The Swedish system of physical education : its medical and general aspects / by Theodora Johnson.

THE SWEDISH SYSTEM OF PHYSICAL EDUCATION

THEODORA JOHNSON

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"THE GOOD OF MAN'S BODY IS OF FOUR KINDS—
HEALTH, BEAUTY, STRENGTH, AND PLEASURE.

Bacon.

THE SWEDISH SYSTEM OF PHYSICAL EDUCATION:

Its Medical and General Aspects.

EXPANDED FROM A PAPER READ BEFORE MEMBERS OF THE BRITISH MEDICAL ASSOCIATION.

BY

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WITH 27 ILLUSTRATIONS.

THIRD EDITION WITH NEW PREFACE.

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PREFACE TO THIRD EDITION.

SINCE the first publication of this booklet, at the request of the Medical Profession, the subject of physical education has become one of more general interest. It does not mean merely the training of the physique but it necessitates also some knowledge of physiology, anatomy, heredity, environment and the laws of health, which include sanitary housing, food, and the proper care of children and adults. Many factors have combined to arouse a fresh interest in the subject. The South African War awoke the country to some extent, and the Royal Commission inquiring into physical deterioration resulted; then a medical memorial signed by 14,718 medical men was presented to Lord Londonderry as President of the Board of Education praying for the compulsory teaching of hygiene in our schools.

Encouraged by these signs, I arranged a conference, which, through the courtesy of Sir William Collins, President of the Education Committee of the London County Council, was held in the Council Chamber of the Educational

Offices on 16th Nov., 1904. The Lord Bishop of Bristol presided, and before Lord Londonderry, then President of the Board of Education, Sir William Church, President of the Royal College of Physicians, Sir William Broadbent, Sir Lauder Brunton, the Bishop of Rochester and others of equal or approaching note, I urged the necessity of the establishment throughout this Empire of a System of Physical Education, including a central institute on the lines of the Royal Central Institute of Sweden and a lecturing staff for the dissemination of knowledge of hygienic laws to improve the health of the nation, its physical and moral health being ever closely interdependent. It was further proposed to affiliate all colleges and societies working on the same lines, as union is strength, and the concentration of energy is an essential element in success. This conference aroused considerable attention in the Press and throughout the country, leaders appeared in *The Times*, *The Standard*, *Morning Post* and other prominent papers. Articles came out in the magazines, and the public awakening was followed up on 28th June, 1905, by the inaugural meeting, in the London Mansion House, of "The National League for Physical Education and Improvement"—the

result of the zealous work of Sir Lauder Brunton, who had devoted a considerable amount of time to win a following of distinguished and influential men to work in the same cause. The Lord Bishop of Ripon became Chairman of the Executive Council. The objects of this league are identical with those proposed at the initial Conference, seeking to remove such social evils and blots on our national life as overcrowding, infant mortality, vice and intemperance.

Scotland, which is ever ahead in educational matters, aided by the munificence of Mr. Carnegie, opened in September, 1905, "The Dunfermline College of Hygiene and Physical Training" to work on these same lines. England should hasten on or she will be left far behind. Already Sweden, Japan and possibly Bohemia and other countries are before us, while America is wide awake to the importance of this subject. The power of balancing possibilities should be brought into play in the consideration of the future position of our country. The past and the present are disgraced by conditions which shame our so-called civilization. The late awakening of a health conscience and the birth of the National League must sweep away some of this foulness and

purify the moral and mental atmosphere that we may leave a fairer heritage and the possibility of a purer life to those who come after us. The future is still ours, and the foundations are now laid for the superstructure of a great national and racial improvement. It surely behoves all who have the well-being of our Empire at heart to join hands and work for this cause, striving to expel disease and wrong living and to spread sweetness and light among the people.

The great intellectual ability of Gladstone and Beaconsfield compels attention from men of all political creeds. Beaconsfield summed up his opinion in the motto "Sanitas Sanitatum et omnia Sanitas," while Gladstone said "The most crying want in the education of the present day is to distinguish between what is principal and what is subordinate." All subjects relating to the life and health of the individual are "principal," when we consider the interdependence of the mental, moral and physical forces in life and desire the improvement of the human race.

T. J.

January, 1906.

CONTENTS.

I.

LING AND HIS THEORIES.

His literary tastes and military experiences—His researches —The Royal Central Institute—The Swedish System—Social position—Illegal for unqualified persons to practice—Zander—Other institutes—Progress of the system in various countries. *Pages* 13—21.

II.

EDUCATIONAL EXERCISES.

