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THE PHYSICAL EDUCATION OF WOMAN.

By PROF. A. MOSSO.

Translated by A. F. CHAMBERLAIN, PH. D.

This address was delivered at the closing session of the "Society for the Education of Woman"—whose meetings were held under the patronage of the Queen of Italy, who honored them with her presence—by A. Mosso, professor of physiology in the University of Turin. The translation is made from the report of the address in the "*Boletín de la Institución Libre de Enseñanza*," Madrid, for August 31, 1892.

I.

The physical education of woman is, in many respects, more important than that of man, and lately it has attracted the attention of men of learning in particular on account of the active opposition offered to the introduction of German gymnastics into the schools. The obstacles to be overcome in introducing a reform in the physical education of woman are, perhaps, less than if the education of man were concerned. In the case of the former, in fact, it is not required that gymnastics should be a preparation for military service, or that the school-mistress should know how to shoot, or that the pupils should practice acrobatic exercises, and there is, therefore, greater hope that the physiologists and hygienists may be able to exert more efficaciously their beneficent influence.

Gymnastics are generally considered from but one point of view, viz., their use in developing the muscles, whilst their utility with respect to the organs is little thought of. It is to this other most important aspect of physical education, which consists in the gymnastics of the viscera and of the functions, that we ought to give greater importance.

In Italy we begin physical culture very suddenly and we relinquish it also too suddenly. The most favorable age is from 14 to 24 years, the very period in which with us least exercise is taken. Physical culture is perceptibly declining. I know not a few cities in which now the youth take much less exercise than twenty or thirty years ago. It seems that with the calming down of the enthusiasm, which led us to the reconstitution of our country, goes also the debilitation of physical education.

Young ladies despise gymnastics because they think it child's play. In the technical schools, in the gymnasia, and in the lyceums, we have seen that compulsory measures do not serve to diffuse German gymnastics. Let us grant the existence of societies for physical culture, destined for picked men and for those who possess better natural gifts, but let us seek another way for those less strong and vigorous, those for whom movement and exercise are necessary in order to make them robust. Before all, we ought, in a good

method of physical education, to persuade the mothers that the health and future of their children are at stake.

Prof. G. Bunge¹ has met with recently one of the causes of anæmia and chlorosis in girls. Their bodies, in the years of puberty, ought to store up a great deal of iron, as a treasure of the most precious element of the blood, which nature keeps in reserve and which the mother will transmit to her child. And as the milk does not contain a quantity of iron sufficient for life, the mother must give to the child before birth an excess of iron. It is a physiological necessity which may be converted into a morbid act. The organism, compelled by the regulating forces to seek the iron which it will afterwards need, blindly consumes the blood, if it is not had promptly. Woman ought, with greater care even than man, to keep active her digestive functions, because the development of her body is more delicate than that of man, and the appearance of the signs of maturity is marked by graver symptoms. The fact that malnutrition, excessive mental work, depression of mind, great debility, convalescence, arrest maturity, is of itself sufficient to convince us that we ought to redouble our vigilance to make sure that during the period from 14 to 15, there be no lack of exercise and that the woman is maintained in a condition most favorable to physical development. The idea put forward by some that about the age of puberty there ought to be a long period of repose, has not found acceptance amongst the physiologists, who recognize, on the contrary, in activity one of the causes most efficacious in promoting the circulation of the blood and the nutrition.

