilst moving them forward, raise one's self from one foot upon the other with great velocity, and make the movements of the feet rapidly succeed each other. During the course, the upper part of the body is inclined a little forward, the arms are, as it were, glued to the sides, and turned in at the heights of the hips, the hands shut, and the nails turned inwards. The master, not only ought to take care that the boys do not contract any bad habits that may render running difficult to them, but he ought also to teach them all the little advantages which, by rendering it more easy, furnish them with the means of avoiding whatever is injurious to the health. It is indispensably necessary, that the instructor be a good runner himself, and well exercised in the different sorts of running; for he ought often to follow his scholars to prevent their making false movements, and especially to watch lest they force themselves too much. It is only by following them, and arriving at the goal with them, that he will be able to judge of their strength, and of what they are capable of

supporting. In following them whilst running, he will observe those who respire too fast, or who tire themselves to no purpose by raising their legs too high behind, and at the end of the course he will take care that they lean the upper part of the body a little forward to facilitate their respiration.

Preparatory Movements.

EXERCISE I.

Running in Place.

This exercise serves to give great play to the hips, accustoms the boys to throw out their feet properly whilst running, and gives the instructor an opportunity of regulating the movements of respiration.* At the word of command—"Forward,"—the boys bend their arms to the height of their hips, the fists closed, and the nails turned in. At the word,—“March,”—each moves forward, his left leg extended, the toe lower than the heel, and counts *one*; on placing it again on the ground, he immediately raises the right leg, which makes the same movement, and counts *two*; and thus conti-

* It is very advantageous to accustom young persons to make long inspirations whilst running. “The continued concurrence of the contraction of the diaphragm, and of the action of the air contained in the lungs, makes the repetition of the movements of respiration less frequent, and at the same time it insures to the chest a considerable degree of dilatation and firmness.” (Barthez.) It may be seen by this, that it is only by a continual and well-directed exercise that we can acquire, what is generally called, a strong breath or good wind,

nues counting *one, two, one, two*, in equal times, till the word,—“Halt,”—is given. As soon as the instructor perceives that his scholars are well confirmed in their pace, he may make them pass, at each return of the exercise, from the ordinary step to the quick step, and from this to the precipitate step, and afterwards in an inverse order; that is, to return to the first pace, observing the same gradation. The voice of the instructor must always direct the movements.

EXERCISE II.

To Rise and Fall with Exactness.

To accustom young persons to take the position of running, the instructor places his scholar, the right foot forward, the fists shut, the arms close to the sides, and the whole weight of the body bearing equally on both feet. Things thus disposed, the instructor gives the command for starting, and follows his scholars, counting *one, two, one, two*, and gradually increasing in swiftness. He carefully observes, that the boy always rises and falls plain on the bottoms of his feet, and that, whilst running, the upper part of his body is inclined a little forward. The arms should be neither too stiff nor too slack, but should follow naturally the impulse communicated to them by the other parts of the body.

EXERCISE III.*Running in a Square.*

As soon as the boy is able to run with exactness on both his legs, that is, as soon as he is able to preserve a perpendicular position of the body, he may be made to run round a square, in the middle of which stands the master. To exercise him equally on both legs, make him run sometimes with his right shoulder within the square, and sometimes with his left.

EXERCISE IV.*Spiral Running.*

As soon as the boys can perform the preceding exercise with facility, make them run round a circle, increasing continually in rapidity, and diminishing the circumference of the circle in proportion as the running is accelerated. They must be accustomed to execute this movement on both legs, for the design of this exercise is to habituate them to turn short on both sides, even in the middle of the most rapid running. This great facility of turning short, in the middle of a course, produces very great advantages to runners; it often preserves them from falls, or from meeting any dangerous object.

EXERCISE V.*Sinuuous Running.*

The plays of the "Wolf's Tail" and the "Winding Run," performed by many children, are also

very commendable, considered as elementary exercises for running. The first is too well known to need any description. With respect to the sinuous, or winding run, it differs from common running in the following particulars. The boys are all placed in a line, about one pace distant from each other; and the quickest and best runner is generally the leader of his companions. Being thus placed, at the word of command, "On guard," they take the proper position for running, and at the command, "March," the joyful company put themselves in motion, and follow their leader, who makes them describe, in running, sometimes a curve, sometimes a semi-circle, and sometimes a circle. Now he advances, now retreats, turns sometimes to the right, sometimes to the left, and all this time running with great rapidity. The whole line should follow upon the footsteps of their leader.

EXERCISE VI.

Doubling the Line.

In order to judge of the progress which the boys will have made in the preceding lessons, choose those who appear the most developed, and make them double the line; that is, whilst swiftly running, to turn short at any point indicated by the master, and return to that from which they started. They may then be accustomed to make, whilst running, an entire turn, and afterwards to turn several times

in passing over a straight line of fifty or sixty paces. A runner who shall have carefully made all the exercises which we have indicated, will be able to overcome or avoid, with the greatest facility, the different obstacles he may happen to meet with in his course.

EXERCISE VII.

Running with a Stick.

To hinder the boys from turning up their legs too high behind whilst running, and in order to correct those who have this defect, and to force them to run off in spite of themselves, two of the best runners take hold of the ends of a stick, from four to five feet long, one with the right hand, and the other with the left. The boy who is to be exercised, takes hold of the stick in the middle, with both hands, his nails turned downwards. The two leaders place themselves in the position for starting, (the right foot one pace before the left,) and the other boy in the same manner. At the command of the master, they start together; the conductors taking care not to run too fast for their companion.

As the continuation and the rapidity of running depend absolutely on the power of the lungs, the suppleness of the hips, and the agility and strength of the thighs, legs, and feet, we confine our scholars to a great many preparatory exercises, which fortify and supple these parts, before making them undertake things too difficult, because we are convinced,

that when the powers are once well developed, young persons may make, without inconvenience, many violent exercises, which would be injurious to them, if they were allowed to practice them too soon. Sufficiently prepared by the preceding exercises, they may now practise, without any danger, the different kinds of running. Running may be divided into, 1st, Running moderate, continued or of long breath; 2dly, Prompt or accelerated; 3dly, Rapid or precipitate.

EXERCISE VIII.

Running Moderately.

As it is required, here, to continue a long time in the same pace, it is very advantageous to run gently, in equal time, and to fix the distance that is to be passed over, in order to know exactly the time employed for arriving at the end; then, to execute the movements well, and to observe the position of the body whilst the running continues. For example, on a fine day in autumn, or spring, when the weather is fresh, make your scholars run a mile in nine minutes, and repeat this lesson till you see they are not much heated when they arrive at the end. Afterwards, make them double the distance, without allowing them to stop, which they will easily do if they are well prepared. Many of our scholars run, at this pace, the distance of six miles in fifty minutes.

EXERCISE IX.*Prompt Running.*

In this pace, which cannot be continued a long time, because the movements are performed twice as fast as in the preceding run, it is proposed to run over the distances already indicated, in less time than in the continued run: for example, of a mile in four minutes, and afterwards in less. Many of our scholars run a thousand yards in two minutes, without being much heated.

EXERCISE X.*Precipitate Running.*

Here it is proposed to run over a short space in very little time; therefore, it cannot be too strongly recommended to the boys to make the simple pace succeed to the greatest rapidity. Though this exercise presents many difficulties, we may, nevertheless, by repeating it, attain to a degree of perfection really astonishing. At the last examination, at the Royal Military Asylum, Chelsea, several boys ran 590 yards in one minute and eight seconds. It may be observed, that the runners experience many more difficulties in the van, than they meet with elsewhere; first, because they are obliged to turn often, and, secondly, because the course is often slippery, which must necessarily impede their progress.

Note—When it is intended to make the boys run one against another, it is essential, in fixing the mark, to determine the distance to be run, according to the age and strength of the runners.

Whilst running, it is forbidden for any one to employ unfair means to throw his competitor, or to place himself before him, in order to outrun him without trouble. Each must run straight forward.

In the simple run, he who touches the mark first is acknowledged the conqueror. If the course is doubled, that is, if, after having gained the goal, they turn without stopping, one to the right and the other to the left, to return to the place from which they started, then the instructor himself should serve as a goal, in order that he might, at pleasure, and according as it may be necessary, increase or diminish the distance which the runners have yet to pass over. If he perceives that they are fatigued, he goes to meet them, which will very much encourage them. If, on the contrary, he sees that they are still vigorous, he may prolong the course, by retreating a few paces. This manner of moving the goal backwards or forwards, at pleasure, during the course, has the double advantage of moderating those who have too much ardour, and of encouraging those who have too little. The first distance that children of from eight to ten years of age may be made to run, is about two hundred yards; the

second, for those more advanced, three hundred; and the third, for adults, four hundred.*

Jumping in General.

OF all the corporal exercises, jumping is, without contradiction, the finest and the most useful. As it cannot be executed with facility, but in proportion to the strength, the elasticity, and the suppleness of the articulations and muscles of the lower extremities, much exercise is necessary in order to attain to that degree of perfection which smooths every obstacle, or furnishes us with the means of overcoming them without danger. In a fire, or an inundation, it is often by means of a determined jump, that we escape the most imminent danger ourselves, or render important services to our fellow creatures. In a carriage, often at the mercy of a coachman asleep or intoxicated, riding an unruly horse, and in a thousand other circumstances, a jump, made with promptitude and assurance, might save our lives, or preserve us from fracturing our limbs. Lightness and perpendicularity constitute all the

* The Highlanders of Scotland have, indeed, always been celebrated for their pedestrian efforts. In the history of Gustavus Adolphus it is stated, that the Highlanders in his service were able, under the weight of all their accoutrements, to keep pace with the cavalry in their most rapid evolutions, and were of most important service in charging with the horse.

merit of jumping: the utmost ought to be done to acquire these two qualities, for, without them, jumping has neither grace nor security.

Remark.—To jump with grace and assurance, one should always fall on the toes, taking care, especially, to bend the knees on the hips;* the upper part of the body should be inclined forwards, and the arms extended towards the ground. The hands should serve to break the fall when jumping from a great height. By falling on the heels, the shock which, in this case, is communicated from the extremity of the vertebral column to the crown of the head, will occasion pain in these two parts, and may be attended with very bad consequences. It is also useful to hold the breath, whilst jumping, for, in all the efforts that we make, the retention of the breath, by preventing the blood from circulating with rapidity in the lungs, makes it flow into the members which are in movement, which greatly increases the strength of those parts.

Preparatory Movements.

EXERCISE I.

Running and touching behind, in place.

ALL our scholars are ranged on the same line, one

* This bending, which decomposes the movement, renders it much more easy.

pace distant from each other, the head up, the shoulders square, the hands shut, the arms pendent by the sides, and the heels on the same line. At the word of command, *Raise behind*, in place, (that is without advancing or retreating,) each boy springs from the ground with both feet at once, and endeavours to touch the upper part of his thighs with his heels, and falls lightly again on the points of his feet. To *Raise before*, in place, the boy, in jumping as high as he is able, does his utmost to make his knees touch his shoulders. These two Exercises are also made both in advancing and retreating.* The instructor ought always to observe that his scholars assemble well; that is, that each one bends on the lower articulations, and augments the impulse by throwing his arms in the direction of the jump which he is making, remembering at the same time to keep his fists shut.†

EXERCISE II.

Trampling on the Ground, in place.

This exercise, which is generally performed in place, is done in two different manners; in the first,

* Raising behind, and marching in place, may be considered as preparatory exercises for those which precede.

† The arms of a man taking a leap, ought to be thrown forcibly towards the place which he proposes to reach. This action greatly increases the impulse, and serves to preserve the body in a perfect equilibrium, and many times to neutralize the fall.

the lower articulations are bent; in the second, they are stretched. It has four different paces, the moderate, prompt, accelerated, and precipitate, paces. In the moderate pace, with the articulations bent, at the word of command, *Trample*, the knees are moved a little forward, the heels raised from the ground, the body rests on the fore-parts of the feet, the fists are shut, and the arms are bent on the hips, or extended by the sides of the body. At the word *Firm*, the feet are alternately raised a little distance from the ground, observing the proper measure. The legs are kept as close together as possible, and the same gradation should be observed here as in the preceding exercise; that is, we must not go on to the prompt pace, till the boys are well confirmed in that which precedes it, and so with respect to the accelerated and precipitated paces. In order to diminish or increase the rapidity of the movements, the instructor may make use of the words,—“slowly,” “gently,” “quick,” “rapid,” &c.

To perform this exercise with the lower extremities stretched, the weight of the body must rest on the bottoms of the feet, and the knees must be kept straight. The stomach should be kept back, without, however, leaning the body too forward. The movements of the feet, and the position of the arms, are the same as in the preceding exercises. This movement, very simple and very easy to perform, is particularly useful to persons confined to a sedentary life; it may be executed in a very small

place, without making either noise or dust. It is especially proper to persons who are subject to affections of the stomach, because the movement of the feet, which are alternately raised with velocity and in equal times, a little distance from the ground, produces in the abdominal region a movement which fortifies these parts. The movements of the feet may be retarded or accelerated in proportion as the exercise is required to be more or less violent.

EXERCISE III.

Walking pace, in place.

The boys placed on the same line, and in the position above indicated, the exercise they are about to make is announced to them; for example, the walking pace, in place, at the word of command, *Forward*, they all raise their arms in the air, or keep them a-kimbo, as in the running, in place, the fists shut, the breast forward, the head up, and the body erect, without stiffness or negligence. At the word *March*, each boy, without deranging the upper part of the body, counts *one*, raises his left foot, with the toe inclined towards the ground, and brings his knee as near as possible to the breast; then he counts *two*, places the left foot on the ground, and raises the right immediately in the same manner as he had done the left, and so on in succession, till the word of command, *Halt, line*, is given. The movements of the feet cease, and each boy, by extending his arm, and placing his right

hand on the shoulder of the next, will find himself in the line, in the place which he ought always to preserve.

EXERCISE IV.

Trotting Pace, in place.

This is nothing but a successive beating of the feet in cadence. The movements of the legs, which are to be performed as in the preceding exercise, must be twice as quick. The instructor, who ought always to be in front of his scholars, counts, as in the preceding exercise, *one, two*, in making the same movements, *halt!*

EXERCISE V.

Galloping Pace, in place.

The movements are much more precipitate than in the trot; it is a continued skipping, which is performed by raising, as it were, both legs at once, and placing them down again very nearly together. When it is the right foot which gives the impulse, the left is raised and set down again the first; the right falls immediately after. When it is the left foot which gives the impulse, it is then the right which is raised and set down again the first. To have a just idea of the cadence of the movements of the feet in these exercises, we may compare the times of the walking pace to the balance of a large clock; those of the trot, to the movement of a watch; those of the gallop form two precipitate movements. The instructor ought carefully to watch that his

scholars raise and set down the left foot at the same time. The upper part of the body has no particular movement; it is almost always immovable, notwithstanding the violent movement of the legs. When the boys can make the above indicated exercises with correctness, in place, they may be made to repeat them in advancing and retreating, taking care especially to make them keep the line and together. If this exercise is one of the most fatiguing, it is also that which presents the greatest advantages for supplying and fortifying, in a little time, the lower extremities, without any instrument, and in a small room.*

EXERCISE VI.

Simple Jump, standing, the Feet joined.

This sort of jumping consists in a sudden impulse executed at the moment when the body is detached from the ground. All the elementary exercises for jumping upwards, are also preparatory for jumping far, for both depend absolutely on the size of the arc which is described in jumping. For this reason we have particularly endeavoured, by a great number of

* It is by means of this exercise that we have been able to supple subjects of an advanced age, on whom our other exercises had had but very little influence. This lesson often repeated, by forcing them to bend all the lower articulations, and that with rapidity, makes them gradually become very supple, and enabled us to make them undertake several exercises, in the course of which we obtained satisfactory results.

exercises, to augment the force and suppleness of the lower extremities. Obligated to exercise many boys at a time, we place a great number of them on one line, at one pace distant from each other, the head up, the shoulders well back, the heels joined, the fists shut, and the arms hanging naturally down by the sides. At the word of command, *One*, they bend and sit down, as it were, on their heels, their arms kept close by their thighs. At the word, *Two*, they rise again, keeping the arms back and the knees straight, and moving the upper part of the body forwards. These two movements are repeated till they are able to make them with exactness and promptitude, then at the word, *Three*, from the second position, by means of an impulse, they move the arms and the upper part of the body forward, fall on the toes, and wait the command of the instructor to re-commence.

EXERCISE VII.

The Redoubled Jump, with the Feet joined, by two, by four, or by eight.

The boys are placed in a line at arm's length. At the word of command, *Fix*, all the right arms fall together down by the side.* The instructor commands: Count by two, by four, or by eight, according to the strength and the number of the

* This line ought always to be the prelude to the exercises of the lower extremities.

boys ; then the four first, at the command, *one, two, three*, or, down, up, jump, begin the evolution. *One*, is to re-assemble, *two*, to rise, *three* to jump and retake the second position, which is to be kept till the instructor repeats the first commandment. The second detachment, which remained immovable during the departure of the first, begins now to perform all the times which the first party has made. At the third command, the third detachment puts itself in motion, and so on in succession for the whole column, which may be called, in military terms, Breaking the division forward by detachments. Each detachment is one leap before that which follows it. As this exercise is very fatiguing, the instructor will not make them execute above five or six jumps at the beginning. He ought particularly to require that his scholars fall perpendicularly on the points of their feet. As soon as the first detachment is arrived at the end, they file off to the right or to the left, and return to the place whence they started, and the rest follow in the same manner.

EXERCISE VIII.

Continued Jump, the Feet joined.

Here the instructor commands only the first jump, which is made by one, by two, four, eight, or by the whole column in front. When the boy is once in movement, he should continue jumping, with his feet joined, till he arrives at the end of

his course. This exercise being very violent, care should be taken to allow only strong boys to perform it. Jumping backwards, with the feet joined, alternately backward and forward, from right to left, and from left to right, also in place, with the feet joined, make a part of this lesson. These exercises are very recommendable, as they put those muscles in action which have been nearly inactive in the preceding exercises; they offer, besides, to the instructor, the valuable means of varying often the elementary lessons.*

EXERCISE IX.