A healthy mind in a healthy body—Ancients—Present retrogression—State of physical education in Sweden—Ling's physiological arrangement and principles—Order of lesson—Free Movements and Apparatus—Exercises—Necessity for full training—Registration desirable—Why more used in England on feminine side. *Pages* 22—35.

III.

MEDICAL MOVEMENTS AND MASSAGE.

The Medical-gymnast in relation to disease—Skill required —Misconceptions—Responsibility resting with the Medical Profession—Massage as given by a *qualified* masseur or masseuse—Metzer—Medical rubbing used by the ancients—Observations made by Hippocrates—Nomenclature—Schreiber on massage—Electricity—Diseases beneficially affected by the Swedish treatment—Cases quoted—Brandt—Medical movements—Apparatus. *Pages* 36—54.

IV

SPINAL CURVATURE AND ITS TREATMENT.

Forms of Scoliosis—Old method of treatment—Effort and Activity *versus* Support and Rest—Liable to recur—Stages of development—Consequences if neglected--Constitutional liability to scoliotic developments—More general among girls—Causes of curvature—Flat-foot—Symptoms—Co-operation between family practitioner and kinesipathic attendant—Method of examination—Time required for cure—Necessary conditions—Typical case described—Its treatment—Further cases cited. *Pages* 55—79

ILLUSTRATIONS.

Apparatus in a Swedish Gymnasium *Facing pages* 22 and 55
Apparatus for Medical Movements - - *Facing page* 36
Figs. 1-10—Educational Exercises - - - *pages* 29-34
Figs. 11— Double Lateral Curvature - - - *page* 65
Figs. 12-19—Medical Movements - - - *pages* 67-73
Figs. 20-23—Scoliosis - - - - - - *pages* 76-79

"HEALTH IS THE FIRST WEALTH."

Emerson,

The Swedish System of Physical Education.

I.

LING AND HIS THEORIES.

His literary tastes and military experiences—His researches—The Royal Central Institute—The Swedish system—Social position—Illegal for unqualified persons to practise—Zander—Other Institutes—Progress of the system in various countries.

THE Swedish system of Physical Training represents the life work of Pehr Henrik Ling, member of the Royal Academy of Sciences, Stockholm.

Ling realised that the full advantage of Exercise, as a therapeutic agent, could never be obtained until a system of Physical Education should be devised which was firmly based upon scientific knowledge. He revived the philosophy of the Ancients, and once more advanced the theory that by means of exercise it should be possible to develop health and strength and beauty

in youth, conserve them through manhood, and prolong them during old age. He held further that it should be possible by exercise to correct many imperfections and deviations from the normal, and to cause certain functional derangements to yield to this most natural method of cure, provided each exercise had a definite physiological aim, and produced a definite physiological result. He then conceived the idea that an extensive, graduated series of movements could be devised suitable for every stage, from weakness up to the greatest strength; adaptable alike to the requirements of little children, to girls as well as to boys, to women as well as to the strongest men, and again suitable to the use of those in advanced years who might wish still to derive the benefits conferred by exercise. The fulfilment of this idea became the object of his life.

These views were no doubt the outcome of a life of varied observation. Born in 1776, of fair parentage, and having received a good education, Ling had travelled much in Scandinavia, in Russia, Germany, France, and England. His poetic tastes had led him far into the paths of literature. As a dramatist he had deplored the physical deficiencies of those called upon to represent his splendid

Viking heroes and heroines. He had felt the rush and excitement of war in fighting on the Danish side against Admiral Lord Nelson. He had known the privations of poverty, and the sufferings that follow in her train, and when his own health derived benefit from fencing, he was struck with the idea that exercise should be used curatively.

These varied experiences ultimately formed the man in whom were combined that artistic sense of form and pose with the love of strict military discipline and scientific accuracy that characterise the system which Ling worked out in his quest after health, strength, and beauty for the human race. It is not, however, as a poet or as a dramatist that his name will be handed down to posterity, but as the founder of a classical system of physical education.

For thirty years Ling worked in a patient and eminently scientific spirit. He studied anatomy, physiology, hygiene, and animal mechanics, and made himself conversant with the human body in all conditions of health and disease, and realised its possibilities and its limitations. He studied the Greek art of gymnastics, and the different forms of athletics and gymnastics of modern times. He, however, rejected all exercises which did not come

up to his high standard, putting aside with a stern hand all acrobatic and complicated movements for effect, and weeding out the element of danger and excitement. He made close practical experiments as to the effects of the exercises upon the physique in various states, and finally produced an elaborate series of pure, simple, and relatively beautiful movements, each having its own aim and producing its own result. Then, with a master hand, he drew up into form and completed his work —a work which owes its unique position to its scientific foundation.