Hysteria, about which there has been so much discussion, is a degeneration of the nervous system fomented by sedentary life. It is a sad prerogative of woman and of feeble men; it is a malady which is now looked upon as a condition of permanent fatigue. We ought to prevent it by vigorizing the organism by means of fatigue. Exercise, light and the open air frequently succeed in curing it by vigorizing the nervous system. If we see girls who are all the time sitting down, who are pallid, who have large bluish circles beneath their eyes, who are inattentive and distracted, who complain of night-mares which exhaust them, who have nervous perturbations of the respiration and of the voice, who have a tardy digestion, who present very rapid changes in mental states, passing suddenly from mirth to melancholy, from laughter to tears, from habitual pallor to excessive color, we ought firmly to intervene and not to permit these young girls to give themselves up to a repose that is enervating them. It is a question of stopping them on the fatal descent which is leading them to hysterics, of withdrawing them from the artificial emotions of society and suppressing exercises which discompose and fatigue the nervous system; it is only the open air and constant exercise that can vigorize these fatigued organisms. We ought, therefore, to make physical culture more attractive by means of plays, to increase the palestras, and to make it so that girls meet with all sorts of facilities for moving and growing under more physiological conditions.

II.

There are in Italy persons of authority who think that a gymnastic movement, in order to be useful, must be executed with much energy and rapidity. Imbued with a military spirit, they seek a physical culture of quick, vigorous, impetuous movements. Judged by a soldier, a rapid movement may seem preferable, because of its

¹ *Lehrbuch der physiologischen Chemie*, Leipzig, 1889, p. 99.

decisive action, but the characteristic step of a Prussian soldier and his manner of handling his gun are things which neither the physiologist nor the artist can admire, and are certainly not suitable for female physical culture. In the movement of the muscle, in its flexion, moreover, which is a chemical phenomenon, there is a mechanical action which is useful to it. We are reminded in this connection of the ancient customs which the phlebotomists had of putting into the hand of the patient the lancet-case and making them compress and turn it round and we could persuade ourselves that a slight movement of the muscles is sufficient to facilitate very much the flowing of the blood.

Athletes before wrestling used to prepare themselves by rubbing with oil and when they came out of the struggle exhausted they were re-invigorated by rubbing. These things, I say, are as old as medicine. A century before Christ, through the work of Asclepiades, the doctrine of the beneficial influence which passive movements exercise over the muscles was already demonstrated and accepted by physicians. Even without causing the muscle to contract, we can by means of massage (*amasamiento*) succeed in making it plumper and stronger. In this connection there have been made recently in my laboratory by Professor A. Maggiora¹ important experiments which show with seeming conclusiveness that, in physical culture, one of the most useful effects is due to the passive action which the muscle exerts upon itself, and that with slight movements, better even than with prolonged and vigorous movements, the lymph and blood are set in motion. Constant and moderate exercise is what favors the development of the muscles; impetuous movements improve it much less. The Swedish system of physical culture obtains good results by following a method completely distinct from ours. I do not say that we ought to copy, just as it is, the Swedish system, but we must, nevertheless, recognize that some of the principles upon which it rests are more conformable to physiology than those of the German system.

To many the idea of taking anything from the Swedish system is repugnant, as if these were the only foreign things or because it has a medical tendency. But we ought to remember that, in the matter of physical culture, nothing has been discovered since the classic times of Greece and Rome. When I feel the necessity of rousing my mind from the reading of modern books, whose number is so great, but few of which contain any novelty of thought or variety in form, I take up Philostratus' book on gymnastics, now twenty centuries old. The ancient physicians prefer Oribasus, who was the friend of the Emperor Julian, the apostate. Oribasus and Julian are two great figures extending like a glorious lustre over the classic world, when the darkness of barbarism is setting in. The Emperor Julian had conceived the hope of saving the empire from its deadly throes and of leading it on to new grandeurs. In Milan he left the insignia of the philosopher and girded on his sword to hasten to the frontier of Gaul to conquer the Germans and Franks. These were the last victories of Roman civilization; and whilst they were fighting, Julian carried with him to the battle-fields his library, and Oribasus wrote the encyclopedia of medicine, the last and greatest monument of ancient science.

Oribasus left several chapters which comprise modern gymnastics, including the principles of the Swedish system. The same rhythmic steps which are now one of the characteristics of modern methods

¹ *Ricerche sopra l'azione fisiologica del massaggio sui muscoli dell'uomo*. Archivio per le scienze mediche, Vol. XVI. (1892), 41-77.