The Spectre's March.

This march consists in sliding forwards or backwards, on the points of the feet; by making little jumps, without bending any articulation, and with the arms kept down close by the sides. This exercise serves to give a tone to the muscles and articulations which might have been too much stretched after the preceding exercises. By means of these exercises, the position of the body and the carriage acquire much more ease and steadiness. The members habituated to bend and act in every direction, take any sort of position without constraint, and he who is master of all his movements, will seldom experience any embarrassment in whatever

* The jump backwards is also a very good exercise. In that action the hands are thrown back in the same way as it has been already described in *The Jump*, standing.

situation he may be found: it may be added, that if the volume, strength, and suppleness of the members are increased, by means of exercises, there are none more proper for developing the lower extremities than those we have described in this Chapter. But we pretend to point out only the general exercises; a judicious instructor will, without doubt, modify them in a thousand circumstances, of which he only can be the judge.

CHAPTER II.

EXERCISES OF THE SUPERIOR EXTREMITIES.

PREPARATORY exercises for developing and augmenting the strength of the upper extremities.

Movement of the Arms.

EXERCISE I.

*Rising them straight in Front.**

All the boys being placed in the position and line, which we have indicated above, at the command of the instructor—*Forward, one*, they extend their arms in front as high as the pit of the stomach, the fists shut, the nails upwards, and remain there; *two*, the arms fall, without slackness, down by the sides; *one*, they return to the first position. *Forwards, two*, they fall again down by the sides, and so on in succession, always counting *one, two, one, two*, in equal time, till the command, *Halt*, is given.

EXERCISE II.

Raising them parallel to the Ears.

This exercise has four distinct times. *One*, is

* In order to execute all these movements with the greatest freedom, the boys may be counted off by fours, and every other four may be made to advance two paces.

for raising the arms to the pit of the stomach, as in the preceding exercise. *Two*, is for raising them parallel to the ears, the fists shut, and the nails in front. *Three*, is for returning to the horizontal position. *Four*, the arms fall again parallel to the body.* All these movements ought to be executed with quickness, spirit, and in equal time. The upper part of the body has no particular movement, it ought to be kept in perfect equilibrium.

EXERCISE III.

The oscillatory or pendulum Movement.

This movement is performed by swinging the arms forcibly backwards, and forwards in equal time, with the fists shut;—at first only one arm, then the two alternately, and afterwards both at the same time. When only one arm is in action, the other ought to be placed on the chest, with the fist closed, the nails turned inwards. In this movement the shoulder and the fore-arm, when in action, should be kept rather stiff, in order to prevent the articular ligaments from being too much stretched.

EXERCISE IV.

Circular Movement.

This exercise is performed in three different ways:

* In the alternative motion, having brought both arms in the first position, one (the right,) is raised parallel to the ears, and the left is darted towards the ground, keeping it close to the body.

the first, from behind to before; the second, the reverse; and, the third, with the two arms together. In the first case, one of the arms slowly describes a cone, the base of which is at the extremity of the hand, and the summit at the articulation of the shoulder. It is understood that the same movement can be made with the two arms alternately. During this movement, the arm should not be left too much to its own weight, that the top of the *humerus*, which moves in the cavity of the shoulder blade, might receive a moderate and equal friction. To perform this and the following exercises, without constraint, the boys should be placed two paces distant from each other; or to the right face, when they are in front, and the room do not allow time to take double distance.

EXERCISE V.

Vertical movement Superior.

Placed in the position indicated in the preceding exercises, the arms are bent in the direction of the arm-pits, the fists shut, the nails turned inward, the elbows close to the sides, the shoulders square, and the body erect. At the command of the instructor—*One*, one of the arms is quickly raised (passing it close by the temple) in a vertical direction, and remains there. The extended arm forms a line parallel with the head; the arm nearly touches the ear, and the nails are turned forwards. At the command—*Two*, the arm, by a retrograde action,

takes its first position, and this movement is repeated till the command, *Halt*, is given. As soon as this action can be executed with exactness and celerity, sometimes with the right arm, and sometimes with the left, we may habituate ourselves to do the same thing with both arms alternately, counting, in equal times, with more or less precipitation, *right, left; right, left*; or *one, two*, viz.—right, up, and left, down, and vice versâ.* Afterwards, observing always the same equality in the measure of the time, the two arms will be spontaneously raised at once, having regard to the rules above described.

EXERCISE VI.

Developing before, Striking behind.

The principal end of this exercise being to develop the chest and bring it forward, by acting forcibly on the muscles of this part, the instructor must carefully observe, that the execution of the movements be made with accuracy. This exercise has four distinct times. *One*, is to raise the hands along the sides, the points of the fingers inclined towards the ground, and before the waist, to join them over the head, the backs of the fingers united from the second joint, and the nails in front. *Two*, from this position, by developing the arms gracefully to the right and to the left, they are extended horizontally, in a line with the shoulder,

* While the right is raised parallel with ear, the left is darted towards the ground, passing it close to the body.

the palm of the hand upward. *Three*, by lowering the arms gently the hands are turned; when they are at the height of the hips, they are struck together behind. *Four*, the hands are placed down by the sides. Thus: *one*, is to bring the hands before the waist, and join them over the head; *two*, is to extend them horizontally on each side of the body; *three*, is to lower the hands, by turning them, and clapping them together on the back; and, *four*, is to replace them down by the sides. To perform this exercise well, the arms must be gracefully developed, and all the times well expressed.

EXERCISE VII.

Detaching Sideways.

This exercise has three distinct movements: the first from the right or the left, the second alternate, and the third both arms. At the command—*One*, all the boys raise their elbows level with the shoulder, and bend them in the direction of their armpits, the fists shut, the nails towards the chest. At the command—*Two*, each detaches (suppose to the right,) a dry blow, without, however, stretching his arm, and returns to the first position; then the two hands act alternately, which must be well distinguished from the two hands put in action spontaneously. In the first case, there is always one that detaches while the other returns to the body; instead of which, with the two hands at a time, there is but one single blow, the hands detach and bend at the same time.

EXERCISE VIII.*Detaching before, or Movement of Repulsion.*

This has also three distinct movements: the first forward; the second, alternate; the third, spontaneous. It is performed in the following manner: The boy, standing firm on the lower extremities, keeps his elbows close to his body, bends his arms to the height of his breast, his fists shut, and his nails turned towards the ground. At the word of command, *one*, he detaches a dry blow straight before him, without, however, stretching the arm entirely, and continues the same movement with greater force and quickness; first with one arm, then with both alternately, and, afterwards, with both at once.

EXERCISE IX.*First Swimming Movement.*

In this exercise, one of the hands is raised in the direction of the arm-pits, the fingers close together, and the palm of the hand turned towards the chest. From that position one darts the hand in a straight line forward, keeping the little finger down, and extending the arm at full length. In the second motion (without bending the arm,) the thumb is turned downwards, and from that position the fingers describe half a circle, from right to left, if the left has begun, or from left to right, if this begins the first. The hand comes back in the first position,

and begins again the first movement. When both hands have been accustomed to execute this exercise separately, and with precision, it ought to be done with both arms alternately, and afterwards with both arms at once. In the fourth movement, from the first position, both arms are stretched forward, the palms of the hand touching each other; one describes with both hands at once, the above-mentioned circle, in a line parallel with the pit of the stomach. During all these motions, the head is kept back as much as possible, and the loins curved.

EXERCISE X.

Second Swimming Motion,—the Thrust.

Here the first movement consists in bringing one arm stretched behind, the palm turned towards the ground, the fingers and thumb stretched, and close together. In the second motion, bending the arm at the elbow, the hand is here raised parallel with the ear, and near to it the palm is turned downward, the thumb extended, and close to the index. From that position the hand is darted forwards without turning it, and the arm extended at full length. 4th. Keeping the little finger down, the hand moves gently close to the body, in the direction of the knee, and is brought back into the first position behind. One ought to do the same with both arms alternately, and finally with both arms at once.

EXERCISE XI.

Describing a Circle.

This action, which may be regarded as one of the most violent movements of the upper extremities, is, without doubt, one of the most efficacious means of fortifying the station, whilst the upper part of the body performs, in different ways, the most rapid movements, which would not fail to draw the body out of its erect position, if the suppleness of the hips did not maintain it continually in equilibrium. This exercise, which is first made in place, and afterwards in advancing or retreating, may be performed from right to left, or from left to right. When it is made in place, sometimes the right leg, and sometimes the left leg, may be placed forward. The leg which is placed before, is bent, and that behind is stretched, both feet flat on the ground. To act from right to left, the right foot must be placed one pace backward. In this position, it is the right side which supports, whilst the arms act. In the attitude here described, the arms are thrown with great force from right to left, by contracting all the articulations, and keeping the fists as firmly closed as possible, and they are then placed in the way opposite to which they were before they were moved; that is, the right arm is bent on the chest, the elbow in the direction of the pit of the stomach, the fists (the nails inward,) on the insertion of the collar bone, with the

shoulder-blade, the left arm behind, the joint of the elbow a little bent, the wrist hollow, the shoulder kept back; then return to the first position, and so on successively. This movement must be made in place, till it can be made very fast, and a great number of times following, without shaking or moving the sole of either foot. Afterwards, it may be made in advancing or retreating.

EXERCISE XII.

Hovering.

This exercise is a sort of movement, "*en fi onde*," very much circumscribed. It is performed with the arms extended horizontally on both sides of the body, the fists shut, and at the height of the shoulders. The fists may be moved indifferently, by making them turn, in appearance, with great quickness, either from behind to before, or in the contrary direction, describing always small circles with the extremity of the finger. During this action the articulations of the arms and shoulders are stretched, and the other parts of the body ought to be immoveable. This exercise operates on the superior extremities, the same as the action on the plank in the lower extremities; it serves, also, to give a tone to the muscles and articulations, which are stretched in consequence of the preceding exercises. It tends to replace these parts in their natural state, by the contraction to which they are subjected.

EXERCISE XIII.

Pointing to the Ground.

Standing in an erect and easy position, as has been already described. In the first motion one raises the right arm (stretched at full length,) parallel to the head, and describes from the knee to the summit of the head, half a circle, of which the body is the centre. 2d. In projecting the right shoulder forward, the arm is brought gently down to the left side. In this action, the body turning a little on the hips, stops in the same direction, left; the right hip and knee are bent strongly, the left leg is kept quite straight, and the right hand is to touch the ground, near the left ankle. 3d. Also placed, without changing the position of the body, one traces with his finger on the ground, half a circle, from the left ankle to the right, and gets gradually in the first position. The same is also to be executed with the left hand; then follows the alternate motion, and at last the same exercise with both arms at once.

It is necessary to observe, that in the double motion both arms are raised at once, very slowly stretched at full length, parallel to the head, the hands brought almost close together, and the palm turned forward.

From that position, keeping the arms and legs stretched at full length, one stoops forward, touches the ground between his toes, and gets up gradually.

*Complicated Movements of the Arms and Feet
together, in place, or moving for-
wards and backwards.*

EXERCISE I.

Of Arms marking time.

FIRST. The right arm and right leg forwards, keeping the left foot firm, the right knee bent, the left stretched, and the left arm in the rear. In the first position, the right arm is extended forwards, the nails upwards, and in a line with the eyes. The movement of the right foot and arm forwards, and that of the left arm in the rear, must be well executed together, and with quickness. 2d. The same exercise with the left. 3d. Alternate movement, or right and left. 4th. Both arms at once, with the right foot, and the same with the left.

EXERCISE II.

Of Arms, with the Walking pace.

1st. Both hands on the chest, in a line with the arm-pits, the fists shut, the nails turned inward. 2d. From that position, one rises at the same time the right arm, in a vertical direction, extended, and parallel with the head, and the right knee as near as possible to the chest, the toes inclined towards the ground. 3d. The arm and foot come into the

first position by a retrograde movement. The same exercise is also done with the left. 4th. Right and left. 5th. Both arms at once. In this movement the right knee is raised with the arms, and the left at the very instant when the arms are placed on the chest.

EXERCISE III.

1st. The right hand in the rear, the arm stretched, the fists shut, and kept two feet distant from the hip. 2nd. Moving the right foot a pace forward, bringing at the same time the arm in front, in describing a circle, and stretched at full length, the nails downward. In this position the right knee is bent, and the left is stretched; and the foot, which ought to graze the soil in moving forward and backward, is always put flat on the ground. 3d. Backward into the first position. In this movement it is necessary to carry the weight of the body on the left, and to bring the hand and the foot through the same lines which they have described in moving forwards. 4th. The left arm goes through the same movements, observing the rules above described. 5th. Both arms, each describing a circle, are brought in front, with the right foot; and back as in the first position. One ought to do the same, moving the left foot forwards.

EXERCISE IV.

1st. Both arms up, the knuckles to the chest, the elbows in an horizontal line with the shoulders. In the second motion the right arm is stretched sideways, keeping the elbow in, and at the same time the right foot kicks sideways, and comes back as in the first position. 3d. Alternate movement, right and left.

In the 4th, jumping up as high as possible, both arms and legs are thrown, or spread right and left. In moving forward and backward, this exercise is executed only with one arm and one foot at once, keeping the other bent on the chest, and moving sideways from left to right, or from right to left.

EXERCISE V.

1st. The right arm, and the right leg, stretched, are brought gradually, the arm parallel with the head, the palm of the hand turned outward, and the leg always kept straight, in a line with the hip. 2d. From this position both are gently brought to the first. 3d. The same exercise with the left. In the 4th, with both arms; one ought in jumping to raise the knee as high as possible, and touch, with both at once, the soles of the feet, or, in spreading both legs, touch them under the knees.

In moving forwards and backwards, this exercise

is also performed sideways, from left to right, or in a contrary direction.

EXERCISE VI.

1st. Both arms are joined together before the waist, the back of the hands touching each other. 2nd. In moving the right foot forward, both hands are raised over the head, and the nails put together. In that position the head is kept up, the right knee bent, the left stretched, and both feet flat on the ground. 3d. The weight of the body being carried on the left side, one moves the right foot in the first, and meanwhile developes both arms, right and left, in a line with the shoulders, the palm of the hands turned upwards, and clasps them behind the back, at the very instant that the foot is put on the ground, as in the first position. The same exercise, with the arms, is done in moving the left foot forwards.

EXERCISE VII.

The arms are bent close to the body, the elbows on the hips, the fists in a line with the pit of the stomach, shut, and the knuckles turned forwards. In the second motion, one strikes forwards (with the right arm and right foot,) quick, and with force, extending the arm at full length, and brings (keeping the foot on the ground,) back the arm, one foot distant from the face, a little bent in the elbow, the knuckle of the first finger quite opposite to the left

eye; here the right knee is bent as in the other exercises; and in the third motion the arm comes into the first position, the right foot, instead of taking again, is moved backwards, and the left hand takes forwards, the position above described, viz.—the knuckle of the first finger of the left hand opposite, and in a line with the right eye. The same exercise is done right and left, with both arms at once, moving one foot forwards, as all the others. It can also be done in marking time, as it has been described in the first exercise. All the other exercises which are described in the book, and not here, may be executed after the same principles explained in the first exercise, except the last two; and all of them may be performed in moving forwards or backwards with ease, or with great energy. It is easily to conceive that all these quick and rapid movements, of short duration, but frequently repeated, are without doubt the best adapted to the preservation of health, and to the maintenance of pliancy and agility. By their simplicity, these exercises may be executed by people of every class, and of every station, and almost every where. The youth, the adult, the grown man, and even old people, cannot but obtain a great benefit from the practice of them. The youth and the adult to strengthen them, and to make them active, the grown man to maintain an equilibrium between the body and mind, and the old man to animate and warm his vital powers, which are nearly extinguished.

G

CHAPTER III.

COMPLICATED EXERCISES.

Wrestling.

But we who are made to be vigorous, do we believe it possible to become so without trouble? ROUSSEAU'S EMILE.

THE salutary effects which result from the different manners of wrestling extend themselves over the whole body. The members are developed, the muscles are fortified, the vital spirits are circulated more freely, and increased in a very visible manner. This exercise presents also the advantage of arming young persons with patience, courage, and constancy. A long experience, supported by daily practice, has clearly proved to us, that, of all the exercises of the body, wrestling, well directed, is that which increases courage the most, inures to pain, and accustoms young men to perseverance. This only gives them that moral force which is commonly called resistance.*

* No other exercises are here meant, than those which our scholars perform in our presence, in order to increase, in amusing themselves, all their faculties; and an intelligent man will easily perceive, that all those exercises are, in fact, the natural plays of childhood, which only require to be directed by a man capable of appreciating their different dispositions.

If we consider wrestling with regard to its general utility, we shall see that there is no other exercise which presents, more than this does, the certain, and not expensive, means of rendering the body supple, vigorous, and well formed,* and of preserving the health, and increasing its means of defence.

It is possible that some men, under the influence of prejudice, or the pretended brave, may think that wrestling is useless, since fighting with the fists is no longer practised amongst gentlemen; but let us suppose, for a moment, that one of these gentlemen unintentionally insults, or rather finds himself insulted, by one of those vigorous companions, who, to decide their quarrel, employ only the arms which nature has given them; in a similar case, what will the man do, who has hardly strength enough to handle the sword which he carries ††

General Remarks on Wrestling.

Both with regard to security and agreeableness, a close soil, covered with a good green turf, is,

* Amongst the Athlets of antiquity, the wrestlers have always been considered as the finest and the most symmetrical men in their whole body.

† On a similar occasion, Marshal SAXE seized the aggressor by the collar, and with a vigorous arm threw him into a scavenger's cart full of mud. Instead of insulting the Marshal, the people of London enthusiastically applauded this proof of his vigour.

without contradiction, the most proper ground for wrestling on, when care has been taken to remove all the hard bodies which might injure the wrestlers in case of falls, or during the struggles which take place on the ground. Too hard a soil presents but little resistance to the feet, and it weakens the confidence of the wrestlers, because they are afraid of slipping and of hurting themselves in falling. Ground covered with a deep sand is very disagreeable, because in wrestling upon it the body is almost always covered with, and the eyes full of sand. Neither boots with high heels, nor shoes with iron about them, should ever be worn whilst wrestling. The pockets should always be emptied of all things that might be injurious to the movements, or that might do harm at the time of falling. The sleeves of the shirt ought to be turned up above the elbows, the waistband of the trowsers should not be very tight, and the shirt-collar should be open. It is expressly forbidden in wrestling for one to take his antagonist by the throat, or by any other improper part, to employ either the nails or the teeth, or to strike him under the chin.