The Swedish System is divided into four branches, which intertwine to some extent, the same aim and qualities being found in each in differing degree. They are :—

I. *Educational*, comprising apparatus and free exercises for schools and classes, designed to develop harmoniously the entire physique, and to quicken and cultivate the mental faculties.

II. *Medical*, used only for curative or preventive purposes, and extensively supplemented by massage.

III. *Military*, for the full training of soldiers.*

IV. *Æsthetic*, to express by pose and gesture

* These exercises have recently been introduced at Aldershot.

every kind of emotion—chiefly studied by dramatic artists.

It was only after many fruitless efforts that Ling's work received its due recognition from the Government, in 1815—about the same year in which Jahn opened an Institute in Berlin, and Amoros in Paris, thus marking a revival of interest in physical education, after a period of long neglect—the Royal Central Institute for Gymnastics was established in Stockholm, for training students of both sexes in the theory and practice of what henceforth became known as the "Swedish System." By royal command, Professor Ling became its Principal, which position he occupied for twenty-four years, until his death in 1839. During this time, in addition to other honours, he was elected Member of the Royal Academy of Sciences, which corresponds to the *Académie Française.*

He was succeeded by Professor Branting, while his son, Hjalmar Ling, occupied a post as teacher, and his daughter, Hilda, held the position of Superintendent of the Medical Department for many years. Hjalmar Ling became Principal in 1858, and was, in his turn, followed by Colonel Nyblæus, who was succeeded by the present director, Professor Törngren, late Captain in the

Royal Navy; he is ably seconded by Major Balk, one of the most brilliant officers in the army, while Dr. Murray, a distinguished physician, is head of the medical department.

The social position of the Physical Educationist is raised through the Central Institute being a Government institution, and having a close connection with the army and therefore with the aristocracy. Owing to the fact that military men must pass through the Central Institute, and during that course be also trained as gymnasts and masseurs, they frequently, in periods off duty, practise massage or teach gymnastics without in any way losing caste; on the contrary, they raise the standard of their profession, which holds a higher social position in Sweden than, as yet, in any other country.

Before entering the Central Institute, students must have previously passed an Examination equivalent to our Matriculation. The course of study extends over two years for women, who must take the educational and medical branches, and three years for men, who in addition pass through the military department. This threefold nature of the work develops excellent qualities in the student, who may at one time be seen dissecting

with exquisite care, or executing manipulations of extreme delicacy on a patient; at another, exercising his power of patience and command, in teaching gymnastics to a class from some school; and again, exerting to the utmost his strength and dexterity in the rapid passes of sword exercise, or in the feats of the Gymnasium.

Without direct authorisation from the Central Institute or from the Medical Faculty, it is illegal in Sweden to teach gymnastics, or to attempt to practise massage independently; a precedent which should be followed without loss of time by every country that rightly values the importance of the physical status of her people. This is indeed a matter which merits the consideration of medical and educational authorities, for it is somewhat anomalous to find a work of this importance—worthy of exponents of the highest culture and requiring special training—left unrestricted and open to abuse at the hands of any ignorant and uneducated person.

Among the hosts of Institutes which have arisen in Stockholm and throughout Sweden, directed by holders of certificates from the parent Institute, must be singled out for special notice those on the Zander method. Zander is a

remarkable mechanical genius who has invented machines by means of which Ling's medical exercises are given to patients in exact imitation of the assistance and pressure usually given by a human operator. It may simplify matters in some respects for the Principal, if an Institute is worked by machinery; but it is an open question whether that method can ever be as beneficial to the patient as the subtle regulation of aid and resistance possible only to the magnetic sympathy of a good medical gymnast. And it is at least open to doubt whether the variations of massage movements can be as well performed by means of steam, working ingenious small hammers, pads, and rolls of leather, as by the delicate manipulations of a highly-developed human hand.

A large proportion of the inhabitants of Stockholm make daily use of these health resorts; sometimes as many as two hundred patients are treated in a day at one of the larger Institutes, which are attended by members of every grade of society, literally from the King to the peasant.