² Philostratus, *Sur la gymnastique*, publié par M. Mynas, Athènes, 1868.

we meet with already in Oribasus, but there are there also many other useful things which we might turn to good account in practice. Oribasus distinguishes movements that are *rapid without intensity or violence* from *vigorous or strength movements*. We might accept this fundamental distinction as the basis of modern gymnastics. First, exercises in the contraction of the muscles pass from one group to another without stopping; then, when the muscle is already near its complete development, that is, after about the fifteenth year, more vigorous exercises; but even in this we ought to proceed with caution and methodically. In modern gymnastics vigorous or strength exercises consist almost always in raising the weight of the body with the arms. Many think that, in order to develop the strength of the muscles, this great labor is necessary. This is an error. I believe, on the contrary, that for vigorizing and developing the muscles, contractions of little duration, in which is put in motion a weight less than one-tenth part of the body, are more efficacious. Such are the exercises with broom-handles and clubs. I have made with Dr. Manca a series of investigations on gymnastics by means of such aids with girls of from 8 to 13 years. The result has been that fifteen days of exercise suffice to double and treble the strength of the arms. I do not believe that in the efforts which are made on the horizontal ladder and other apparatus an equal result can be obtained, because, in lifting the whole weight of the body, the muscle acts under less physiological conditions.

The gymnastics for women should never be a gymnastic of strength.

Recently I have seen in London how much advantage can be derived from the Swedish system. Miss Chreiman, well-known as a writer of eminence on female education,¹ carries eclecticism so far that she has introduced into her system some movements taken from the Spanish dances.* Cadenced movements, well-selected, slow contractions which give artistic postures to the body, have a great future before them in the physical education of woman.

Instead of giving an order for each movement, we ought to prefer the series of movements and to direct them with a physiological and useful purpose. Think of the difficulties which mothers encounter in teaching their daughters to move gracefully. For a girl to move elegantly implies a complete study of the co-ordination of movements. Our girls, from being idle so much, acquire the tendency to shrink the shoulders and to walk with the back somewhat bent and the head a little inclined.

A book on the physical education of women, in order to be useful, must be rational and classify exercises according to their physiological importance, placing first of all those which are indispensable and indicating, likewise, those which may be omitted; above all it ought to be written in a pleasing, readable style. Unfortunately, up to the present in Italy no such books have been written, and of all our school-mistresses may buy, there is perhaps not one suitable for mothers and young girls.

III.

One mistake in physical culture consists in employing the same method and the same apparatus for both women and men. In the case of the former, the muscles of respiration and the muscles of

¹ (a) *The Scientific Physical Training of Girls*. A Lecture. London, 1884. (b) *The Physical Culture of Women*. A Lecture. London, 1888.

Formerly in Spain, the young ladies were taught the national dances, e. g., the *Bolero*, as a means of developing flexibility and grace in movement. [Note of the Editor.]

the abdomen are much more important than in men. In their lives women have terrible moments when weakness in the contraction of these muscles prolongs the labor of a mother and sometimes causes her death. The German system, which was invented by soldiers, has not taken into account the necessity of woman, and does almost nothing for the muscles of the diaphragm and abdomen, even when there is a series of exercises put forward as absolutely necessary.

In books on physical culture written with a practical end in view, such as that of Schreber,¹ of which already twenty-four editions have been printed, we find many exercises for such purposes. Schreber recommends falling to the ground upon a thick rug; crossing the hands behind the head and raising oneself to a sitting posture, then letting oneself fall backwards again. This is one of the best exercises for exciting the muscles of the abdomen and of its walls. But there are many other ways of training the muscles of the abdomen without apparatus. It is sufficient to sit on a bench and then having secured the feet under some article of furniture, to stretch oneself backwards, raising oneself up again. The training of the abdominal muscles can be had in running and climbing a sloping lawn or meadow. Any physician can improvise in a house, in a meadow, or under a shed, the apparatus necessary for these exercises, which are of the greatest importance in the physical culture of women.