In wrestling upright, the great advantage consists partly in following attentively all the movements of the feet of our adversary, in order to throw him when he makes a false equilibrium; or, when all his forces are not acting in the same way, he fails in his attempt or attack, and gives us himself a real advantage. We see by

this how useful it is, in order to wrestle with advantage, to study the equilibrium during the active station, then to know how to employ with advantage the action of the lever, to conquer or to oppose any obstinate resistance when our adversary is stronger than we.

Having been Directors of National Gymnastics in Switzerland, during several years, we had many occasions to observe that the position which sometimes appears hopeless, is often that which procures the victory. The reason of it is simple: he who has apparently the advantage, almost always abates his vigour, instead of which, he who is ready to yield, assembles all his powers, makes a last effort, and takes advantage of his adversary, who believed himself already the conqueror. The latter is so much the more disconcerted because he did not expect this vigorous resistance: for this reason, he who has the advantage ought never to give himself up to too much security; nor ought he who finds himself in a critical position to despair of success; but, on the contrary, he ought to oppose an obstinate resistance to the last extremity. It sometimes happens in wrestling, that he who meets with a vigorous opposition, which he did not expect, soon loses his courage: the violence of his first shock is often followed by a dejection, which he is not able to overcome; and the obstinate resistance which he experiences, having soon exhausted his strength, he gives up his hopes, sometimes at the very moment when his adversary

is on the point of yielding him the victory. As it is seldom that all the qualities of a good wrestler are found united in the same person, the great advantage, at the time of the encounter, is to discover immediately the weak part of one's adversary: has he the advantage over us with regard to weight; address, prudence, and quickness, will powerfully serve to fatigue him.* We must carefully avoid being held tight in the arms of a man who is stronger than ourselves, and being carried away by him, or we must render his so doing useless and fatiguing, by interlacing ourselves in his legs, and by fixing ourselves round his neck, which we hold with force. The wrestler will at length be persuaded that the strength of a man is of little consequence, when he who possesses it is deficient in those qualities which are acquired by experience and judgment.

In order to prepare our scholars for one of the most complicated exercises, both with respect to the diversity of its movements, and the different situations in which wrestlers are often placed, we arrive at wrestling, properly called, by a course of preparatory exercises, which serves as an introduction.

* Address doubles the faculties of the body. Prudence and quickness often supply the place of strength, when we know how to employ them with advantage.

EXERCISE I.

Kissing the Ground in Equilibrium on the Arms and the points of the Feet.

All our scholars are placed on the same line. At the word of command—*To the ground, forward*, each one, extending his arm straight forward, falls on his hands, by bending the inferior articulations a little, and extends himself at length, as represented in *Plate 2, Fig. 1*. At the command—*One*, he lowers himself, as it were, to the ground, by pushing his body forward, without bending his back or his knees, and remains there an instant. At the word, *Two*, he re-takes his first position, and so on successively, till the command *Up*. Many of our scholars make this exercise forty times following, on the arms and the points of the feet, without falling; that is, they lower and raise the body by the help of the arms and the feet, the number of times indicated, without resting, or bending the back or the knees. To vary this exercise, one may, in this position, describe a circle with the feet, the hands in the centre, and serving as a pivot. It may also be done by walking on the hands, and then the feet are in the centre. In both cases a periphery is described.

EXERCISE II.

To the Ground Backwards.

Here the body is supported on the hands and the

heels, the other parts of the body as far from the ground as possible. (*See Plate 2, Fig. 2.*) At the word of command, *One*, all our scholars, supporting themselves strongly on the hands and the heels, move the knees forward, which should be well kept together, and remain in this position till the word, *Two*, be given, when they return to the first position, and so on successively, till they hear the command, *Up*. The object of these exercises is to strengthen several muscles on which our preceding exercises have had but very little influence. The instructor should carefully observe that his scholars bear equally on the arms and the feet.

EXERCISE III.

To make the Seven, or Square.

Seated on the ground, the hands are placed down quite close to the body, the palms of the hands in the direction of the hips, the fingers outward and joined together. In this position the body is raised from the ground, by pressing strongly with the hands, and kept in equilibrium with the legs extended; and without touching the ground, except with the hands, the legs are moved sometimes to the right and sometimes to the left.

EXERCISE IV.

The Goat's Jump.

Placed on the hands and feet, as in the first exercise, the boys must endeavour to advance by

jumping, without bending any articulation. The loins and the arms give the impulse, and the feet ought to follow without dragging on the ground. This exercise is also made backward,

EXERCISE V.

*Squaring with the Hands, or Wrestling with the Fists.—
Plate 2, Fig. 3.*

In this position, he who proposes to drag away the other, ought to assemble all his forces, feel his equilibrium on the leg which is behind, bend himself gently, place his feet sideways (or pinch with the sole,) and pull strongly that way which he wishes to bring his competitor. He who resists, employs the same means till he loses his footing. If the greater force with which he is drawn away hinders him from keeping himself in a direct line, he makes a pace sideways, from the right to the left, for example (when the right leg is forward,) draws, by this change of direction, his partner out of equilibrium, and endeavours to drag him away in his turn, or re-gain his footing.

EXERCISE VI.

Head to Head.

This manner of wrestling is represented in *Plate 2, Fig. 4*, where the position of wrestlers is shown. The one endeavours to make the other give way, by pushing him strongly with his head and his arms, one above and the other below. If the ground is

firm the young champions have an equal advantage, which they will not always preserve; for one will be able, either by strength or address, to make his adversary recede; and, after he has once been able to put him in motion, he will never give him time to regain his footing.

EXERCISE VII.

The Binding.—Plate 2, Fig. 5.

In this action, where perseverance may often procure the victory, it is forbidden to touch the champion with the hands in the face, or to endeavour to make him let go by throwing him down, or by wringing his fingers. The binding ought to be strong enough to hinder the prisoner from escaping, without, however, injuring him or making him fall down. The great advantage is to manage our strength, and to follow, with the greatest suppleness, all the movements of him whom we hold. When the prisoner is taller than the champion, the latter ought to raise himself, as much as possible, on his toes, to keep up his shoulders, and to force away the hand, which the other tries to introduce by his fore-arm. If, after having made several attempts, the prisoner is not able to disengage himself, by introducing one or both his arms between his own body and that of the champion, he ought to take advantage of the moment when the other forces away the arm which he tries to introduce, and endeavour to turn himself in the following manner: By leaning himself to the

right, in order to introduce his left arm as soon as he feels that the other raises his shoulder, he makes a movement backward with his head, raises his arms parallel to his ears, and throws them forcibly, from right to left, over the head of his champion. If he does not entirely succeed in turning himself by this movement, he leans his right fore-arm strongly against the nape of the neck of him who holds him, and remains in this position till he is able to turn and then disengage himself. He may also disengage himself without the assistance of his arms; but for that he must be very strong, and able often to repeat the effort he makes with his loins, to turn himself as above indicated, or to fatigue the champion in some manner or other.

EXERCISE VIII.

Bending Upwards.

As soon as the engagement begins, he who makes the attack lowers gently the right hand of his champion, drawing it towards himself, and seizing the moment when the elbow of the arm, which he lowers, is close to the hip, he vigorously moves it off with the right, lowers the left hand of his champion, making it pass before the body, and bends his left arm on the right, by acting strongly with the shoulder. The two arms are then joined together. During these different actions, the knee, which is before, ought to act in concert with the hands, in order that he who is pulling the other to-

wards himself, may make him lose his equilibrium. Here, the left knee being forward, it is the *right* arm which lowers, and the left which moves off and bends. To execute this exercise with advantage, requires more suppleness than strength. It contributes powerfully to the developement of the breast and shoulders, it fixes the upper part of the body on the hips, and prepares the members for all the fine movements of wrestling.

EXERCISE IX.

Wrestling with Sticks.

Here the wrestlers ought to act without precipitation. They collect all their strength in giving notice by the words—*Draw, Just!* *Draw*, is the word of warning, and *Just*, that of execution. At the moment of the greatest action, the upper part of the body bends upon the hips, the breast is projected, the arms, are immoveable, the legs, which till then were bent, are extended and stiffened with great force, and act in concert with all the other parts of the body. In this exercise it is less the strength than the resistance which procures the advantage. Therefore, it is essential that the instructor knows well how to distinguish between strength and resistance. We have often had occasion to remark, that a subject of moderate strength prevailed, by resistance, over a very strong man; therefore it appears to us, that, without any abuse of language, strength, in general, may be called

physical strength, and that which we call resistance, moral strength, or strength of courage.

EXERCISE X.

Forming the Lever.

Here strength and tallness give one man great advantage over another, who is shorter and weaker. However, the victory is not always on the side of the strongest. Here it is the left that bears away, the right and the head press down on the same side; that is, the left arm of the strongest moves away the right of the weakest, at the same time he leans his head strongly against that of his champion, and tries to overthrow him, by holding him always in the same position. This action, making him who is the least and the weakest bend the upper part of his body upon the hips, makes him yield in spite of himself. This movement is composed of four different actions: 1st, that of the left arm which moves the right; 2nd, that of the head, which leans with force in the same direction; 3rd, that of the right arm, which pushes down the left shoulder; 4th, the general action of the upper part of the body, which acts to the right, and causes a gentle, but almost inevitable, fall.

He who proposes to resist this attack lowers himself gently, till he is able to seize, with his lower hand, the leg of his champion, pull it up with force, put immediately one of his legs behind that on which his champion stands, and lean the upper part

of his body forward. However little address one may have, with great quickness he will always overthrow his adversary. Or, as soon as the weakest perceives that the other wishes to press him down, he moves his head back quickly, interlaces at the same instant his right leg with the left of his champion by placing it inside, lifts up forcibly the leg which he holds, and pushes vigorously to the right, with his right arm, which he places across the chin of his champion; if he does not succeed to overthrow him, he ought at least to take advantage of this action to supplant him whom he holds round the body, by raising him from the ground to overthrow him to the right or to the left, without forgetting, especially, the action of his legs.

The Snares, or the Trip.

Among the great number of attacks used in Greek wrestling, we will point out the seven principal trips, or snares. It is extremely advantageous to understand them well, in order to employ them in case of necessity, or to know how to avoid them.—1st. The first, which is called exterior, is made from right to right, outwards, the knees and the hips kept well together; that is, the leg is placed outwards behind the right of the champion.—2nd. From left to left. The left leg outwards, behind the left of the champion. In the first case, the

left hand of him who attacks draws back the upper part of the body, whilst the right shoulder presses forcibly on the breast of him who is to be overthrown. In the second case it is the right hand which draws, and the left shoulder which presses vigorously. In the warmest moment of the action, he who attacks ought to stiffen as much as possible the knee which makes the lever. In either case, he who attacks ought to make all these partial movements as one single action, executed with the quickness of lightning. He who resists has the same chance as he who attacks, when he has foreseen the blow soon enough to ward it off. If, on the contrary, he has been surprized, or has no confidence in his strength, he ought immediately to disengage his leg, and place it behind.—3rd. One may also interlace the right with the left, placing it inside, then the under part of the knees are joined, and he who attacks makes the hook on the forepart of his champion's leg, with the point of his foot.—4th. With the right against the left, in the inside, as above said.—5th. By letting himself fall to the left, to lift quickly from the right, with the top of his foot, the left leg of his champion, tacking it under the calf, and to make him fall on his back, pulling him with the left hand, at the same time pushing vigorously with the right. In both cases, he who is overthrown is made to describe a sort of half turn on the heel of the foot which rests on the ground.—6th. To fall to the right by lifting

up from the left, as above indicated.—7th. By giving a violent push from left to right; to take advantage of the moment when the opponent staggers, to place the end of the right foot quickly on the exterior part of the foot of the champion, and to push vigorously from right to left, without moving the foot which holds. The exterior snare of the left against the right, and of the right against the left, is given when the adversary presents to us one of his legs, sometimes to make a trap, the right for example. If we see that he intends the exterior snare, from the right against the right, we move the left leg quickly, outwardly, behind that which he presents, by engaging him under the knee, we raise it up, drawing towards us with great force and rapidity; we pull at the same time towards us with the left hand, whilst we push forcibly with the right. When this action is well executed, we seldom fail to overthrow our adversary. The blow of the knee is given at the moment when the adversary, bending backwards, moves one of his legs forward to overturn you, you seize the instant when one of your knees is behind his, to give him with the knee a strong push in that part, and with your hands you draw or push his body in a contrary way. Care must be taken not to give the blow of the knee, except the knee which presents itself is a little stretched.

EXERCISE XI.

Taking the Advantage.

In this exercise it is not yet permitted to throw each other on the ground; it is only allowed to seize the adversary round the loins, and to squeeze him in such a manner that he cannot introduce his arm between his own body and your's. To this end, as soon as you have seized him, you must press your head flat against his breast, and raise up your shoulders as much as possible, in order to prevent all his movements. This action takes place standing. The wrestlers place themselves one pace distant from each other, the arms bent, the elbows close to the sides, the fists shut, and crossed one upon the other, as high as the stomach. At a signal agreed on, they approach, seize, escape, and let go each other, often several times, with great quickness, and endeavour, by means of all sorts of deceptions, to seize a favourable moment for taking the advantage, each trying to introduce his arms between the arms and body of his opponent, and to embrace him with sufficient force to preserve the advantage. It is not sufficient to have seized the adversary, as above indicated, but he must be held in this position till he acknowledges his defeat. Whoever has twice had the advantage with the same champion, ought to be acknowledged conqueror, and has the right to begin again with another wrestler.

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EXERCISE XII.

Of the First Fall.

Sufficiently prepared by all the elements of wrestling, we may now, without fearing any accident, familiarize ourselves with one of the most complicated exercises, both by the variety of the movement, and the different situations in which we are placed during the action which is about to be described. Placed opposite to each other, as has been indicated in the preceding exercise, the wrestlers endeavour, by all sorts of movements, to take the advantage; but as here the principal object is for one to throw down the other, it is permitted in the attack, in endeavouring to take him round the body, to throw him in any manner whatever, and when one of the wrestlers is much quicker and more dexterous than the other, it might happen that the victory may be decided before either has taken his hold of the other, for he who has twice thrown his adversary on his back ought to be acknowledged conqueror. As soon as one has taken the other round the body, he who has obtained the advantage ought to keep his head as close as possible on the highest of his shoulders, in order to hinder his champion from taking it under his arm; then, in raising him from the ground, to push him from one side, and throw him to the other; or to take advantage of the moment when he advances one of his feet, and throw him down.

by giving him a trip up. He who loses the advantage ought quickly to move his feet backwards,—to lean the upper part of his body forwards,—to seize, if possible, the head of his champion under one of his arms,—to fix his other hand on the hip, or on the loins, and to make his adversary bear all the weight of his body.

EXERCISE XIII.

Wrestling on the Ground.

In this exercise the two wrestlers are lying on the ground, one on his right side, and the other on his left, two feet apart and opposite to each other. Their arms are lying on their breasts, or extended down by their sides. The action begins at a signal agreed on, and he who is first able to suspend all the movements of his adversary, by holding him confined under him, upon his back, is conqueror. Here cunning, suppleness, agility, strength, and, especially, resistance, are indispensable. When the wrestlers are of nearly equal strength, the victory remains some time undecided; each takes his turn to be on the top, and it sometimes happens that he who loses the first part gains the other two; or, by making an equal part, renders the victory undecided. In this manner of wrestling, as well as in the others, they very often engage three times, for it often happens that he who has had the advantage in the first action, loses it in the second, and is consequently obliged to begin again, in order to decide the victory.

Jumping, Running, and Skipping in a Hoop.

THIS is one of the most simple and amusing exercises for boys. Children of from seven to eight years, with the assistance of a hoop, are able to perform a great number of movements, which cannot but be very advantageous for developing their strength and address. The hoop which they use should be small enough to pass easily between their legs: the two ends which cross each other ought to be very thin, and firmly fixed with a wire or a piece of strong twine; the projecting edges should be rounded as much as possible, in order that the children may not hurt themselves when they strike them against their legs, which often happens when they begin this exercise.

EXERCISE I.

Passing the Hoop forward, in Place.

To perform this movement the hoop is held at the joint, the two hands about four inches apart, the body kept in a perpendicular position, the head up, and the heels on the same line; the hands are then raised to the height of the chin, and their backs turned towards the face. Placed in this manner, we look through the hoop, the part which is to pass under the feet being now over the head.

Things being disposed in this manner, the hoop is thrown under the feet, and we make a little jump with both feet at once to let it pass; we then bring it from behind to before, and continue jumping, taking care especially to raise the feet well up, and not to let go the hoop, to which we communicate a rotatory movement: the hands only should be employed to put the hoop in motion, and they should be kept as close to the body as possible. In this, as in all the exercises of the lower extremities, we should raise and fall on the toes.

EXERCISE II.

Passing the Hoop behind.

Here the hoop passes over the head, descends behind the back, passes under the feet, and rises again before. In this action the movement of the hands takes place in a direction contrary to that of the preceding exercise: placed opposite the middle of the stomach, they hold the hoop turned towards the ground: in this position the hands are raised as high as the eyes, the arms are bent back, and the hands descend, passing close by the face and the breast. In consequence of the impulse it received in passing over the head, the hoop passes under the feet at the moment when the hands become just above the hips. It is indispensably necessary to perform these two exercises well before proceeding to others.

EXERCISE III.*Running through the Hoop.*

As soon as we begin to put ourselves in motion, one foot is put through the hoop and placed on the ground, the other is then raised behind to let the hoop pass, and the hoop is brought again before the feet by making it pass up behind the back and over the head. The passage of the hoop under the feet is made at the moment when one of the feet is raised, whilst the other is moved forward.