Institutes on similar lines have been opened by the disciples of Ling in other countries: at Christiania, Copenhagen, St. Petersburg, Moscow,

Riga, Milan, many in Germany, a few in Austria, in Greece, Spain, Portugal and France. In London and Clifton such institutes have been established, and in many places in both North and South America. Moreover, they are constantly on the increase. That this Swedish Method of Physical Education will become a still greater power in the future may be considered a certainty. That its progress has been slow is due to some extent to the fact that Sweden is a comparatively out of the way country, that her language is little known, and that her technical literature has therefore a limited circulation; also, when strangers visit Stockholm, for the most part in summer, the Institutes and Schools are closed for the long recess from June to September. Then, too, in our own country the insular prejudice against anything branded as "foreign," the conservative spirit which characterises our medical profession, and the over-crowded curriculum from which our educational establishments suffer, are factors which check our progress, and prevent our people from obtaining the advantages which would accrue from the full adoption of the Swedish System.

II.

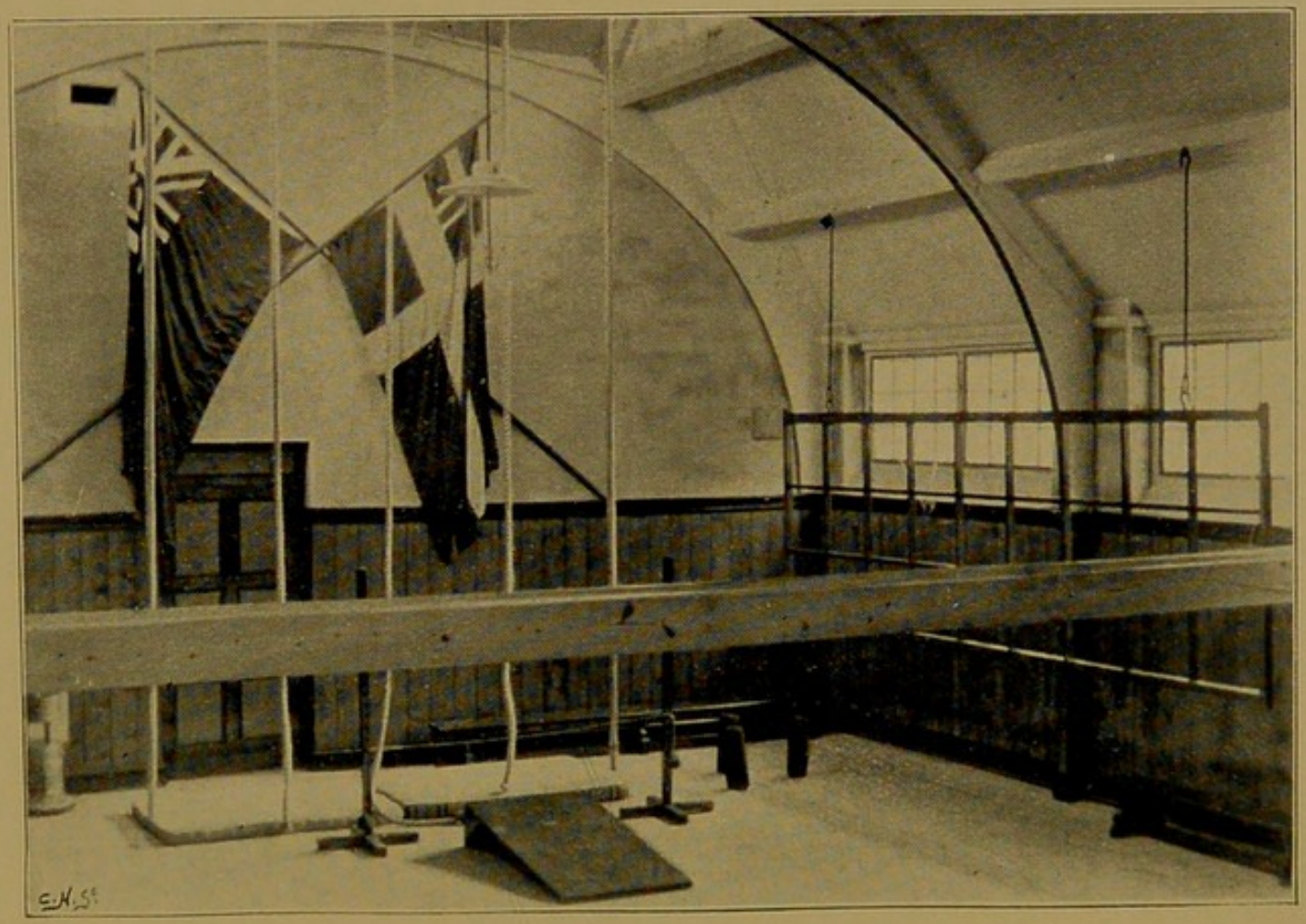
EDUCATIONAL EXERCISES.