It was Philostratus who said that the strong man ought to have a "vientre hundido." When the training of the abdomen has gone on for some time the strengthened muscles remain in a permanent state of tonicity, which favors the functions of the intestines and of the female viscera.

We must not be too pedantic and prescribe by means of programmes such a uniformity as will stupefy the teachers and stifle all initiation in the pupils. Having given a physiological direction to gymnastic movements and having demonstrated their utility, let us give them a little more freedom. In England, plays are not exactly equal in all parts; even in the same play there are notable differences, which are in no way prejudicial. What is lacking with us in Italy is the desire for physical culture. Let us first of all try to inspire a little enthusiasm for physical education and afterwards we may think of generalizing it throughout the kingdom.

A few examples will suffice to show, if indeed it were necessary, how difficult and wearisome a thing is the physical culture of to-day. The elementary movements are insupportable and seem made to cause recruits to despair. In 1838 Colonel Amorós said:² "Frenchmen would get tired of doing them and would perhaps make fun of them." Notwithstanding this the authors of treatises go on copying one from another the elementary exercises, and in the most recent of the Italian treatises I find even the rotation, gyration and flexion of the head.

Movements of the head in all directions are habitual to such an extent that I know not why children should be obliged to make them to time and measure.

After having spoken of the "flexion of the head forward, backward, to the right and to the left, alternately, in order to be efficacious (thus it is written in the book), all movements of the head must be executed with energy and intensity, excluding any rapid or vigorous movement."

¹ *Gimnastica domestica medica ed igienica per ogni sesso ed età*, con 45 figure, Milano Treves.

² *Nouveau manuel de l'instruction physique*. Paris 1838, Tome 1, p. 27. [For an account of the works of this celebrated Spanish gymnast, see this *Boletín*, numbers 276, 277. Note of the Editor.]

This is mere logomachy ; here are words which annul one another and expressions which I humbly confess I am at a loss to comprehend. All this but serves to create confusion, to waste time and make gymnastics wearisome.

The flexion of the arms and of the legs, jumping with the feet close together, changing step, walking on tip-toe, looking up or down, to the right or to the left, are things that our boys and men do for themselves every day and I cannot see what necessity there is for placing them in file to do so. On the other hand many useful and necessary things are lacking. The reason for this is that we have copied the German system of gymnastics, which is essentially a parade one.

Some exercises now prescribed in the programmes, besides being useless, are even prejudicial. Amongst these is the vigorous marking time with the foot, which has the effect of greatly increasing the flatness of the foot. A foot, to be beautiful, ought to have inwardly between the heel and sole where the toes are, a semi-circular arched part. At bathing-places by the sea, by looking at the tracks left by the ladies in the sand, one can see what well-formed feet are. The narrower the instep region, the more perfect is the foot. We physicians can tell if the foot is more or less arched by simply observing the individual's way of walking ; those who turn the feet a little outwards in walking have a tendency to flatness. This form, when much accentuated, constitutes a defect which exempts from military service ; for, through the inward part of the sole pass the arteries and nerves, and if the elevated arch of the normal foot is lacking, it is less suitable for marching.

Dr. Charles Roberts was the first to note that this defective form of the feet tends to generalize itself more and more. We ought, therefore, not only to exclude this exercise, but also seek others by which with the excitation of the flexor muscles, the back of the foot may be made higher.

Another defect of female gymnastics is that almost no attention is paid to the vigorizing of the muscles of respiration. This was not the case with the ancients. Oribasus,¹ after having written a chapter "on the different sorts of exercises and their efficacy," and another "on the method of exercising," wrote two on the gymnastics of respiration, which was then called *apoterapia*. This was the last part of the methodical exercises. It consisted in holding the breath and whilst a strong contraction of the muscles of the thorax took place, those of the abdomen and of the diaphragm were relaxed. Then the inverse exercise was practiced, i. e., the viscera of the abdomen were compressed by means of the diaphragm with the simultaneous contraction of the abdominal walls.