EXERCISE IV.*Half-Passage.—Sideways.—In Place.*

The pupil holding the hoop in his right hand, and extending his arm, makes a little jump, passes the hoop under his feet, and rises into a horizontal position, standing himself in the middle of it; he then jumps again, passes the hoop back under his feet, and resumes his first position. This exercise should be made with the right hand, till it can be done with ease and facility, and then the same thing may be done with the left.

EXERCISE V.*Entire Passage.*

If this exercise presents greater difficulties than the preceding, it offers also the surest means for developing the address, by habituating the body to

move itself with ease and celerity, whilst the arms are executing partial movements. In order to make the hoop perform an entire round, by throwing it under the feet, either from the right side or the left, the arm which acts should be raised and extended parallel to the ear; then the instrument should be passed under the feet, which ought to be raised high enough not to interrupt it, when it comes again in the first position. The hand not in action should be placed on the breast, and the elbow kept close to the body. It is especially necessary to perform well the passage of the hoop under the feet. If it has not sufficient impulse, it will take an oblique direction, and touch the body. What has been made with the right hand may be repeated with the left.

EXERCISE VI.

The Return, or Passing above.

As soon as the preceding exercise has been made with facility, we may try to pass above, that is, to make an entire turn, by making the hoop pass over the head on the side opposite the hand which directs it. If the right arm acts, the arm held parallel to the ear, the hoop is thrown to the left; then, by making it pass over the head, down the side, and under the feet, it is brought again to its first position. To pass from the left to the right, the contrary movement is made with the left hand.

Jumping, Running, and Skipping with a Cord.

The exercise of the hoop and the cord are in every respect recommendable. By putting the body in action in every possible manner, they increase its strength and address, and render the members astonishingly supple. Besides, their great simplicity presents the advantage of being able to perform them every where without danger. Children of seven or eight years may try the most simple, without running any risk of injuring themselves. Afterwards they will learn, of their own accord, to perform the most difficult. Although very simple in itself, this exercise is capable of a great many variations. It ought to obtain an advantage over many others, because the movements which it occasions develop the body in the most varied and extensive manner. The exercises in question, as well as all the other elementary exercises, present the advantage of being executed, at the command of the instructor, by a great many scholars at a time. Each of our pupils having his cord and hoop, we often exercise sixty of them on the same line. In order that they may be able to act, without interrupting each other in this exercise, after having counted them by fours, every other four is made to advance or retreat a few paces. In following here

the gradation of the different classes, the spectator sees in the same lesson the most simple exercises, and those which are the most complicated. The cord used for this exercise should be very supple, and long enough, when held in both hands, to extend from the sole of the foot to the hips. This exercise consists in making the cord, one end of which is held in each hand, pass over the head and under the feet. A gradual impulse is given to the cord, and the pliant body follows the movement in cadence. The cord passes under the feet, lightly grazing the ground, and then over the head of the skipper, and envelopes him in a semi-oval, which afterwards, by the rapidity of the movement, appears to be entire. To admit the cord to pass under the feet, both the legs are to be bent at once, and the heels are raised to a convenient height behind.—See *Plate 6, Fig. 28.*

EXERCISE I.

Passing before.—In Place.

Here the position is the same as in the first exercise with the hoop. To begin, the cord is thrown behind, and then, by giving it an impulse, it is brought forward, passes under the feet, rises again behind, comes forward, passes under the feet, and so on successively. As in the exercise with the hoop, the cord must perform a movement of rotation, except that it does not turn between the fingers. During this action the arms are a little bent, and

have but very little movement; the principal action is in the wrists.

EXERCISE II.

Passing behind.—In Place.

Here the movement is made in a contrary way to that of the preceding exercise. The cord placed before is made to pass over the head, behind the back, under the feet, &c.

EXERCISE III.

Passing before.—In Running.

This does not differ from the preceding, except that it is made in advancing or retreating. As soon as these three exercises are made with precision, we may try the touch behind, the touch before, and the galloping step; and then we may pass on to the following: though they present greater difficulties, they may be easily executed by those who have well learnt the preceding.

EXERCISE IV.

Skiping in Place.

In this exercise the position and the movements of the feet depend entirely on the will and address of him who is performing it. The action of the feet may be infinitely varied, whilst the cord turns sometimes from behind to before, and sometimes from before to behind. Often whilst the right leg

is extended forward, the left, by being raised behind, touches the upper part of the thigh. The left advances in its turn, and the right touches. We might also try the balance, sometimes on one, and sometimes on the other leg. Young persons who have already learnt to dance, might make all sorts of figures whilst the cord moves without interruption.

EXERCISE V.

Simple Passing and Crossing.—In Place.

The first passage is made as in the preceding exercises; in the second, the arms are crossed in the following manner:—In the moment when the cord falls before, the hands cross in the direction and about the height of the hips, the right hand passes to the left, and the left to the right. The direct passage and the cross may be made alternately. When this exercise is made with facility, we may try to make it behind.

EXERCISE VI.

Three alternate Jumps,—simple, double, and crossing.

This exercise is one of the most agreeable to the eyes of spectators; it is also very easy to those who have made the preceding. Here the essential part is, to know how to communicate a sufficient impulse to the cord, to make it pass twice under the feet during one jump. This is what is called doubling. When we are able to double

several times without difficulty, we try to pass alternately without stopping, twice simple, once double, and once crossing. The same exercises may be made behind, in place; then skipping, in place; and then by running forward or backward. Here it is only the double behind which is a little difficult; the others are executed without much trouble, by a little application.

EXERCISE VII.

Doubling Right and Crossed.

This exercise begins to present some difficulty. In it the arms and hands ought to move with great rapidity. Whilst the cord passes twice under the feet, the hands are moved according to a determined change. In the first passage, they act simply, each one on its own side; in the second, they cross, making the cord perform a turn under the feet.

EXERCISE VIII.

Doubling the Cross.

This is one of the most difficult exercises. However, with a little application, it might be conquered in a few days. The principal thing is, to cross the hands with rapidity, as soon as the cord has received a movement sufficiently rapid to make it pass twice following under the feet, during one jump.

These are the most remarkable exercises of the

cord and the hoop. It would be impossible for me to describe all those which my pupils make. Our elementary, exercises of the inferior extremities furnish them with the means of varying them infinitely.

LOWER EXTREMITIES.

Skating.

THIS exercise, carried to a certain degree of perfection, surpasses all those of which we have hitherto spoken, as well with respect to the beauty of the movements, as to the infinite variety and rapidity of graceful attitudes, which the skilful skater knows how to assume and change instantaneously, without appearing to take the smallest trouble. Sometimes, his movement resembles that of a bird hovering about the same place; sometimes, with his body easily balanced, he waves from side to side, like the bark driven by the wind; then, instantly uniting all his powers, the active skater dexterously and courageously darts forward with astonishing rapidity, and the velocity of his course equals the rapid flight of a bird which appears to cleave the air. Sometimes, appearing to yield himself to a simple movement of impulse, he slides upon this compact surface without the spectator being able to perceive the smallest muscular action, and passes as a flying shadow before the surrounding objects. This magical action, which seems

(so to speak,) to set us free from the laws of gravitation, possesses, indeed, something of enchantment; and, without doubt, it was the delightful pleasure which this recreation affords, that suggested to the immortal Klopstock the idea of celebrating, in his songs, the delights which the people of the north find during the winter, on the smooth and solid ice of their numerous canals and lakes.*

* During the winter, Holland presents a spectacle which may be enjoyed at a small expense. When the canals and lakes are frozen, they travel on the ice with skates. In all the provinces, but especially in Friesland, this art is carried to so great a degree of perfection, as to become the wonder of all foreigners; and it is surprising to see with what agility and boldness they will pass over twelve miles in one hour of time. All the country-women know how to skate. Sometimes thirty persons may be seen together, that is, fifteen young men with their mistresses, who, all holding each other by the hand, appear, as they move along, like a vessel driven before the wind. Others are seated on a sledge fixed on two bars of wood, faced with iron, and pushed on by one of the skaters. There are, also, boats ten or fifteen feet long, placed on large skates, and fitted up with masts and sails. The celerity with which these boats are driven forward, exceeds imagination; and, it may be said, they equal the rapid flight of a bird. They go three miles in less than a quarter of an hour.

Nautical exercises are also well known in Holland. In many places situated on the borders, or near to a lake or river, they amuse themselves, at least once a year, by contesting the honour of being the most skilful conductor of a sailing vessel.—*Coup d'œil sur la Hollande.*

January 1821, a Lincolnshire Man, for a wager of 100 guineas, skated one mile two seconds within three minutes!

The penetrating cold which fortifies the body, and accelerates the circulation of the blood, the vigorous action of the muscles in a great variety of determinate movements, as well as the real pleasure experienced during this exercise, must have a great influence on the body and mind of the individual who indulges himself in these amusements.

FRANK, knowing no other exercise more advantageous for developing and strengthening the human body, often expressed a desire to see this amusement introduced, wherever the localities would permit it.* In the Low Countries, adds the same author, the fair sex believe themselves possessed of vigour enough to brave with hardy step the rigorous cold, whilst our delicate females keep close to the fire-side, and hardly venture to take a short walk, even in fine weather.

The celebrated Campe is also of the same opinion with the author I have just cited. "I know no corporal exercise," says he, "more useful and more agreeable to youth. Every child of eight or ten years may easily learn it; it is only necessary to give him an opportunity." It is generally thought that this exercise is dangerous, because we are thereby exposed to falls; this remark is very just, but every sort of danger disappears, if we consider that beginners, being able to give themselves only

* Police Médicinale, &c.

a moderate impulse, are not liable to severe falls, and that it is only by degrees that they are able to perform difficult exercises; and when they have attained a certain degree of perfection, falls are extremely rare, and hardly ever dangerous. In regarding it more closely, we shall soon be convinced, that this exercise presents much less danger than many others which we practise every day without evincing the smallest uneasiness. For example: by riding in a carriage or on horseback we are much more exposed, and for this reason, that it is always better to depend upon our own personal address than to abandon ourselves to the caprice of an unruly horse, or to the mercy of an ignorant, and sometimes drunken, coachman. If we are but ever so little acquainted with many of our exercises, we shall be convinced that we might also learn to fall without injuring ourselves in the least, and as, in the course of life, this accident is inevitable, it is very advantageous for every one to know how to prevent the bad consequences which commonly follow an unexpected fall. As for the misfortunes which arise when the ice breaks, they are not the consequences of the exercise itself; they can only be attributed to a general want of care, or the incautiousness of many parents.

The exercise in question is learned with great facility, if we begin young and have the advantage of being instructed by a good skater. The principal thing is to take care that the skates are well

made, and to fix them on in the most commodious manner. This exercise is so easy that it is scarcely necessary to prescribe any rule to young persons when they have good examples before their eyes. It suffices, by way of precaution, to make them observe, that when they go alone they must lean the upper part of the body forward till they have acquired the equilibrium. In order to obviate as much as possible the difficulties presented in learning this part of gymnastics, we will proceed by degrees in the description of this exercise, and, taking the learner at the elementary part, we will follow him step by step, till he has attained that degree of perfection which will enable him to surmount all the difficulties that can possibly occur. This section divides itself into three distinct parts. The first treats of skates in general, and the manner of fixing them on; the second, of the elementary exercises; and the third, of the various sorts of exercises,

I. Description of Skates, and the manner of putting them on.

When we buy skates, we should choose them with the wood not longer than the sole of the shoe. When the wood of the skate projects beyond the sole of the shoe, either before or behind, it retards the progress, by rendering the movement less secure, and may occasion falls. The bottoms should be of good steel, well tempered, and very hard; those which are too thin and weak break easily, and cut too deep a track in the ice; therefore, we should

always prefer those which are nearly a quarter of an inch thick to those which are narrower. The greater part of skates which are used in the north are grooved, and have two edges. This form may be useful, because it hinders the foot from slipping when it gives the impulse. However, those who are accustomed to skates whose irons have a plain face, will go with as much security, and even faster, than those which have others. It is essential that the iron be of the same height from the beak to the heel. The common height is about three quarters of an inch. Those which are lower are good for nothing, for as soon as the body inclines a little on one side, the skate being no longer in a perpendicular direction, the wood may easily touch the ice, and occasion a slip. We must especially take care that the iron be well secured in the wood, for the most important thing in this exercise is to have the skates properly fixed. In those which are commonly employed there are three points in the hinder part, which fasten themselves into the heel of the shoe as soon as the straps are tied and we begin to stand upon them.

II. *Elementary Exercises.*

The greatest difficulty being to balance well on bases so narrow as those of skates, it will be very advantageous to teach young persons to walk with them in a room before going on the ice, and to balance themselves sometimes on one foot, and

sometimes on the other. These preparatory exercises will soon enable them to tie on their skates themselves, which, though simple in appearance, is certainly an essential preparation. In order to prevent sprains, on first making use of skates, we should give our hand to some one near us, or hold fast by the surrounding objects, till we are sure of our equilibrium.

III. *The Straight Course.*

After repeating on the ice the different exercises we have made on the ground, we endeavour, by an impulse given to one of the feet, to go forward, bearing the weight of the body alternately on different feet. As soon as we are in motion, the foot which has given the impulse is drawn up to that on which we rested, and supports now in its turn all the weight of the body, whilst the other gives the impulse; and this movement is continued alternately till we stop; which is effected by bending the knees a little, drawing the two feet together, inclining the upper part of the body forward, and pressing more on the heels than on the points. We may also stop ourselves by turning short, either to the right or to the left; in this case, the feet being near together, that on the side where we turn is forwarder than the other, and supports a part of the weight of the body.

When girls or boys, who are weak and timid,

learn to skate, during the first lessons they may make use of a stick, as in triple running, p. 52, or may push before them a little sledge, on the back of which they place their hands. It is by these methods that young girls are taught to skate in Holland.

As courage increases in proportion as we acquire the power of balancing ourselves well on the skates, it is rare that children of from eight to ten years employ more than eight days in learning to run on the ice with confidence ; and it may be added, that this exercise has so much attraction for youth, that it is not uncommon to see even the most indolent children so passionately devote themselves to it, that it is with great difficulty they are made to leave off. When arrived at the point where they begin to enjoy the fine easy strokes of their movement, they soon make a rapid progress ; nothing is now necessary but practice, and the example of good skaters. This exercise, carried to its highest degree of perfection, presents an infinite variety of actions, the movements of which are more or less complicated ; but we shall confine ourselves, here, to pointing out those only which are purely elementary, because we are convinced that pleasure, emulation, and good example, are the most powerful incitements to engage us to endeavour to equal those who are already our superiors. The exercise in question may be considered under

two points of view : *a*, as it regards the rapidity, and *b*, as it regards the beauty and elegance of the movements.

In the first case, the active skater, without having any regard to the position or the movements of the body, considers absolutely nothing but rapidity.* In the second, he does just the contrary, and, always preserving a noble and graceful position of body, makes all his movements with the greatest regularity, and seems to measure precisely the space he passes over, and all he executes appears to be foreseen and calculated. He is absolute master of all his actions, however complicate

* The Frieslander, who is generally considered to be the most skilful skater, often goes fifteen miles an hour, and is even able to support this pace for a long time. In the province of Friesland, there are annually several public courses, which may be considered as national festivals, where the two sexes are indiscriminately admitted to dispute the prize, and whoever arrives first at the goal, is always proclaimed conqueror. Here no regard whatever is paid to the fine movements of the body, each taking the attitude which appears to him the most proper to accelerate his course. Often the skater in Friesland is seen with his body leaning forward, assisting himself with his hands, which he places on the ice to increase his impulse. Here the women are the rivals of the men, nay often surpass them in quickness; and in many of these contests, at which we were present at Leuwarden, we have seen the young women carry off different prizes in the skating race.

In 1808, two young females, named Scholtens and Johanes, won the prize in a skating race at Groningen. They went thirty miles in two hours.

they may be, and moves with so much ease and grace, that, at first sight, every body thinks himself able to imitate him without trouble. In Holland it is not uncommon to see one of these virtuosos taking the most graceful attitudes, and drawing with his skates geometrical figures, and sometimes even flowers; and it may be said with confidence, that then this part of Gymnastics is carried to the highest point of perfection.

The Serpentine Course.

If the end proposed in passing on a straight line be to go over a certain space with the greatest rapidity, the only object in describing curve-lines, is to increase the pleasure, by retarding more or less the progress. In the direct course, the trace which the skate leaves upon the ice is only a little curved at its extremity; but in the exercise in question, the skates describe only semi-circles and quadrants throughout. If the skater makes the curves produced by the impulse too round, his movement then becomes retrograde. The extent of the lines described depends entirely on the force given, and we may, according to our inclination, trace at each turn a very limited line, or give it an extent of twenty feet. It is essential to observe, that the more the line is prolonged in the serpentine course, the greater facility the skater has to develop his

body in a graceful manner. The action which produces this course consists only in alternate impulses and slides, as we have indicated in the direct course. Here the body must be inclined in the direction in which we go, and the principal thing is to give it an impulse proportioned to the space which we wish to pass over; then, as soon as we are arrived at the extremity of the line, the foot which followed must be placed, the body inclined, an impulse given, and we must abandon ourselves more or less to the movement of impulsion, which we have just communicated to ourselves. The foot which gives the impulse follows close on the ice, yet without touching it, and gives a new blow by closing this movement as much as possible in order to render it imperceptible.

Crossing during the direct Course.

As soon as we are sufficiently exercised in the difficult evolutions just mentioned, we may try, in skating on a straight line, to give the impulse alternately, by making the foot which follows cross over that on which the body slides. We must act equally with both feet, because if we make this exercise several times following on the same foot, we shall describe a circle, the circumference of which will be proportionable to the greater or less extent of each slide.

To break short in Crossing.

This exercise requires a great deal of address, confidence, and quickness; we must have made considerable progress to be able to cross on both sides equally, in describing the curves, because the movement which is made to break the force communicated, in order to go in a contrary direction, requires that we should be absolute masters of all our movements, however violent they may be. In crossing, while making the Serpentine course, the body is thrown with great violence, sometimes from right to left, and sometimes from left to right.

In this action the dexterous skater resembles a vessel, which is proceeding by a serpentine or zig-zag course (tacking,) with great rapidity.

ELEMENTARY VAULTING.