A healthy mind in a healthy body—Ancients—Present retrogression—State of physical education in Sweden—Ling's physiological arrangement and principles—Order of lesson—Free movements and apparatus—Exercises—Necessity for full training—Certificates—Why more used in England on feminine side.

THE ancient axiom, *Mens sana in corpore sano*, is as true as it is old. Mind and body are so closely linked together that the human being must ever fail of his highest possibilities, if the physical side of his nature be undeveloped and imperfect. This fact was recognised in early times by such wise men as Sophocles, Galen, and Hippocrates, and it is well to bear in mind that in ancient Greece this axiom was not relegated to the region of theory, but was put into practice by the wisest of the old world peoples. In the upbringing of a child, the health was tended and the body carefully trained and developed before any mental work was permitted. The highest honours of the state were heaped upon those successful in the gymnasia and at the games, for

THE SWEDISH INSTITUTE.

GYMNASIUM.



Horizontal Bar: Ropes: Poles: Horizontal Ladder.

physical prowess was connected with every idea of learning and of culture. The two were linked as they never have been since that time. Cicero wrote: "By no way can one approach nearer to the gods than by conferring health on men."

But—*Nous avons changé tout cela.* Delicate girls, and even children, are now subjected to extreme mental pressure, while the *systematic training* of the physical side of the child-nature is neglected, for which the increase of games, valuable as it is, cannot be considered to be an adequate substitute. Notwithstanding that progressive change is now apparent, it is true that in many girls' schools a stiff walk, a little dancing, and drill for one half hour in the week, still represent the attention paid to this department. When the advanced Head Mistress of a large Public School fears that it would "brutalise" the girls to exceed the weekly half hour devoted to gymnastics, what can be expected of the less enlightened?

No wonder, then, that a close observer may go through numerous schools, and be struck with the rarity of finding a perfect child, radiant with health and beauty, and that vivacity and spirit which health alone can give. For this condition educational errors are not alone responsible. Dis-

regard of the laws of heredity, the multiplication and survival of the unfit, together with the complicated conditions of modern life—these factors all tend to lower the average of health and correspondingly to increase the importance of every counteracting influence. Medical science has become more active in prevention, and it may be confidently asserted that were instruction in a general knowledge of the laws of health added to an excellent system of physical training, made compulsory throughout the schools of the country, the deteriorating influences at work might to some extent be modified.

Sweden has amply proved the advantage of her system. For the last half century or more Ling has made his mark upon the physique of her people. Throughout the National Schools, Colleges, Private Schools, and the Institutions for the Deaf and the Blind his system obtains. Each place has its large, well-ventilated gymnasium, fitted up with apparatus, and each pupil attends a class daily, or at least four times in the week. The departments devoted to feeble-minded children are similarly provided for, on the ground that the development of the muscular sense is the very key to their mental development;

and the region of investigation into the relation of physical sign and expression to mental condition, as opened out by Dr. Francis Warner, is an extension of this theory. In support of it we may quote Sir Douglas Galton, who states that: "A listless attitude in the pupil is not conducive to mental aptitude, but it is not generally understood that a good balance of the body in every detail, even to the hands and fingers, promotes in the brain an aptitude for mental brightness; and that cultivation of symmetry and accuracy in movement promotes a healthy brain state; yet such appears to be the truth. In removing abnormal balances and actions in movement, the teacher helps to improve the activity and balance of the brain."*

The Educational Exercises are grouped according to muscular action and physiological effect. All the different muscle groups of the body are successively brought into play and harmoniously developed, avoiding the fault of the German System, which tends unmistakably to strain the upper part of the body, overwork the heart and lungs, and produce heavy shoulders and a stoop-

* "The Nineteenth Century," Feb., 1894.

ing gait. Due regard is paid to the effects upon the circulatory, respiratory, and nervous systems. An arch line is followed, the strongest movements being placed centrally in each lesson, while the preliminary and terminal ones are comparatively quiet. Special movements are given to slow the action of the heart after any considerable acceleration, and a lesson invariably ends with deep respiratory movements. Another distinctive feature of Ling's System is the large number of trunk bendings and turnings for the development of the spinal muscles, to prevent the occurrence of curvature.