A little group of English girls can scarcely come together before they organize a game. Often those who travel through Italy carry with them their rackets and balls. Our girls, as if they were living in a convent, are seen to walk composed and grave, almost afraid of setting down their feet, terrified by a monastic vigilance which paralyzes them. In none of the institutions which I have visited, and they are amongst the very best, have I met with lawn tennis. The Italian woman of the renaissance used to play ball, as we can see in the frescoes of the castle of Ferrara and of the Borromean palace at Milan. Now it would never occur to an artist to represent girls at play, for that is a thing that is never seen.

Some institutions for female education, which I have visited, have left in my mind a sad remembrance, which I never shall forget. It is a humiliating fact that we deny to our young girls the air, the

¹ Œuvres d'Oribase, traduction de Bussemaker et Daremberg, Tome 1, p. 473.

light, the sun, the room which we so freely¹ grant to our state prisons and houses of correction. In Italy, the physical education of woman will continue as abandoned as it is to-day and for a long time, unless a propaganda in favor of games is begun. Let us imitate the example of Germany, which, even though it be the birth-place of modern gymnastics, is now engaged in a great movement to complete them by means of games. In the month of June next, there will be given in Prussia two special courses for teaching games to school mistresses, one in Berlin, the other in Brunswick. Let us, too, institute our courses of games for teachers and above all let us publish a book of games. There is no difficulty in collecting the Italian games, and we can add the foreign ones that are lacking to us. Commencing with the book of G. Beleze,² and coming down to the last few years, we meet with remarkable progress in foreign countries. I will mention, amongst others, that of Major Doex,³ which I have recently seen put into practice in the schools of Belgium.

In France and in Belgium the clergy have at once understood the tendency of the evolution of gymnastics and a book of games written by two Jesuits has quickly run through three editions.⁴

IV.

There has been so much talk of the biological and psychological differences between man and woman, and such diverse and opposite applications of these have been made by students of social science, that I feel almost obliged to give expression to my opinion as a physiologist. There have been fathers of the church who denied to woman the possession of a soul. The canonists wrote: *Mulier non est facta ad imaginem Dei*; and since then many philosophers have continued to speak ill of woman. In this very series of meetings and lectures, Prof. Sergi⁵ made the synthesis of the pessimistic school. The differences pointed out by Prof. Sergi, whose value in the field of anthropology and psychology I am the first to recognize, do not depend, it seems to me, on the primordial constitution of woman, but are the result of the artificial atmosphere which the life of society has created around her. To judge of woman, we must study her apart from the special conditions in which man, who has enslaved her, brings her up; we must consider woman in an entirely free state of nature, where she represents a specific form of the zoölogical series.

Let us take for purposes of comparison the most intelligent and affectionate of animals, the horse and the dog. We all know that the physical strength and the activity of the nervous system are equal in the male and female. The lioness is feared more by the hunters than the lion, and it is the same with the tiger, the panther and the other higher animals, who might have disputed for the lordship of the earth had not man appeared.

There are various reasons which make it difficult for me to accept the opinion gravely expressed by Prof. Sergi⁶ that "woman, morphologically and functionally, does not reach the normal development of man, but in general remains behind, as if there were a general suspension of development." It seems to me that the human characteristics and fundamental differences which dis-

¹ This "freely," of course, refers to Italy. [Note of the Editor.]

² *Jeux des adolescents*, Paris, Hachette, 1886.

³ *Guide pour l'enseignement de la Gymnastique des Filles*. Namur, 1882.

⁴ De Nadailac et G. Rousseau, *Les Jeux de Collège*. Paris, 1891.

⁵ Per l'educazione e la coltura della donna, en la revista "L'Educazione Nazionale," anno III, 9 aprile, 1892.

⁶ Loc. cit. Par. II.

tinguish our bodies from those of the lower animals are essentially feminine in their nature.