HAVING been employed on the Continent to introduce into several schools, as well as in many particular families, some of our bodily exercises, and not always finding in such places the necessary apparatus, we were obliged to contrive a very simple instrument, on which a great number of our most useful exercises may be executed. The superior part, *Plate 1. Fig. a*, which is moveable at pleasure, can be employed to perform all the exercises of the pole. The vaulting beam *b*, fixed between the two standards, *c c*, renders it fit for performing on it all the elementary exercises of vaulting. A board, *d*, with the edges rounded, placed in the same direction, between the standards, may serve to accustom young people to walk on narrow objects, fixed at several elevations. The same board, fixed like the pole, can be employed with advantage to accustom them to raise the body as high as possible, supported only by the last phalanges of the fingers. A rope, with a small sack filled with sand at each end, two little iron spikes to support and make it easily moveable upwards and downwards, presents the most useful and least dangerous instrument to exercise boys in every kind of jumping.

Those who have but a small room, in order to exercise the arms, may fix in one of the corners, at six or eight feet from the ground, and from one wall to the other, a strong pole, eight feet long and three inches thick, on which the following exercises can be performed, which are the most useful, in increasing prodigiously the strength of the upper limbs.

EXERCISE I.

Hanging by both Arms, Plate 2, Figure 6.

Here the two arms ought to support for several minutes the whole weight of the body, by which they will be stretched, while all the other parts of the body hang loose. This cannot be done by children of a weak constitution, for it is necessary that they should rise their knees; and for safety, some one should remain near them to prevent their falling. In descending, let both hands go at once, and light on both points of the feet, the upper part of the body inclined forwards.

EXERCISE II.

Hanging alternately on one Hand.

EXERCISE III.

*Hanging on both Hands, the Nails turned inside.
Plate 3, Figure 7.*

EXERCISE IV.

Hanging on both Arms outside, like Figure 6.

In this position communicate to the body a swinging movement backwards and forwards; and after balancing a moment, jump backwards, let go both hands at once, and come down on the points of the feet.

EXERCISE V.

The same Movement, the Hands fixed, the Nails inside, like Plate 3, Figure 7.

EXERCISE VI.

Look over.

The hands fixed on the pole, as *Plate 3, Fig. 6*, raise the body gently several times till you come with the breast near the pole, looking over it. Make the same exercise, the hands fixed, as in *Plate 3, Fig. 7*.

EXERCISE VII.

Sliding Sideways.

This consists in bringing the body from one end of the pole to the other, by moving upon it one hand after another in an oblique direction.

Children of a weak constitution ought, during this action, to be a little sustained in the loins; and it is necessary to oblige them, during the exercise, to raise their knees as high as possible, and to move them in concert with the arms.

EXERCISE VIII.

Hand over Hand.

Fixed on the pole, as is represented in *Plate 3, Fig. 12*, move forwards and backwards, passing one hand over the other, carefully observing in the beginning to fix the hands not too far from one another.

EXERCISE IX.

Advancing by Jumps,

Or moving both hands at once from one place to another; at first forwards from one end of the pole to the other, and after that the same exercise in a contrary direction.

EXERCISE X.

Hanging on the Elbows backwards, and balancing.
Plate 3, Figure 9.

In this movement it is necessary, in jumping down, to let go both arms at once in the very moment the feet are moving backwards.

EXERCISE XI.

Hanging on one Leg, and changing alternately from one Leg to the other, and rising up. See Plate 3, Figures 10 and 11.

EXERCISE XII.

Riding.

From the position mentioned before, *Exercise 6*, to come riding upon the pole, communicating to the leg which hangs a movement of impulse in a

backward direction. To turn over from that position, at first, it is necessary to have the back of the hands turned behind, the points of the fingers in the same direction of the face, then the upper part of the body being inclined upon the thigh, you turn or tumble gently forwards, holding very fast with the hands and the calf on which you hang. Rise up again. To do the same exercise backwards is the opposite of the preceding, except that in this action the body must likewise be inclined, as in the preceding exercise.

EXERCISE XIII.

To hang on both Elbows backwards.

EXERCISE XIV.

Changing Hands across.

From the position, *Fig. 11*, after having raised the body upwards, change the hands from place to place several times successively, without touching the ground with the feet.

EXERCISE XV.

Changing both hands at once,

Is to take several times alternately the position as *Figs. 6* and *7*, without coming on the ground.

EXERCISE XVI.

Right about Face,

Is one of the most difficult of these exercises; it ought therefore to be made very gently. Fixed as

in *Fig. 6*, after having raised the body as high as possible, let go both hands at once, bring them on the pole in an opposite direction, as you were before. By this movement the body has made right about face.

EXERCISE XVII.

Changing from the Elbows.

EXERCISE XVIII.

Touching with the Knees.

EXERCISE XIX.

Through the Hands and Jump.

EXERCISE XX.

Through the Hands and back.

EXERCISE XXI.

To turn over.

The hands fixed as before; after a strong movement of impulse, bring your legs upwards and lie upon the pole with the girdle, or if you can well support yourself without loosening your hands, turn round the pole and come on your feet. This is the genuine *Salto mortale* fixed, by the hands, or feet overhead. The same exercise can be done having the hands fixed as in *Figs. 7* and *15*.

EXERCISE XXII.

To slide down.

Sitting in the middle of the pole, both hands fixed on one side of the body, to the right for example. The right hand near the right hip, the nail

turned to the face, the hands strongly fixed. From this position, slide gently forward, and you will hang on both arms; after having turned over, as is described in *Exercise 13*, come up again, sit upon the pole as before, and repeat the Exercise several times on both sides without coming on the ground.

EXERCISE XXIII.

Turn over, both Legs stretched, and without impulse.

After having raised the body as high as possible, bring the legs close, in a straight direction upward, and turn round the pole like a wheel on its axis. This should be performed several times without coming on the ground with the feet. The same Exercise can be made, the hands fixed like *Figs. 7* and *15*.

EXERCISE XXIV.

The vigorous Jump.

In the position as in *Fig. 14*, raise the body as high as you can, without moving your arms from their place; bring the knees up to the pole, and jump over it.

EXERCISE XXV.

Hang double.

EXERCISE XXVI.

The right Angle.

Raise the body till the knees almost touch the

pole, then come down gently, stretching your legs forwards, and rise again without touching the pole with your breast. The angle under the pole, and the angle above, are too difficult to be described here, one ought to see them before they try.

EXERCISE XXVII.

Hanging on the Arms.

From the position, *Plate 4, Fig. 16*, raise the body several times up and down without coming to the ground with the feet, and get upon the pole.*

These are all the exercises which can be performed on the pole, and which we have adopted in our lessons: they may be executed by almost every one without any danger, particularly if due gradation be strictly observed. After the experience of several years, during which we have superintended, in England, more than two thousand scholars, we can testify, and it is well known, that no one has ever been injured by these exercises. What is commonly called

* This exercise is one of the most useful to get upon any object the dimensions of which does not allow the hands to grasp, or to throw one leg over and get up by swinging. It was by this means that, last March, a boy of the Naval Asylum, Greenwich, who was on board an Indiaman, saved himself in a wreck, at Newfoundland, while thirteen of his comrades were drowned, not being able to reach the place of safety where he took refuge, by climbing and swinging his body from one place to another.

tours de force do not belong here: the physical education intended to prevent accidents, does not admit hazardous exercises, whereby young people imprudently may make themselves unhappy for life, from the foolish vanity of showing their dexterity.

Continuation of Vaulting.

IN general, of all the leaps, the most sure, useful, and agreeable, is the vaulting in a straight direction, and is that which we can employ on a great many occasions. A man who has acquired the facility to perform it well, may easily jump over objects of his own height, and even more, without any danger whatever.

The first exercises which we ought to make in order to supple all the joints, are, in general, the most useful and proper for every kind of jump.

EXERCISE I.

Raising the Knees.

Supporting the body in equilibrium upon the hands, as it is represented in *Plate 5, Fig. 22*, bring the legs several times up and down, without touching the beam with any other part of the body.

After having practised this exercise a little time, it will be very easy for any body to stand on the beam, since, to rise up from the first posi-

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tion, there is nothing else to be done than to bend the body a little forwards, bring the heel of the right foot before the ankle of the left, and rise up gently.

To come down, the knees bent gradually, the hands come on the beam, and as soon as the weight of the body lays upon them, the feet leave their place and take the first position.

EXERCISE II.

Walking forwards.

From the first position, bring one hand forwards by sliding it close to the other, till the last articulation of the thumb of the moving hand comes in the direction of the nail of the other, and then continue on the same way till you can perform it with ease, always observing an equal distance in your steps.

EXERCISE III.

Walking backwards.

The same exercise, moving backwards, though much more difficult than the preceding, may be executed very soon by those who have well observed the rules of the former. Here, while the hands are moving backward, the upper part of the body is kept forward.

EXERCISE IV.*Jumping between.*

To perform this exercise easily, place the beam the height of the middle of the thigh; put both hands upon it, and by giving a little impulse upwards, brings both feet, at once, close between the hands, without moving them from their place, and continue the same exercise until it can be done easily. Having acquired some dexterity in this, try, by jumping in the same manner, to pass one leg through the hands, and return without touching the beam with it. In passing the leg through, the body is kept backward, and in bringing it back, it is bent forward. Do the same with both legs together, observing the same rules.

EXERCISE V.*Jumping through.*

Here it is necessary to have some one to stand by to assist; and in the beginning this exercise ought to be made with very great precision.

The preceding exercises having been well made, it will be very easy to jump through the hands, because there is nothing else to be observed than to push the body forwards and let both hands go at once after the legs are passed through the hands in a straight direction.

EXERCISE VI.*Jumping over.*

This manner of jumping is very agreeable and sure, because in the action we have always the power to direct the body with the greatest ease in whatever direction we please. Placed before the beam, which is at first as high as the hips, lay both hands upon it, then bending down raise the body at once with all your strength over the beam. In jumping to the right, the left foot passes between both hands, the right hand lets go, and the left guides the body in its fall. In jumping to the left, the right foot passes between both hands.

In whatever direction this jump be made, you ought not only to be master of your equilibrium, but must also be able to point out, before jumping, the place where you intend to fall,* observing, at the same time, to come on the ground on both feet, the knees projected forward, the hands ready to neutralize the fall, if necessary.

Parallel Bars.

THE instruments employed to perform the exercises here described, are two pieces of wood from

* This jump can be executed with or without running. Those who think it difficult to let go the hands at the very moment that the feet come over, may practise the same exercise in two motions; viz. the first, poized on the arms, the second, jumping over.

six to eight feet in length, and four inches square, the edges rounded. For grown men they are fixed at two feet distance from one another, and for children, at eighteen inches, supported by two round standards, firmly fixed in the ground, and from three to four feet high, according to the stature of the boys.

It is necessary that, during the exercises, the instructor should always remain near the boy who is exercising, on purpose to assist him if he should make a false movement.

EXERCISE I.

Balancing.

Being placed in the middle of the bars, and between both, put your hands right and left on each bar on the same line. After a little jump upwards, preserve your equilibrium on both wrists, the legs close, and in that position which we call the first: then communicate to your body a gentle movement of balancing, from behind, forwards, and continue so several times. In the beginning, it is necessary to observe, not to bring the feet too high, to make this Exercise with precision, and without making any movement with the arms; the body moving as it were upon a pivot.

EXERCISE II.

The same as the preceding, fixed upon the arms, from the hand to the elbow.

EXERCISE III.*To bring both legs over.*

From the first position, after a little movement of balancing, bring both legs, close and at once, over one of the bars forwards without touching it, or moving your hands from their place. The same ought to be made backwards, right and left.

EXERCISE IV.*Crossing.*

After having made several times the preceding Exercises, and got some readiness in them, you can try this: having both legs on the right (where the right hand lies) bring them in at once upon the left backwards, after that between, then over the left forwards, from thence over the right backwards, and continue on in the same manner from right backwards to the left forwards, between, over the right forwards, and over the left backwards.

EXERCISE V.*Doubling.*

Having both legs over the left bar, forwards, bring them close, and without falling between, or touching the bars, place them over the right forwards, then over the left, and continue so for some time. The same exercise, behind, is much more difficult, but by practice you may acquire readiness in this as well as in the former. Observe to bring

the body forwards at the same time that you bring your legs over both bars.

EXERCISE VI.

To Jump out.

After having communicated to the body a movement of balance, the moment in which the legs are raised over the bars, jump backwards over the right, without touching it with the feet or waist; — then perform the same jump forwards. By the vaulting jump, you may easily come between the bars, and also bring your body over both, without touching them otherwise than with your hands.

EXERCISE VII.

To rise up, fixed by the Legs.

Sitting upon one of the bars, place the upper part of your feet under the lower part of the other bar, and slide backwards upon your thighs till you come to hang in the joints of your knees. In this position the points of your feet, and the upper part of your calves, are the only part of the body which touch the bars. Also fixed, bring the upper part of your body gently down and backwards, laying your hands crossed upon the chest, and holding the head upright, then raise up your trunk several times. At the beginning, make this exercise no more than five or six times without rest. When once accustomed to it, you may perform it forty

or fifty times without any ill consequence attending it.

EXERCISE VIII.

Moving upon the Hands forwards and backwards.

To perform this exercise, either forwards or backwards, it is necessary to make but little movement in sliding your hands upon the bar, holding the body upright.

EXERCISE IX.

Advancing by Leaps.

From the first position, after having communicated to the body an impulsion forwards, lift both hands at once, and bring them forwards upon the bars, keeping them always in the same line. To execute this exercise backwards, it is necessary to keep the upper part of the body as much forwards as possible.

EXERCISE X.

To rise, and sink down.

In equilibrium in the middle of the bars, place the legs backwards, the heels close to the upper part of the thigh. From this position, come gently down till the elbows rest upon the bars; then rise up gently without any impulse, or touching the ground with your feet. This ought to be repeated several times without resting. As soon as you can perform this easily, in rising up try to bring

the knees as high as possible in the direction of the face.

EXERCISE XI.

Weaving.

Sitting at the end of one of the bars upon the right, bring the upper part of the body between them; the articulations of the knees being fixed, the body goes under the left bar, *Plate 4, Fig. 17*; the hands are put upon it, and the left leg hangs by the calf outwards on the same bar;—where the hands are already fixed, the right foot is now under the right bar, and the right arm over the left: in this position, after a movement of impulse in a vertical direction, you sit upon the left bar, *Plate 5, Fig. 18*. Then go over the bar to the right; sliding on the right thigh, as in *Plate 5, Fig. 19*, the upper part of the body comes down the right, the articulations of the knees are fixed, the right leg to where the hands were, the left arm comes over, and, after a strong impulsion, you return to the first position, and continue this exercise till you arrive at the end of the bar. This exercise being much too complicated to be well understood by the description, we beg leave to refer to the Figures, which represent the most difficult positions.

EXERCISE XII.

To make a parallel Line with the Bar backwards.

From the first position bring the body forwards,

and raise both legs, stretched and close behind, over the bars, till the whole body, from the summit of the head, makes a parallel line with the bars.

EXERCISE XIII.

The same forwards.

Here, in equilibrium upon the wrists, the legs are stretched forwards as high or higher than the bars. Keep this position for a moment, and then rise up and go down several times between the bars, keeping the legs always in a horizontal line with the ears.

EXERCISE XIV.

To touch the ground with the Knees.

In this exercise the legs are folded backwards, and the same movements are made as in the former, by going gently down between the bars, till the knees touch the ground, moving up and down several times.

EXERCISE XV.

To change the Hands.

In equilibrium on the wrists between both bars. After having communicated to the body a little impulse from right to left, bring, with quickness, the left hand near the right, without touching the ground with the feet or waist, and remove the right to where the left hand was placed before:

This exercise ought to be practised several times without resting.

EXERCISE XVI.

To Kiss the Hands.

In the same position as before. Bring the body gently down between the bars without touching the ground with your knees, kiss both hands alternately, and then rise up as in the first position.

If we have not described all the exercises which may be performed on the bars, it is because we are assured that those which we have indicated here are sufficient to develop the body; and we must acknowledge, that we consider all others useless, and even dangerous.

To Climb up a Board.

AN ordinary unpolished board of pine, about thirty feet long, two broad, and two inches thick, is fit for this exercise; which, though very simple, may be of great use in many circumstances. The upper part and the basis of it should be well fixed. The board which we employ in our establishment is fixed at its upper end to a bulk, and, for greater security, passes through the upper part of a ladder, which serves for the boys who have climbed to the top of the board to come down.

The last steps being always the most difficult, we place ourselves upon the bulk to help those boys who want any assistance, and at the same time oblige every one to place firmly his feet and hands in passing from the board to the ladder, before he moves his hands. In the beginning, the board should not be more than thirty-five degrees of declivity, nor the boys go more than half way up, and then come down. For young people who are stronger, you may gradually augment it to fifty degrees or more, or nearly perpendicular.

The only exercise performed on this instrument, is to climb up to the top, by fixing the hands on both sides, and laying the feet flat in the middle. *Plate 5, Fig. 20.* In coming down after climbing, it is always necessary to make small steps with the feet and hands, and to make them as quickly as possible.

Flying Course, or Giant Steps.

THIS exercise is not only amusing for young people, but it strengthens them in an astonishing degree, without their perceiving it; and they may practise it as much as they please, without any ill effects arising from it.

It consists in taking hold of a strong rope, which is fixed upon the top of a column on a turning hook, and running in a circular manner. Here

the weight of the body is nearly supported by the hands; the feet making very large strides, and directed outwards from the circle which they describe.—*Plate 6, Fig. 23.*

The Column of Pegs.

OF all the instruments we make use of, there is none which presents at once so great a number of different exercises. This column is a round post, twenty-five feet long, and fifteen or eighteen inches in diameter. It should be firmly fixed in the earth, in the centre of a circle of twenty or thirty feet in diameter. There are four rows of hard wooden pegs, which should be well fixed in the post, and three feet distant from each other; they project four inches and are one inch in diameter. The windlass of iron, which is in the column, is composed of four crooked branches, and a stem or axle one foot long, and one inch in diameter; this axle is placed in a vertical position, in a metal socket, which is fixed in the centre of the column. (*See Plate 6, Fig. 24.*) This windlass can be moved only horizontally, either from right to left, or from left to right.