These exercises are directed by command to obviate the possibility of a mere mechanical performance, such as often happens in musical drill; for when certain musical sounds are associated with certain muscular contractions, they follow, by the law of reflex action, on the recurrence of those sounds. In Ling's System the class never knows what exercises will be selected. Ling desired by this arrangement to ensure close attention, to strengthen the sense of order, discipline, and strict obedience, and, further, to increase brain impressionability, and promptness of action on reception of the mental

stimulus. Brightness and cheerfulness are evolved by the joy of energetic work in unison, and the fellowship in rhythmic movement infuses a glow which transforms work into pleasure. The consideration given to mental and moral training in Ling's System is great, for he felt, as Montaigne quaintly wrote, that in Education, "It is not a soul, it is not a body only, we are training up; it is a man, and we ought not to divide him into two parts." Thus not only the tall, straight form, and ease of movement; but the self-reliance, good judgment, and frank expression of the typical Swede may, in a large measure, be attributed to this cause.

The trained observer marks a great difference in type of movement, which passes quite unnoticed by the casual eye; and these Swedish Exercises display a keen æsthetic sense, the attitudes assumed presenting most graceful lines, combined with a harmony of movement which shows that the laws of human mechanics and reflex action have been followed by a mind which understood them, while making the whole subservient to the physiological welfare of the subject.

Even, deep respiration is the invariable rule during the exercises, so that the width and

mobility of the thorax may be increased, and that the entire organism may be improved by the resultant increase in strength and elasticity of lung tissue, and by the more rapid and thorough oxidation of the blood.

Each exercise has its definite time and rhythm, and must be performed in a correct manner from the initial attitude through the series of intermediate positions to the final posture. The extent of a movement is limited by the laws of gravitation, the structure of the joints, and by the sphere of activity of the muscles; its performance must be regulated, in force and frequency, according to the physical condition of the class.

A specially easy uniform costume should be worn, that the movements may be perfectly free.

The order to be followed in giving a lesson is known only to the teacher. After the preliminary movements of formation and position, which bring the teacher and pupil *en rapport*, and establish attention and discipline throughout the class, there are nine divisions, viz.:—

(1,) *Exercises for the Muscles of the Lower Limbs:* As foot-placings in different directions,

with or without heel raising, and ankle and knee flexions. These cultivate co-ordination, and equalise the circulation.

(2,) *Exercises for* (a,) *the Cervical Muscles:* As head rotation and flexions. These correct the position of the head and influence cerebral circulation.

Fig. 1.

(b,) *the Dorsal Muscles:* As in arch flexions during inspiration (*Fig.* 1) to contract the back and expand the thorax.

Fig. 2.

(3,) *Exercises for the Muscles of the Upper Limbs:* As arm stretching in different directions, alone or combined with foot movements (as in *Fig.* 2). These also quicken respiration and circulation.

(4,) *Balancing Movements:* As heel raising, with or without knee flexions; "pass

positions (*Fig.* 3), from which position the heels can be raised or different movements of the head, trunk, and arms can be executed; walking along the inverted form (as in *Fig.* 4) or the bar. These cultivate co-ordination, grace of movement and unconscious ease of bearing.

Fig. 3.

(5,) *Exercises for the Muscles of the Scapulæ:* As arm flinging and rotations. These correct the position of the clavicles and scapulæ, drawing the latter nearer to the spinal column and depressing the inferior angles.

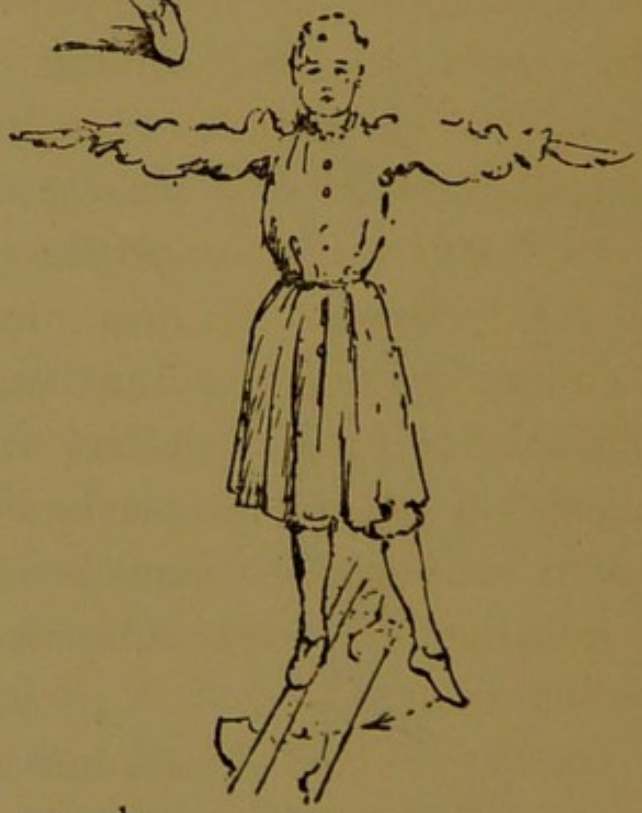


Fig. 4.