It has been said that the cerebrum is the organ which marks like a gulf the difference between man and the animals, but this is not certain. There does not exist any profound anatomical difference between the cerebrum of the gorilla and our own, and even in function the difference is only in the greater extension of the psychic phenomena, not in nature and characteristics. The great morphological difference between the animals and man is in the form of the pelvis. No physician can, even when looking at it from a distance of twenty paces, confound the pelvis of man with that of any other of the anthropomorphic apes.

The pelvis of woman is a new type of skeleton appearing on the earth. Hitherto we have sought in vain the animal which should supply the missing link between us and the lower animals, and singularly enough, the pelvis of man, more than that of woman, resembles the pelvis of the simians in being narrower and higher. If it is certain that walking upon two feet is one of the characteristic signs of the genus homo, woman is certainly better constructed for not walking bent towards the ground, and the female type must preponderate in the human type. Other characters of femininity appear in man in the mammary glands, which serve no purpose, and in the muscles of the abdomen, which are more useful to women. Besides these female characteristics, man has others, as the abundance of hair, which approaches him more to the lower animals. To engender a woman more favorable conditions are necessary than for the formation of a male, because the embryo of the female represents a greater vital potentiality. In the case of bees only the non-fecundated eggs produce males. Statistics show that when the conditions of life are unfavorable a greater number of males are born. With man, as with the lower animals, the males die more easily than the females. In France, for 25 years on, the probable duration of life is, for the woman 39 years, and for the man only 37 years¹, and this in spite of the fact that woman, by reason of her physiological functions, is subject to a greater number of infirmities than man. Some authors, while admitting that the cerebrum of woman can function as well as that of man, add, nevertheless, that if woman wishes to completely preserve her femininity and not to injure her function as mother, she ought not to enter into competition with man in the intellectual field. The division of labor is certainly useful in society and thus man obtained the supremacy and woman finds herself in unfavorable conditions. But it cannot be said that the activity of woman in the intellectual field is at the cost of her femininity.

Recently Mrs. Henry Sidgwick², sister of the celebrated physiologist Balfour, published a very careful statistical investigation concerning the women who have studied in the universities of Cambridge and Oxford. This lady collected documents full of details relating to over 562 women of the various university colleges, and the facts came out that the women who have attained to academical degrees had in their marriages afterwards a more numerous progeny than that of their sisters, and that they were physically superior to the general average of English ladies³.

But we must not forget the difference there is between physical education in England and Italy. To her education the English

¹ Victor Turquan, *Manuel de statistique pratique*, Paris, 1891, p. 487.

² Health statistics of women students of Cambridge and Oxford and of their sisters, Cambridge, 1890.—Mrs. Sidgwick is the wife of the well-known philosopher, Prof. Sidgwick, and has just succeeded Miss Clough as head of the famous Newnham College, at Cambridge.—[Note of Editor.]

³ Loc. cit. p. 91.

woman owes her greater development, agility and robustness. Looking at the caricatures of the illustrated periodicals of France and of England, one recognizes in the exaggerations of the profile of woman how different are the types which are now in vogue in these two countries. The sketches of *Punch*, in which the figures of women, drawn by Maurier, by Keene and by Furniss, are taller, more muscular, and I might almost say stronger than those of the men, form a complete contrast to French caricatures.

V.

We to-day have an idea of beauty distinct from that which the Greeks had. Some things which we believe necessary in order for a woman to be called beautiful remind one of the prejudices which dominate the æsthetics of the middle ages. I think Schadow was the first to observe that the Venus de Medici had feet longer than the normal, and to show how the thorax of woman in the Greek statues is larger than that of the modern woman. The Venus de Milo, in the proportion of its members, is a giant among women, and has in its muscles characteristics which make it resemble the celebrated statue of the Athlete of Policletus. Even the Venus of Cnidus, in the Vatican, has a masculine stature. In the axilla of these Venuses can be seen the muscle for insertion into the shoulder, a salient characteristic, which at times is wanting even in strong men. But it is particularly in the modeling of the abdomen that the development of the muscles is most evident. The models for the Venus of Cnidus and the Venus of Milo must certainly have been women trained in gymnastics and games. The rectal muscles of the abdomen are clearly seen; the upper part of the belly as far as the navel is divided by a line in the middle and on one side, and on the other are seen two furrows marking the outer margin of the rectal muscles. I have not seen a modern statue in which this great development of the abdominal muscles was so well indicated. Only in some master-pieces of Michael Angelo and Cellini can we admire these physiological peculiarities of the classical woman.