EXERCISE I.

Climbing to the top in a Spiral direction.

The most simple exercise with this column, consists in climbing to the top, in a spiral direction, by

help of the hands and the feet. Though simple and very easy, it ought, nevertheless, to be made with great precision ; because, when it has been performed for some time, it produces very advantageous results. It especially habituates the hands to seize with quickness and firmness, and the feet to place themselves with celerity and exactness on narrow places, without requiring the eye to direct them.

For the simple ascent, the left foot is placed on the first peg, the left hand grasps the second, with the nails turned under, the right, the third peg of the second line, the nails also under, the right foot on the first peg of the second line, the left hand on the third, and so on to the top of the column. (*Plate 6, Fig. 24.*) To descend, the contrary movements are made, going backwards, The changes on the pegs must be made the same as in ascending. In this exercise, as well as in the following, turn to the left in ascending.

EXERCISE II.

Passing under the right Arm.

This manner of climbing the column powerfully contributes to strengthen the hands, the arms, and the shoulders; and to enlarge the thorax by projecting the chest strongly forward. All the muscles of this part of the body being in continual action, both in ascending and descending, these exercises are invaluable for young persons who

have a contracted chest, shoulders high, and too forward, or the pulmonary cavity unequally distributed. They have also the advantage of rendering all the articulations very flexible, and consequently of producing great elegance in all the movements of the body, and accustom the hands to grasp firmly.

In ascending, passing under the right arm, the right foot is placed on the first peg, the left hand on the second, (*See Plate 6, Fig. 25.*) the left foot, passing between the right foot and the column, is placed on the first peg of the second line, the heel outward, and the right hand on the second peg of the same line. In this position all the weight of the body is supported by the right hand and the left foot. Then the head passes under the right arm, between the column and the body. In order to descend, in passing under the right arm, the movement is made in a contrary direction, observing that the nails of the right hand ought to be turned upwards, the moment when seizing the peg to pass under the arm, (*Plate 6, Fig. 26.*) In the exercise now in question, both in climbing up and down, the foot and the hand which cross, always occupy the two pegs which follow on the same line. That is, the left hand and the right foot, or the contrary.

EXERCISE III.

Passing under the left Arm.

Here it is the left hand and the right foot which begin. The left hand crossing over the right arm, grasps the second peg of the second line, the nails upwards. The left foot, passing between the column and the right leg, is placed on the first peg of the second line, the heel outward as in the preceding exercise; then, after having let go with the right, the head slides under the left arm, the right foot and the right hand take two other pegs, and so on successively.

It is essential to observe, that both in ascending and descending, when passing under the left arm, the right hand and right foot, as well as the left hand and left foot, should always be on the same line of pegs, (*Plate 6, Fig. 27.*) In the commencement we need only pass two or three times, sometimes under one arm, and sometimes under the other, till we are assured that the hands will not let go, even if the feet happen to fail.

EXERCISE IV.

In ascending without the help of the Feet.

In this exercise the body is raised, by means of the arms, from one peg to another, passing the left arm over the right. In descending, the right arm passes under the left.

CHAPTER IV.

THE ART OF SWIMMING.

The first knowledge ought to be that of our own preservation.

BERANGER.

*The shortest, the most easy, and the safest Method, of Learning
the Art of Swimming.*

OF all the exercises which should form a part of our physical education, swimming is, without contradiction, one of the most useful; it contributes powerfully to the developement of the body, to the increase of strength, and the preservation of health.

The different positions which the human frame necessarily takes in swimming, cause the muscles of the inferior and superior extremities to be in play at the same time, particularly those of the arms and the chest.

The ancients are known to have placed a high value on the art of swimming; and it is probable, that the frequent exertion of the muscles of inspiration and expiration, contributed to give to their chest that round form, which is so observable in ancient statues, and in some of the athletic men of the present time.

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If we are disposed to consider swimming in regard to cleanliness,—it possesses the advantages of a cold bath, so frequently recommended as a most useful remedy to cleanse, fortify, and strengthen the body;—if we regard it as a means of preservation, we must acknowledge, that of all exercises there are none which give to us more confidence, and more courage, under perilous circumstances;—added to which, is the high gratification we may procure to ourselves, from being the instrument of snatching a fellow creature, perhaps a friend, from a watery grave.—In order to experience this satisfaction, and to enjoy the salutary influence this exercise imparts to the body, it will be necessary to be really a good swimmer, that is to say, to have attained in this art such a degree of perfection, as will render us capable of mastering the element, upon the surface of which we cannot sustain ourselves but by combined movements: these movements are not natural to man, whilst they are to animals, being, in point of fact, the very same they execute in walking upon the earth.—It is not sufficient, as many may suppose, to know so much of this art as merely to extricate ourselves, but it is necessary to possess sufficient ability to succour another in the moment of distress.—A swimmer who has only attained mediocrity, is incapable of this latter gratification, for his swimming cannot be considered as an action that he executes with facility; on the contrary, it

appears as a continued struggle with the element, in which he must perish, should the least accident occur to confuse him, or impede his efforts.—It is, then, essential for those who would possess the real benefits of this art, to convince themselves of its great utility, and not to commence, until they have resolved to pass the bounds of mediocrity.

In the arts of fencing, dancing, music, horsemanship, &c. a tolerable progress produces no unhappy consequences, it is even productive of pleasure: it is not thus in regard to swimming; we can have but little pleasure, and no safety in the water as indifferent swimmers. Experience proves to us that more fatal accidents happen to those who swim imperfectly, than those who cannot swim at all, the latter having no temptation to expose themselves to danger.

Without having finished his studies (says Rousseau,) a traveller mounts on horseback, keeps his seat, and this he can do sufficiently well for his purpose; but in the water, if he does not know how to swim, he will probably be drowned.

As the progress which we may make in swimming depends more on the precautions we take, and the progressive mode we pursue, than on the dangers to which we expose ourselves, it is evident that we may be able to learn to swim extremely well in a circumscribed place; but it is at the same time requisite to be observed, that it is only after having succeeded in the elementary ex-

ercises which we shall point out, that a person ought to commence more arduous and adventurous exercises of this art. It is evident that, in these higher exercises, the learner must proceed gradually, and with great care: now he acquires that presence of mind, quickness of decision, and rapidity of movement, which is totally out of the power of another less expert,—the presence of danger, so far from confusing him, only urges him to the use of that art which he is confident that he so fully possesses. For instance, a person who has been thus personally exercised in our method, cannot find, in actual events, any trial to which he would not be perfectly accustomed, whether it be to save another or himself.

To satisfy those persons who have a repugnance to this exercise themselves, or to permit their children, from the fear of encountering too much difficulty, we can assure them, the practice of many years has proved to us, beyond the possibility of doubt, that of all the exercises in which we are engaged, there are none where the apprenticeship, or learning part, is more easy.* In cases

* We think it would be absurd to pretend that the exercises of which we treat, in general, and particularly those of swimming, are only suited to youth. It is true that, in that happy age, all the parts of the body being less consistent, the members adapt themselves much more easily to every sort of movement, more or less difficult to man. But does it follow that they ought to fear making themselves ridiculous by practising

where the corporeal qualifications may not be great for swimming, yet, if a person persevere in his efforts, we are firmly persuaded that he will become an excellent swimmer in a very short time, even with a feeble constitution, or bodily defects. —We add, that it is an error to believe that grown up men cannot learn to swim, experience daily teaches us the contrary, and the great number of soldiers and private individuals who are taught swimming in the different European establishments, proves clearly to us that a person can learn to swim at any period of life, even to become very expert in the art.—Doubtless the youthful learner possesses superior advantages, and more easily surmounts the first difficulties. When we begin to swim at an early period, and have the advantage of excellent instruction, we are generally certain of arriving to a degree of perfection, beyond which nothing can be desired;—such is probably the degree of superiority in swimming to which the inhabitants of the Archipelago have arrived, that what is said of their expertness almost borders on incredibility.* Without going

exercises, which have for their only aim the augmentation of strength and activity, the preservation or restoration of health by very simple methods, and within the reach of every body? And is it not much more noble and useful for us, whose lives are intersected with dangers, to prefer those games whose object is to give vigour to the body, and energy to the mind, to those which render men weak and effeminate as women?

* The Carabces, expert at every thing, are particularly

very far in search of facts, of the authenticity of which we cannot always depend, we could point out instances of distinguished swimmers, who by this art have rendered their country important services, and have obtained an honourable recompense.*

so in the art of swimming, as if they were born in the water, and formed for it; they swim like fish; the women acquit themselves as well as the men. When a canoe overturns, which happens very frequently, because they carry too much sail, they absolutely lose nothing of their baggage, and their being drowned is a thing never heard of. We see on these occasions the children swimming about their mother like so many little fish, and their mothers are so dexterous, as to support themselves on the water with their infants at the breast, whilst the men are employed in putting the boat to rights, and emptying out the water.—In 1699, a small vessel belonging to the monks of La Charite, was overset by a gust of wind, between St. Lucie and Martinique, and all who were in it perished, with the exception of a Carabee, who, without being aided by a plank, or other morsel of wood that might have assisted him, kept himself buoyant upon the water for the space of sixty hours, supporting hunger, thirst, and the violence of the tempest, which caused the loss of the vessel, and at last landed at a small creek, and communicated the news of the wreck which had happened.

VANCOUVER.

* In the famous defence of Genoa, by General Massena, that officer felt the necessity of making known his perilous situation to the first consul,—the fate of the place, and that of the French army, depended upon the event of the siege, the blockade cut off all communication by land, and that by sea was attended with great danger. Franceschi, a young officer, was the first to present himself for this great act of devotion;

But we may say with truth, that swimming is highly advantageous to all conditions of life, more especially to the sailor, and scarcely less so to the soldier. In addition, swimming promotes health, strength, and activity, and enables the latter to surprise the enemy, to pursue him, or, in adverse circumstances, to extricate himself from certain death or captivity. Should he be forced to cross a rapid and deep river, what regret would an unfortunate man experience, who should ob-

he received dispatches from the general, and jumped into a fishing boat, with three intrepid rowers; by favour of the night he passed through three lines of the English fleet, but at day break they were perceived, and chase was given them; Francesche escaped for a long time the pursuit of the English, until they were but a few leagues from Antibes, but the enemy then gained upon them, and the fear of falling into their hands was severely felt. Franceshe stripped off his clothes, bound the dispatches to his body, and having recommended the sailors to manœuvre as long as possible, to draw the enemy's attention from himself, gently dropped into the sea. He swam several hours, landed among his countrymen, and had the satisfaction to present the dispatches safe to the first consul, who could not withhold his admiration of this proof of courage and success: the former begged to finish his enterprize, received the answer, and carried it back to General Massena, at Genoa.

It is also a known fact, that Lord Byron swam across the Hellespont several times.—In September, 1821, an English officer, of the name of Smith, swam across the lake of Geneva, from Morges to Amphion, a distance of seven miles and a half, and back, without stopping.

serve all his comrades saving themselves by swimming, and he not able to follow them, in consequence of his ignorance of the art; obliged to surrender to the discretion of his enemy, who may not always be generous, and by cruel treatment, can make his prisoner to repent not having preferred death, to a dreadful state of slavery. It is then, in a situation so desperate, that a man, whose physical education has been neglected, feels profoundly his misery, is tempted to upbraid his parents, or even the state, for this fatal negligence towards a citizen, who otherwise would not have been lost to the defence of his country.

Surely it may be called a duty of parents to attend to this part of the physical education of their children. Is it not truly pitiable, to see the smallest animal find its safety in crossing rivers, and in sustaining itself on the water for hours, whilst man, the king of animals, so proud of his knowledge, may be drowned in a brook, if he has not learnt to swim?—In the moment of danger, of what service to a person are all the valuable pleasures of literature, and the stores of the mind?—Of what avail to know the whole circle of the mathematics, the ^{or} properties of different bodies, their mechanism and specific weight, if he should fall into the water, and not be able to remedy that property in his own body, which causes it to sink in that fluid? Nay, we beseech him to learn to swim, that he may preserve more effectually from acci-

dent, those gifts and attainments which would cause his loss to be severely felt.

The motions we must make in the water, in order to preserve our equilibrium, or to direct the body according to our will, are not natural to man; it is therefore necessary to learn them, if we wish to preserve ourselves from danger. Even if the body of a man, placed horizontally on the water, had the property of buoyancy, it would be of no advantage without the art of urging it forward, or directing its movements. It would either remain stationary, or in a rapid stream be drawn into gulfs, bruised against rocks, or perhaps crushed by the wheel of a mill.

Let the English youth feel this truth, and learn to govern their own persons, in its healthy kingdom, with as much skill as they do their ships of war and commerce, which have raised their country to the highest pitch of maritime glory and prosperity.*

* Among all the different institutions of public utility which are to be found in England, more than in any other country in the world, we consider that for restoring drowned persons an admirable one, and are disposed to do ample justice to the good intentions of the liberal and noble founders. But, at the same time, we cannot help thinking that a swimming school added to each of these establishments, where persons of every class, and of every age, might learn to save themselves in cases of danger, would be very beneficial. We are confident that a swimming school, erected on the plan we gave to France and Switzerland, in 1817, would be very little additional expense to the society, and would be the means of preserving many valuable lives.

Amongst the nations of antiquity, swimming was in high repute; Cato himself, taught his son to traverse the most rapid rivers and dangerous gulfs.* The Emperor Augustus also taught his nephew to swim.† It was at the head of his legions, that Julius Cæsar crossed rivers by swimming.‡ Charlemagne was one of the best swimmers of his time; and Louis XI. swam very often in the Seine, with all his courtiers. A vulgar proverb, says Barbier,§ has consecrated the extreme importance which the Romans and Greeks attached to swimming,—they were accustomed to say of an ignorant man, he neither knows how to read nor to swim:—thus their soldiers, skilful in all exercises of the body, triumphed over men and elements; exhausted with fatigue, covered with wounds, and loaded with the weight of their arms, nothing stopped them, they scaled up mountains, and swam across rivers, in presence of their enemies.

Swimming was also in esteem among the ancient Franks, and it was by the epithet of swimmers, that Sidonius Apollinares distinguished them from barbarians.

Swimming in General.

All swimmers being of opinion that it is only the position of the body, and the regularity of the

* Plutarch's Life of Cato.

† Suetonius.

‡ Plutarch's Life of Cæsar. § Dictionary of Medical Science.

movements of the limbs, which give them the power of swimming for a length of time, and without much fatigue, it is evident that children may be taught the elementary principles of natation, without having recourse to water, or to a number of instruments, which only augment the difficulty.

The summer being very short, and often cold in northern climates, and even in more temperate ones, young persons have not the same facility of bathing every day, and at any hour, as those who live in more southern countries; added to which, the water of the rivers in these countries is always cold, which prevents their remaining in the bath as long as they could wish. This circumstance is a great obstacle to the progress which they might make in swimming, and disgusts them, (if we may so express ourselves,) with this exercise.

In order to teach the youth of cold countries the art of swimming, it has been necessary to forward them as much as possible in the elementary exercises. These are, in part, the reasons which have induced us to adopt a new system of instruction.*

* This system, which we put in practice in 1809, for the first time, with the two grandsons of Marshal Blucher, and in 1811, in our own country, (Switzerland,) has been introduced for some years, by Colonel Pfull, in the Prussian army, with great success, and lately, in many other parts of the Continent. Paris, Vienna, Berlin, Copenhagen, Stockholm, Moscow, Petersburg, Amsterdam, Berne, in Switzerland, and a great

The experience which we have had on a great many subjects, has convinced us that this is a very good method, and presents great advantages, especially to the inhabitants of cold countries.

As to the precautions, we request the instructors not to be too rough with their pupils, and, above all, never to force them to leap into the water, without their being able to swim, nor to permit them to bathe immediately after dinner, nor to go into the water when they are very hot;—on the other hand, they must not wait until entirely cold. After violent exercises it is wrong to bathe, but persons may wash themselves, at the same time rubbing their joints with much force.

We also recommend friction before swimming, as the surest way to be preserved from the cramp and giddiness. Friction after the bath, by making the blood circulate more freely, distributes it over

many other places, have now regular Swimming Schools established, and maintained by the government, or private societies.

In the year 1818, there was formed, in the central school of Denmark, one hundred and five masters, destined to teach in the different cities of that kingdom. All of them having been instructed after the same method, learnt, in less than four months, to swim a distance of nine miles, to dive twenty feet deep, and even to swim a considerable distance in full dress and arms, carrying a man on their back. In the different Swimming schools of that country, 2707 individuals have learnt to swim perfectly in the same year, and almost every one of these Institutions, on the Continent, offer the same satisfactory result.

every part of the body, which soon gets benumbed in cold water, while a little hard rubbing, creates an agreeable glow over the whole frame. Besides these advantages, by frequent friction, the joints, muscles, and articulations acquire a great deal of strength and elasticity.

The swimming *apparatus* necessary for teaching, consists of a girdle of a hand's breadth, (*Plate 7, a,*) of a rope from five to six *fathoms* in length, and of a pole eight feet long, with large drawers and jacket of linen, fastened together by buttons.* The depth of the water in the place chosen for swimming should, if possible, be not less than eight feet, and selected in the clearest and calmest water possible. A *raft*, or float, may serve for the purposes of instruction, but by far the best mode, and that which most facilitates the object, is to inclose a sheet of water of 100 paces in length, 25 in breadth, and of the requisite depth, with floats, and to erect thereon ranges of boards, which may support the scaffolding and railing necessary to support the poles during the time of practice. There must, besides, be partitions of boards or

* As we fall into the water unexpectedly, or are compelled to jump into it without having time to undress, it would be of very great advantage to accustom young people to learn to swim in large trowsers and a jacket; and then there could be no objection to their practising that exercise in every part of the river, and at any hour of the day.

sail-cloth, serving as well for the protection of the reposing swimmer from the sun and wind, as for the purposes of dressing and undressing. By means of a place thus constructed, the teacher can never lose sight of his pupils, is enabled to watch all their movements, to remark and correct every fault, to ascertain at any time the measure of their power, and instantly to prevent every possible accident.