(6,) *Exercises for the Abdominal Muscles:* As trunk flexions forward; knee bending when suspended from the ribs or bar; lying trunk upraising when the feet are fixed. These improve digestion, and induce peristalsis.

(7,) *Exercises for the Lateral Muscles:* As in side flexions (*Fig.* 5), and trunk rotations, simple, or combined with arch flexions. These by the alternate contraction and extension of the vessels affect the circulation, and by alternately compressing and extending the liver, specially influence the portal circulation and hence digestion.

Fig. 5.

(8,) *Military Evolutions and Rapid Exercises:* As marching, running, leaping, vaulting, etc. These increase respiration and circulation; elasticity, general co-ordination, control in time, speed, and space, increase the power of rapid translation of idea into action, and produce exhilaration.

(9,) *Respiratory Movements:* As deep breathing with slow arm movements, sometimes combined

with knee flexions. These regulate the respiration, and slow the action of the heart at the close of the lesson.*

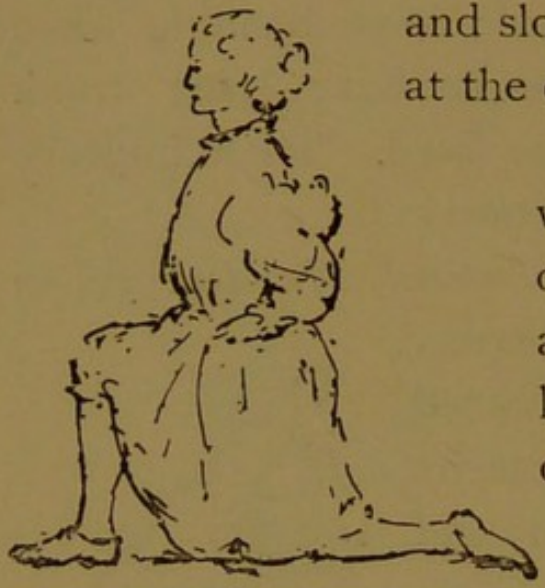


Fig. 6.

A lesson can be given with Free Movements only, from the four primary positions: standing, kneeling (*Fig.* 6), sitting or lying; from which are derived numerous other positions, simple or complex with human support; or the lesson may derive further variety from the addition of Apparatus Exercises, as suspended progressive movements along the Bar, or exercises from the position of *Fig.* 7, circling the Bar,

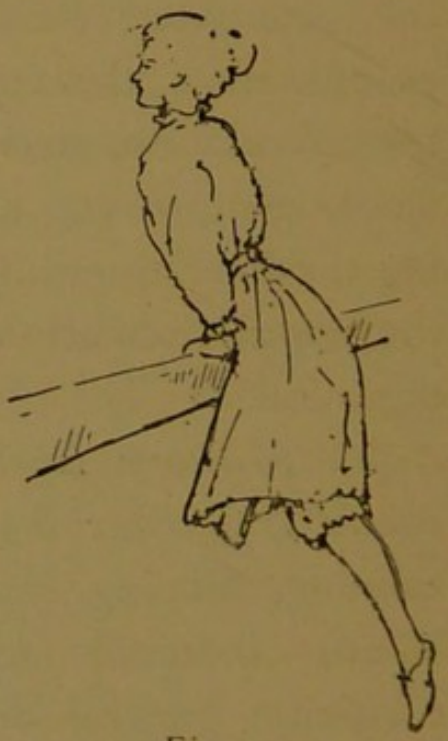


Fig. 7.

* It has been thought unnecessary to give in this place tables of gymnastic exercises. Such are to be found worked out in any students' handbook; in Swedish, by Ling, Norlander, Liedbeck, or in English by Possé, Nissen, Mélio, etc.

and so on; exercises from the suspended position

Fig. 8.

on the Fixed Ladders, or from the ground with support on the Ladder (*Fig.* 8), twisting serpentine movements through the Horizontal Ladder (*Fig.* 9 represents the start); leaping and vaulting exercises with the Horse and with the Jumping Apparatus; swarming up the Poles and Vertical Ropes or along the slanting Ropes,