There are young ladies and mothers who fear that by practicing physical culture they will make their arms too corpulent. A rounded arm is not beautiful; it may be pleasing, but it is not artistic. The exercise of the arms causes the fat to appear a little, and then the muscles in the state of repose are not flaccid, but let their form be discerned beneath the skin. We have on the shoulders a triangular muscle called deltoides. This muscle is to cover the bones of the shoulder, descending in a visible manner till it inserts itself on the shoulder. The biceps, too, the muscles which we see increase in volume when we bend the elbow: this muscle ought to be seen as well, if the arm is to have a perfect form. Artists agree in recognizing that the women of the Montes Albanos have the most beautiful shoulders. During the whole renaissance there was such a profuseness of superb shoulders that many connoisseurs maintained that our art excelled the Greek art of the classic epoch, in which the shoulders were less beautiful. It is sufficient to refer to the women which Raphael painted in the picture of the Transfiguration, the drawings which he made for the vault of the Farnesina and his fresco of Galathea. The shoulder development and the majestic walk of the women of the Montes Albanos are considered insuperable, and are owing to the habit which they have of carrying heavy things on their heads and often keeping the hands raised to keep them in place. I am not the first to note these facts and to indicate the direction which ought to be given to female gymnastics in order that girls may learn to walk straight and with a noble step.

Thus, for example, instead of making motions in all sorts of directions, which is inconvenient on account of clothing, it would be much more useful for them to catch with their hands in leaping at an object suspended above their heads.

Ernest Brücke, professor of physiology at Vienna, one of the most distinguished scientists of this century, whose death occurred but a few months ago, published last year a book entitled, "Beauties and Defects of the Human Body."¹ It is a classic in its profound knowledge of anatomy and physiology united with great artistic skill. Brücke, speaking of the insertion of the neck and of the muscles seen in the posterior portion of the shoulders, says: "Celebrated for the beauty of these forms, and for the insertion of the nape of the neck, are the Roman girls and women, especially the chocharas. Rounded necks, like those of the ancients, I have often seen in Tuscany." Speaking of the thorax he says to the German artists: "There is no trust to be placed in the models now in vogue generally, especially with us in Germany, for the German thorax is much more frequently badly developed than the Roman." Then he makes a comparison between the abdomen of northern people and that of those of the south; he speaks of the form of the head, of the jaw-bone; and in his æsthetic criticism he always shows his sympathy and admiration for the physical characters of our race. It is fitting that the Italian women should jealously guard this inheritance. It was a slow selection that has perfected our race, and physical education ought to strengthen and preserve this superiority.

It is an exaggerated belief that the Romans did not acquire until the last centuries the æsthetic sentiment of Greece. The Romans always had a great admiration for corporeal beauty. Without this sentiment, the Scipios in one of their tombs now to be found in the Vatican, that of Cornelius Lucius Barbatus, who conquered the Samnites in 300 B. C., would not have praised the beauty of his body which, according to the inscription, was equal to his virtue. The saturnine verse runs:

QVOIVS. FORMA. VIRTUTEI. PARISVMA. FVIT.

Times have changed so much that to-day, in the very same Rome, we may not or cannot say to a woman that her beauty of body is equal to her accomplishments.

¹ Schönheit und Fehler der menschlichen Gestalt, Wien, 1891.—He is also the author of essays in the *Bibl. Scient. Internat. Paris*, 1878, on "Principes scientifiques des Beaux-Arts, etc.—[Note of Editor.]