In order that the diver may not get under the floats, there should be sunk, level with their interior edges, a partition of net or lattice work. But to save the expense of this net or lattice work, the float might be so constructed that if, by chance, the swimmer should get underneath, danger might be prevented, by having between every other two boards an interval of a foot and a half in breadth.*

Now, as to the mode of instruction itself. This is divided into six sections, which being kept strictly separate from each other, give the pupil a constantly increasing proficiency, and enable the teacher at all times to form a just estimate of the power of each individual, be the number of pupils what it may.

* This is meant for a public establishment, where a great number may be taught at once. For private instructions, every body may easily find a place to practise, if he knows well the elementary parts, viz.—the regular movements of the arms and legs.

SECTION I.

Elementary Principles.—First Lesson in the Water.

The swimming girdle is placed round the pupil's breast, in such a manner, that its upper edge touches the pap of the breast. The girdle, which is formed of *hemp or linen thread*, must be four fingers in breadth, and provided at both ends with brass rings. It must be of such a length that these rings may touch on the back. Through these the rope is drawn, the ends of which are left loose, which the teacher holds in his hand. The pupil is then conducted to the water, and recommended to go gently into it.

As soon as the pupil is in the water, in order to inspire him with confidence, the teacher winds the end of the rope, which he holds in his hand, round the pole, and leaning the pole on the rail, he swings the pupil into the water, in such a way, that the latter appears to repose on its surface. The pupil is not placed in a perfectly horizontal position, the head is plunged up to the mouth, the arms are stiffly stretched forwards, so that the palms of the hands touch each other; the legs are also stiffly stretched out, and the heels are kept together, but the toes are turned to the outside and contracted, *Fig. 2, Plate 9*; this is called *ranging*. In this position the pupil must remain for some time, till he feels it becomes easy to him. *When this is well*

known, the pupil proceeds to the movements. That of the feet is taught first, during which the arms are to remain immoveably stretched out, *Fig. 1, Plate 7.** The motion of the legs is divided into three parts: *First*, the legs are slowly drawn under the body, and, at the same time, the knees separate to the greatest possible distance; the spine is bent downwards, and the toes kept outwards. *Second*, the legs are stiffly stretched out with a moderate degree of quickness, while the heels are separated, and the legs describe the widest possible angle, the toes contracted and kept outwards. *Third*, the legs, with the knees held stiffly, are quickly

* Which represents the preparatory motions of Swimming on the fixed girdle. The method of teaching thus the Elements before going in the water, presents great advantages, particularly in cold countries, where the time for instruction in the water is very short. Independent of that, the motions of swimming, when executed on the girdle, may be considered as a very good exercise for developing and increasing the power of every part in action.

The elementary exercises of the art of swimming may be taught in all seasons, to people of every age, and even to young girls. We think them particularly beneficial for those females to whom the physician recommends bodily exercise, to strengthen them in general, or to re-establish the equilibrium and symmetry between the different parts of the body. And why should the English females not learn to swim as well as a great many of their sex on the Continent? Or, why should they remain inferior, in that point of education, to the women of other countries, not so much advanced in civilization as England?

brought together, and thus the original position is again obtained.*

The teacher causes these motions to be performed according to the word of command, whilst he counts *one, two, three*. When the pupil is capable of executing these motions without a fault, then the second and third motions are to be blended together in such a manner that a kind of *circle* is formed by both of them, which must be as *extended* as possible, and the whole must have an accelerating movement. As soon as these two new parts of the motion are made without fault, then all the three parts are united into one. The teacher counts *one, two, three*, and pays great attention that each part of the motion is performed in its due measure of time.

These exercises are continued till they can be performed without any fault, the proof of which may be observed in the equal swinging of the rope, that is, after the regular strokes have begun to impel the pupil forward.

When the motion of the legs is well understood, which may frequently be the case in the *first* lesson, then we proceed to that of the arms. This begins by first ranging the pupil, when the legs remain motionless.

The motion of the arms is divided into two parts;

* The main advantage of swimming lies in this third part of the motion.

First.—The hands are turned horizontally, or kept close together, the palms downwards, the arms held stiffly, proceed asunder, and the hands, with the edge of the thumb, inclined somewhat downwards. The arms must always remain in advance of a line which we may suppose drawn through the shoulders.

Second.—When the arms have reached their greatest degree of extension, the hands are turned, the thumb downwards; the arms, stretched, describe half a circle, of which the body is the centre, and being then curved rectangularly with the body, the hands pass near the arm-pits, and extend forwards, as in the first position.

When each of these movements is well made, separately, they must be done together, each preserving its measure of time.

When the arms and legs have been exercised separately, we then proceed with both together. The pupil being *ranged*, the teacher counts *one, two*. At *one*, the arms and legs perform their *one*; at *two*, the arms their *two*, and the legs their *two* and *three*. (*Fig. 3, Plate 9, represents the movements decomposed.*) After *two*, the pupil is again *ranged*, and a new movement commences. The chin remains the whole time in the water. Simple as all this may appear, there are still various difficulties to overcome, as the swimmer has to pay attention to two difficult motions at the same time: while the arms describe

a circle, the legs are drawn up, that is to say, they are prepared for their motion, and while the legs describe a circle, the arms are stretched, that is, they prepare for their motion; thus the real exertion of both, necessary for the act of swimming, is unceasingly interchanged, and until this interchange is effected with perfect ease, there can be no proper swimming.

The sign that the motions of the arms and legs begin to play regularly one into the other, is a certain jerking of the rope, for the proper combination of the action begins to raise and buoy up the body, and renders the support of the rope for some time useless. By degrees, and without the pupil's being aware of it, the rope becomes more seldom tightened; till at last, without the pupil's perceiving it, all support ceases. The teacher now sinks the pole, and if the pupil is capable of making twenty strokes with the pole sunk, he leaves the first section, and enters the second.

SECTION II.

The pupil is loosened from the pole, but remains attached to the rope. The teacher then takes the loose end of the rope, and causes him to take a *running leap* into the water, to rise without help to the surface, and thus to commence swimming alone.

During the leap, the legs are to be kept together, and the arms close to the body. Above all,

the pupil should be enjoined, when he rises to the surface, not to open his mouth immediately, but previously to repel the water from his nose, to prevent head-ache.

When necessity compels us to jump from a certain height, into shallow water, in a place with which we are not acquainted, or in a muddy river, it is of great importance to place the feet or hands foremost, observing to extend the diagonal line, which the body is to describe, as much as possible. With some practice in this exercise, one may jump from the height of twenty feet, in water only five feet deep, without hurting himself.

In this way, the pupil will of himself learn to take the proper horizontal position. The girdle and the rope are securities always ready at hand, to give him the necessary confidence. The pupil now swims, attached loosely to the rope, strictly observing all the rules, and without any real assistance. In this section he remains till he is capable of making fifty strokes without a fault. When he has reached this point, he enters the *third Section*. This is the section of the *counters of the strokes*. In a regular swimming school, to improve a great number of scholars in a very short time, one ought to fix in the centre of it, (in a large barge for instance,) a mast, upon the top of which ten or more ropes could be fixed, and move on the same principle as the flying course. The pupil tied at the end, describes a large circle, swim-

ming round the barge, and can stop when he likes. This is one of the most amusing and improving exercise in the art.

SECTION III.

The girdle and rope are now taken from him; he springs freely into the water, and makes his fifty strokes quietly and without a fault. From this time the pupil is enjoined, in swimming, to count his strokes, in order that he may obtain a scale of his power, and be conscious of his progress. He will remain in this class till he is capable of making 400 strokes.

SECTION IV.

It is now that the pupil enters for the first time the open water, and by way of trial he is to swim over a space of about 300 paces; if possible, this should be across a river or lake. On this occasion he is attended by two swimming masters, one on each side, and a third, who follows behind in a light saving boat, or with the scaphander.* (*Plate 7. c.*)

* Two pieces of cork covered with cloth, of which the specific weight is five pounds, for a man of eleven stone. It is fixed round the neck by a rope two yards long. However simple the scaphander may appear, it is without doubt one of the most useful things in a vessel. Fixed to a long rope, it may be thrown at the very moment to those who fall overboard, and anybody, even those who cannot swim at all, can,

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It is also in this section that the pupil learns how to swim on his back, by the *feet alone*, and the method of treading water.

Swimming on the Back.

The pupil is again suspended, or put on the girdle, and placed horizontally on his back; the head is bent as far backwards as possible, and so placed, that the water covers the forehead as far as the eyes, the breast is protruded, and the hands are placed upon the hips. (*Fig. 4, Plate 8.*) The movement of the feet is the same as in swimming upon the waist. (*Fig. 5, Plate 8, represents the movements decomposed.*) But it must be observed, that the head and breast remain perfectly immovable, and must by no means be agitated by the contraction of the legs. The beauty in swimming on the back, consists in completely extending the body after each stroke, and in making the longest possible pauses between them. When sufficient facility has been acquired in this, the hands may then be stretched above the head, whereby the deportment of the body is rendered still more graceful. (*Fig. 6, Plate 9.*)

Treading Water.

The swimmer is suspended perpendicularly in the girdle, the hands compressed against the hips,

by resting their chest upon it, keep themselves above the water for many hours.

and the feet describe their usual circle. Hence arises a kind of hopping movement. Another mode of treading water, consists in not contracting both legs at the same time, but one after the other, so that while the one remains contracted, the other describes a circle. In this mode, however, the legs must not be stretched out, but the thighs are placed in a distended position, and curved, as if in a half sitting posture. According to this mode of treading water, the swimmer does not make the hopping kind of motion, but remains at an equal height above the surface. Treading water is generally imagined to be extremely difficult, but, in fact, it is very easy, as is proved from the circumstance of the legs, according to the first mode, not having really to learn any new movement. (*Fig. 7, Plate 9, represents the two different motions.*)

If the pupil is able to swim for half an hour together, without relaxation, and has made some progress in swimming on his back and treading water, so that he is enabled to pursue either method for some minutes together, and can pass with facility from the one to the other, then he may enter the *fifth section*. Still it is to be remarked, that the act of passing from swimming on the back, to that on the waist, and *vice versa*, must always take place immediately after the act of impelling the feet outwards, and must never be done at the same moment with the contraction of the feet.

Each pupil of the *fourth section* may now be employed as a teacher of the *first* and *second sections*.

SECTION V.

The person who enters this section will have already acquired a kind of *self-possession*, to develop which is the object of the following exercises. First, he now begins to swim in company, in which the master causes all the pupils to perform their evolutions, and well-ordered motions. This swimming in company tends, in an uncommon degree, to confirm the skill of the swimmer: for, while his attention is wholly directed to the companions by whom he is surrounded, and to the directions of his teacher, the act of swimming becomes by degrees a sort of unconscious, and, as it were, natural movement. Besides this, the following movements are practised in the *fifth section*.

Swimming on the Side.

The body is turned either upon the right or left side, and the feet perform their usual motions. The *arm from under the* shoulder stretches itself out quickly, at the same time that the feet are striking. The other arm *strikes* at the same time with the impelling of the feet. The hand of the latter arm begins its stroke on a level with the head. While this hand is again brought forward in a flat position, and the feet are contracted, the stretched out hand

is, while working, drawn back towards the breast, but not so much *impelling as sustaining*. As swimming on the side presents to the water a smaller surface than on the waist, when rapidity is required, the former is often preferable to the latter.

Swimming on the Back, without employing the Feet.

This is twofold:—1st, *in the direction of the feet*. The body is placed in a horizontal position, the feet are stretched out stiffly, and the heels and toes are kept in contact. Then the body is to be somewhat curved in the seat, the hands are to be stretched flatly forward over the body, and slowly striking in small circles, the loins are somewhat drawn up at each stroke. 2nd, *in the direction of the head*. The body is placed horizontally, but somewhat curved in the seat, the head in its natural position, the arms are kept close to the body, with the elbows inclined inwards, and the hands describe small circles from the back to the front, at about a foot and a half from the hips.

These modes serve to exercise and strengthen the arms in an extraordinary degree, without in the least fatiguing the breast.

Floating.

The body is laid horizontally on the back, the head is bent backwards as much as possible, the arms are stretched out, over the head, in the direc-

tion of the body, the feet are left to their natural position ; if they sink, the loins must be kept as hollow as possible. In this position the person, who is specifically lighter than the water, remains, and may float about at pleasure. But the greater part of men, as we have before observed, are specifically heavier than the river water, and in order that these may not sink, they ought to inflate the lungs as much as possible, by which the breast is distended, and the circumference of the body augmented. In order not to sink while in the act of taking breath, which the greater specific weight of the body would effect, the breath must be quickly expelled, and as quickly drawn in again, and then retained as long as possible; for, as the back is in a flat position, the sinking, on account of the resistance of the water, does not take place so quickly, but the quick respiration will restore the equilibrium, before the water reaches the nose.

Leaping or Plunging.

This is twofold: either with the feet or the head foremost. In the *first*, especially when the leap is high, the feet should be kept together, and the body kept inclined rather backwards than forwards. In the *second*, the modes are various: first, the *headlong plunge*.—The swimmer takes his stand on the edge of the leaping-board, with his arms stretched above his head, his knees curved, and his body inclined forwards. (*Fig. 8,*

Plate 9.) When the head comes to the level of the feet, then the legs are rather stretched than impelled, the knees are kept very stiff, and the legs in their position tend forwards. The beauty of the headlong-plunge, is when the swimmer plunges quite noiseless into the water, and does not raise more bubbles than a thin piece of wood falling perpendicularly would do.

The running Plunge.

In making this, the swimmer flings himself from the leaping place, with his arms close to the body. (*Fig. 9, Plate 9.*)

The flat Plunge.

This can be made only from a small height. The swimmer flings himself as far forwards as possible, and in such manner that his head reaches the surface of the water before the power of the impulse ceases. As soon as the swimmer touches the water, he must keep his head back, his joins hollow, and his hands, which are stretched forwards, flat and somewhat erect. In this manner he will dart forwards a considerable space, close under the surface of the water. This leap is to be recommended in water of no considerable depth.

The Fling.

The swimmer lays himself flat upon his waist, draws his feet as close as possible under his body,

stretches his hands forward, and, with both feet and hands beating the water violently at the same time, raises himself out of the water. In this manner one may succeed in throwing one's self out of the water as high as the hips.*

The Mill.

The swimmer lays himself upon his back, contracts himself so that the knees are brought almost to the chin, and while one of the hands keeps the equilibrium by describing circles, the other continues working. Thus the body is kept turning round, more or less rapidly.

The Wheel, backwards and forwards.

In the latter, the hands are put as far backwards as possible, and so pressed against the water that the head is impelled under the surface, and the feet, by a pressure of the hands in a contrary direction, are rapidly flung above the head, which in this manner is again brought to the surface. In the backward wheel, the swimmer lies upon his back; he contracts himself, the hands, stretched forward as far as possible, describe rapidly small circles, the feet rise, and as the point of equilibrium has

* This exercise is very useful for saving one's self by catching a rope, or any other object which hangs above the surface of the water from a small ship, or from any perpendicular height.

been brought as near as possible to the feet, the head sinks, and the feet are thrown over.

The Thrust.

At first, the swimmer lays horizontally upon his waist, and makes the common motions in swimming. He then simply stretches one arm forwards, as in swimming on the side, but remains lying upon the waist, and, in a widely-described circle, he carries the other hand, which is working, under the breast, towards the hip. (This circle is in its direction the very opposite of that observed in swimming on the side.) As soon as the arm has completed this movement, it is lifted from the water in a stretched position, and thrown forwards in the greatest horizontal level, and is then sunk, with the hand flat, into the water; while the swimmer thus stretches forth the arm, he with the other hand, stretched as wide as possible, describes a small circle in order to sustain the body; after this, he brings this hand, in a largely described circle, rapidly to the hip, lifts the arm out of the water, thrusts it forward, &c. (*Fig. 10, Plate 8.*) During the describing of the larger circle, the feet make their movements. To make the *thrust* beautifully, a considerable degree of practice is required. This mode of swimming is applicable in cases where a great degree of rapidity is required for a short distance.

The Double Thrust.

In the performance of this, the arm is thrust forwards, backwards, and again forwards, without dipping into the water; in the meantime the stretched-forth arm describes two small circles before it begins the larger one.

Diving.

The exercise of diving must begin by remaining under water without motion. The most pleasant manner for the diver is, to let himself sink gently into the water, by means of a pole or rope. The breath must be drawn in slowly, and expelled by degrees, when the heart begins to beat very strongly. If the pupil has practised himself in this for some time, he may then begin to swim under water, and *to dive to the bottom*. In swimming under water, he may either move in the usual way, or keep his hands stretched before him, which will enable him to cut the water more easily, and greatly relieve the breast. (*Fig. 11, Plate 8.*) If he observes that he approaches too near the surface of the water, he must press the palms of his hands upwards. If he wishes to dive to the bottom, he must turn the palms of the hands upwards, striking with them repeatedly and rapidly, whilst the feet are reposing; and when he has obtained a perpendicular position, he should stretch out his hands like feelers, and make the

usual movement with his feet; then he will descend with great rapidity to the bottom. It is well to accustom the eyes to open themselves under the water, at least in those beds of water which admit the light, as it will enable us to ascertain the depth of the water we are in.

To Swim with one Hand.

The pupil swims on one side, keeps his feet somewhat deeply *sunk*, while the arm, which in the meantime ought to work, is kept quiet, and might even be taken out of the water. It is a good practice of strength, to carry first under, then over the water, a weight of three or six pounds.

Saving from Danger.

It is necessary for a swimmer to know how to act in rescuing a drowning person, without himself becoming the victim, as so often happens; we therefore lay down the following rules:—The swimmer must avoid approaching the drowning person in front, in order that he may not be grasped by him; for wherever a drowning person seizes, he holds with convulsive force, and it is no easy matter to get disentangled from his grasp; therefore, he ought to seize him from behind, and let him loose immediately the other turns towards him; his best way is, either to impel him before to the shore, or to draw him behind; if the space to be passed be too great, he should

seize him by the foot, and drag him, turning him on his back. If the drowning person has seized him, there is no other resource for the swimmer than to drop at once to the bottom of the water, and there to wrestle with his antagonist; the drowning man endeavours, by a kind of instinct, to regain the surface, and when drawn down to the bottom, he usually quits his prey, particularly if the diver attacks him there with all his power.

For two swimmers the labour is easier, because they can mutually relieve each other. If the drowning person has still some presence of mind remaining, they will then seize him one under one arm, and the other under the other, and without any great effort in treading water, bring him along with his head above the water, while they enjoin him to keep himself as much stretched out, and as much without motion, as possible. (*Fig. 7, Plate 9.*) *Fig. 12, represents a very easy way to carry anybody over a river, or of saving a person who has not lost all presence of mind.*

FEATS OF SWIMMING.

I. *The Float.*

One swimmer lays himself horizontally on the back, with his feet stretched out, the hands pressed close to the body, and the head raised forward. The other swimmer takes hold of him by the ex-

tremity of the feet, and swimming with one hand, impels him forwards. The first remains motionless.

II. *The Plank, Fig. 13, Plate 8.*

One swimmer lays himself horizontally, as before, another lays hold of him with both his hands immediately above the ankle, and pulls him obliquely into the water, while he extends himself and impels himself forward; thus both the swimmers dart rapidly one over the other.

III. *The pick-a-back Spring.*

One swimmer treads the water, the other swims near him behind, places his hands upon the shoulders of the first, and presses him down. He then leaves his hold, and puts his feet upon his shoulders, and flinging himself out of the water, pushes the first towards the bottom. Now he treads water, and the *first* performs the part of the second, and so forth.

IV. *The Shove.*

Two swimmers place themselves horizontally on their backs; the legs are strongly distended, and the soles of the feet bear against each other; each impels forward with all his power, and he who succeeds in shoving back the other is the conqueror.

V. *The Wrestle.*

Two swimmers place themselves opposite to each other, tread water, and hold their right hands in the air; the question is, who shall first force his adversary under the water, by pressure: only the head of the opponent is allowed to be touched, and that only in the *pressure, &c.*

When a pupil has become a perfect proficient in all the exercises which are practised in the *fifth section*, so that he is able to swim a considerable distance with his feet tied together, to make from 500 to 1000 *thrusts* regularly, to swim 30 or 40 paces under water, and has surmounted the various other trials that have been imposed on him, he may then enter the *sixth section*, may be considered as a perfectly finished swimmer, and may be entrusted with the superintendence and management of others.

With respect to swimming in storms, amidst high waves, and in *eddies*, as also on horseback, it is only to be practised by the more expert and finished pupils of the fifth section; because, to counteract great external obstacles, considerable self-possession is required.

This appears the proper place to take notice of some prejudices which exist against swimming. One of these is, that swimming is hurtful to the breast; another, that it can be learned only during

the period of youth; and, lastly, that the best swimmer has no resource against the cramp. To these we reply :—

First—That only a *bad* mode of swimming is hurtful to the breast, but, on the contrary, that a *good* method will tend to strengthen it. While the *awkward* swimmer moves his arms with violence, the *good one* will employ them rather to sustain, than to impel his body, and is, besides, master of his strength; therefore, one ought to learn to swim well, or not at all.

Secondly—Not only children and youth, but persons of every age, can learn to swim, provided their frame be capable of sustaining the effect of the water; for the motion of swimming is very simple, and requires little or no exertion.

Thirdly—There are different kinds of cramp. If the cramp seizes the whole frame like a fit of apoplexy, then our lives would be in danger, even in our beds, but if the cramp affects but one member, as a foot or a hand for instance, then the skilful swimmer would know how to reach the shore by the aid of his sound limbs, for he may repose, at pleasure, either his hands or his feet; whereas the awkward swimmer, on the contrary, who is not master of the water, will infallibly be drowned. After all, those only are exposed to the cramp who go into the water heated, or who remain in too cold water till they become numbed, or those who, in spite of their exhaustion, attempt too vehement ex-

ertion. A swimmer, well acquainted with the water, knows how to avoid danger, and if, perchance, he should once have been improvident, he will know how to encounter difficulties. I therefore repeat it,—“either learn to swim well, or not at all.”

CONCLUSION.

WE have now laid before the public, in a progressive series of exercises, the advantages resulting from a well-regulated employment of our physical powers, as well as from their application in various circumstances. The influence of Gymnastics on our physical, as well as on our intellectual faculties, has convinced us, after long experience and repeated observations, of the utility of a simple elementary treatise on the subject. In executing which, we have endeavoured, as much as possible, to discard from our lessons every thing that might bear the least resemblance to the strength and agility of rope-dancers or tumblers.

We may, however, even yet, awaken the cynic censure of the adversaries of every new discovery, but a very slight inspection will be sufficient to convince the unprejudiced observer, that even in our most complicated exercises, we have not departed from our first and sole object,—*utility*. Far from having aimed at exciting the astonishment, or of calling forth the admiration of the spectator, we have adopted those exercises alone which have struck us as tending more or less directly to this point, whether in developing the forms or in fortifying the constitution; whether in restoring the

health, or in counteracting natural or accidental infirmities ; or whether they only tend to render us more adroit in saving ourselves or our fellow creatures from danger.

If we have not pointed out a determinate application to each exercise, from amidst the various unforeseen accidents and contingencies of life, it is in the persuasion, that it cannot fail to be perceived that we have left nothing to hazard ; and that our proceedings, the fruits of long experience, have obtained the approbation of enlightened and justly celebrated physicians.

Our plan, as it is divided into three sections, may be applied with success to the first three stages of life. In the preparatory lessons, parents will find unfailling instructions towards the developing the strength and agility of their children ; to the masters of institutions, the exercises, properly so called, will afford the most convenient means to cultivate and augment the strength, the address, and the promptitude of their pupils ; and the adult, confined to a sedentary employment, cannot better devote his leisure hours than to the practice of some of the complicated movements, in order to maintain a perfect equilibrium between the exercise of his body and his mind. If it were necessary to prove all that the health of (literary men) men of letters derive from Gymnastics, we could cite a number of testimonies, among which are those of the different cantons of Switzerland, France, and England.

We may add, that the experience of all ages has proved, beyond a doubt, the salutary tendency of physical education to improve the corporeal powers of man, and to bring to perfection that form which its great Creator evidently intended to be the seat of perfect symmetry and beauty. Many learned Physiologists, and celebrated Philosophers, have proceeded further in their observations, and have asserted that the ideas of the mind become more just, grand and capacious, in proportion to the advancement of the body, in health, strength, and energy.

Of the truth of this assertion, the republics of Greece and Rome afford the most irrefragable proofs. In these states, it is notorious that physical and mental education went hand in hand; the most enlightened senators, successful warriors, and acute philosophers, passed much of their youth in the Gymnasium, and by its healthy exercises perfected that strength of frame, magnanimity of mind, and manliness of spirit, which proved so beneficial to their country, and crowned their own names with immortal honour. Ah! what incalculable benefit to a nation, to possess subjects thus able to fulfil all the high demands of their life and station!

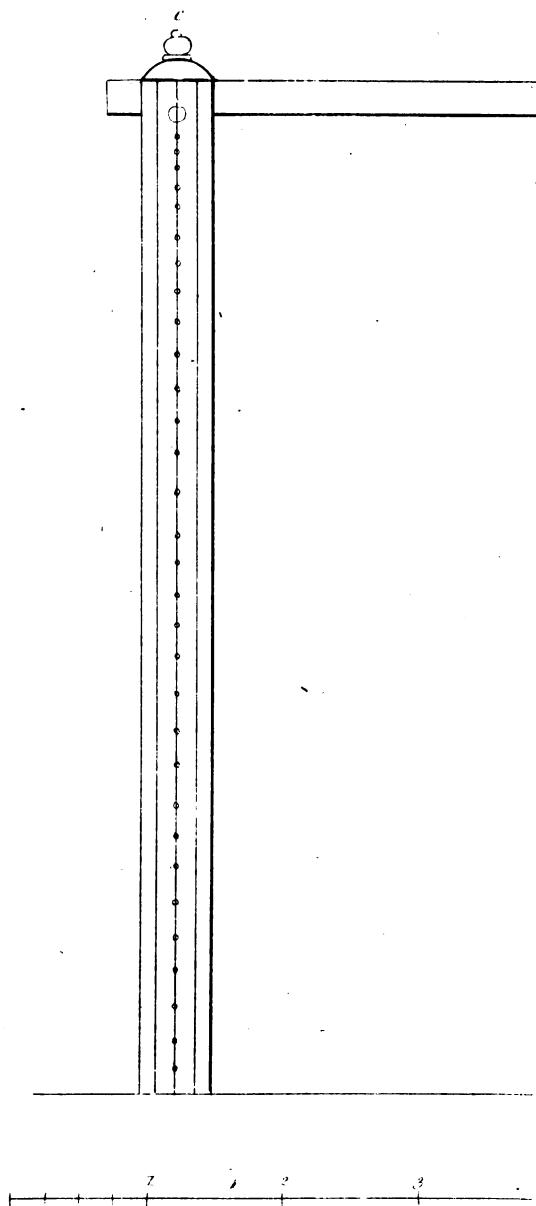
Such would ensure to a state, a healthy and enterprising posterity, born with dispositions the most favourable to culture and improvement. Scions springing from a noble stock, they would resemble

those vigorous grafts, which only require the care of the cultivator, to bring forth the most delicious and salutary fruits. We think that indifference to the effect of well-directed physical education can only arise from a blind attachment to custom. It seems to argue the individual born, if we may so speak, from parents, whose souls were actually absorbed in matter, to be unable to appreciate the advantages of keeping both in healthy exercise, or to comprehend the great truth,—that mutual action and excitement, brings mutual advantage and benefit.

In this country, dear to science and letters, every day beholds new monuments exalt themselves. An indefatigable zeal, an enlightened philanthropy, preside in adopting every project tending towards the improvement of man, or the augmenting that sum of felicity which he is here called to be a partaker of with his fellow creatures. Under this double aspect, Gymnastic Institutions will not fail speedily to obtain that protection which is due to them from a benevolent and liberal government; and the wishes of the true friends of rational education will be at length accomplished.

THE END.

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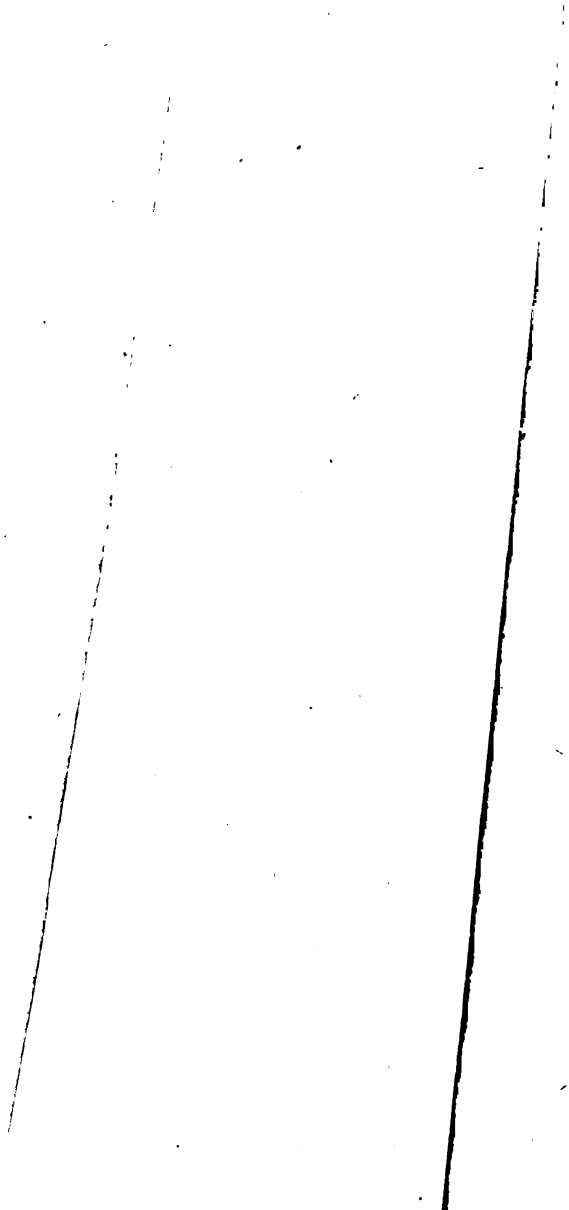


Fig. 7.

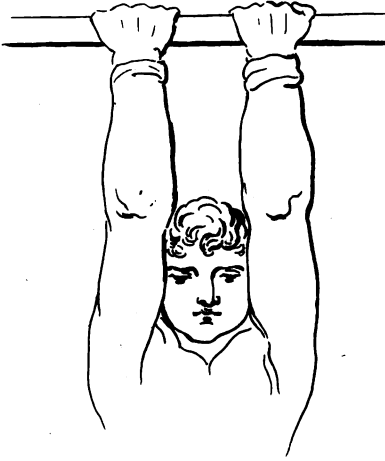


Fig. 10.



Fig. 13.

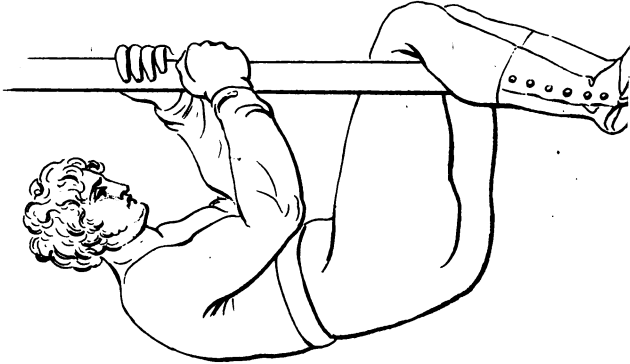
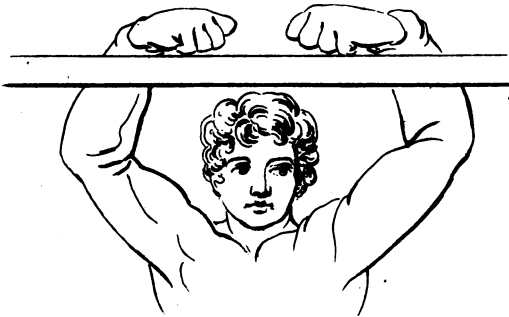


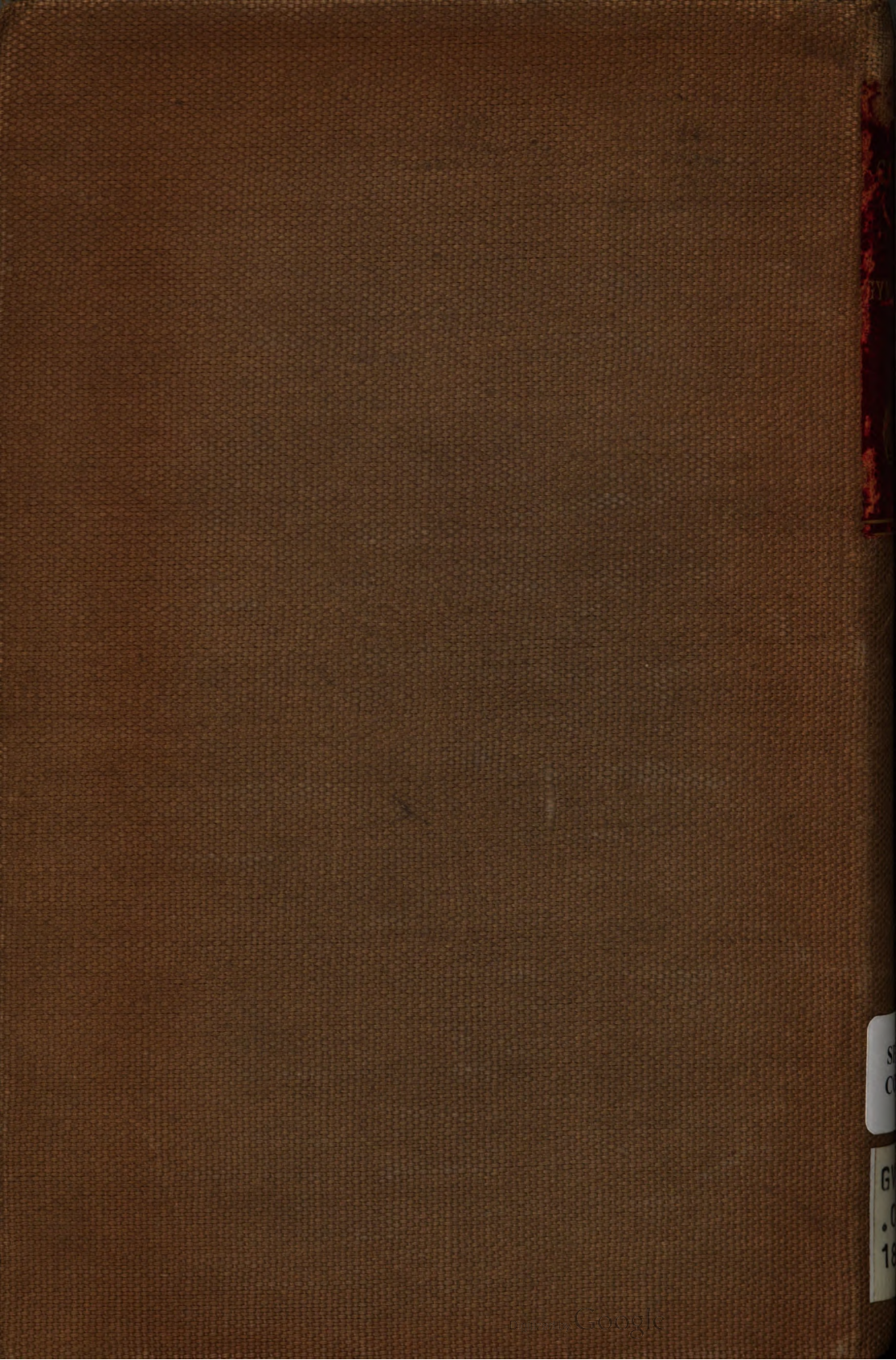
Fig. 16.



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