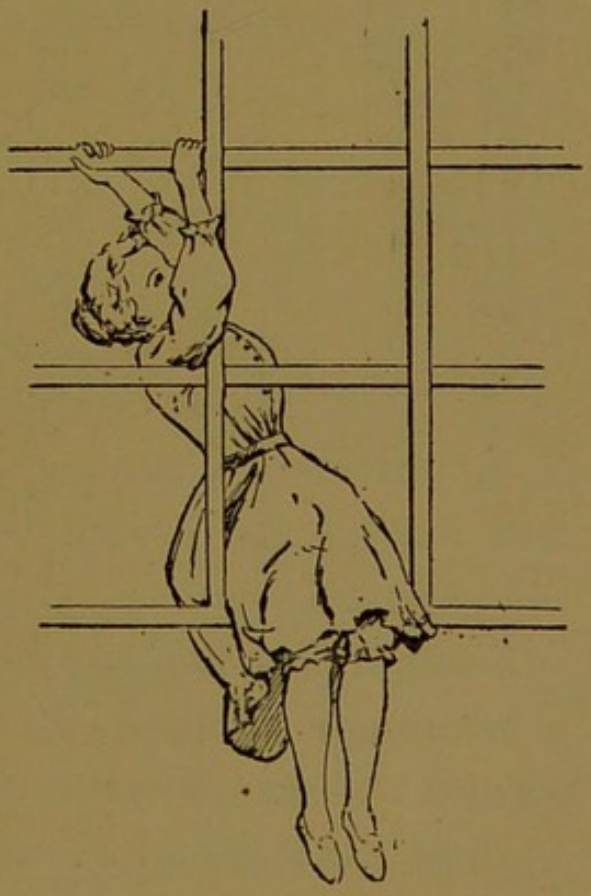


Fig. 9.

heaving movements between two Ropes (*Fig.* 10), and so on.

Fig. 10.

All the Apparatus here mentioned is represented in the two illustrations of the interior of the Swedish gymnasium at Clifton (see *pp.* 22 and 55). Some of the apparatus exercises require a considerable amount of energy, courage, and perseverance for their correct performance, and so tend to bring out the qualities of determination and fearlessness in the pupil.

It is impossible to describe the elaborate series of exercises, or to convey a full idea of the infinite variations to be obtained by their combination and development in the hands of a master of the system; but it is possible to convey an idea, however slight and inadequate, of the principles which underlie the practical work.

Enough has perhaps been written to prove that a thorough training is absolutely necessary to qualify teachers, but the manner in which Frœbel's System has suffered at the hands of incompetent exponents arouses a fear lest Ling's work should

be similarly brought into disrepute. It therefore behoves the public to require that a good certificate shall have been obtained in Sweden, or from the only College in England* where a full training can, as yet, be acquired, and there, unfortunately, by women only. That any advantage—educational or otherwise—should first accrue to the feminine portion of our population is distinctly unusual; yet this may be accounted for, as the importance of health and strength to boys and men has never been so completely lost sight of; their schools have been provided with gymnasia and swimming baths, and time has been found for their sports and games. It has been an easier process, therefore, for the Swedish System to be introduced into the comparative void in girls' schools, than to displace any gymnastic system—even if inferior—already in use among boys. Again conservatism blocks our progress.

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* Madame Bergman-Österberg's College, Dartford, Kent, late The Hampstead Physical Training College.

can be affected, its circulation and nutrition regulated, and that not only is this the case in health, but in various conditions of disease. It must be borne in mind that the skill and knowledge of an expert medical-gymnast are required to select from a host of movements those most suited to each individual case, and apply them, moderated in gradations not only to suit the special patient, but to suit each variation of state to which such patient may be liable in the fluctuating conditions of ill-health. Such skill and knowledge can only be obtained after the thorough training and experience have been acquired, which are necessary in order honourably to practise in this department of medical work.

This point is equally important in the triple interest of those who prescribe, of those who practise, and of those who receive the treatment.

It is keenly to be desired that the medical profession should courteously acknowledge the laborious investigations of a scientist of the first order, as was Ling, and study, if not the practice, at any rate the principles of his work. It is one of the first axioms of a physician's creed that no means of cure should ever be neglected. Is it right, therefore, to leave unused a weapon

which might often be wielded on behalf of those entrusted to his care, in that grim fight against disease and death in which every medical man is engaged?

For other reasons also it cannot be too strongly urged that a grave responsibility is incurred when, for instance, such neglect made possible the revelations by which the name of massage was degraded in London in 1894.

Or, as long as a delicate patient may run the risk of being placed in the hands of a "medical rubber" who knows little, by a medical man who knows even less, of this work, as sometimes happens under existing conditions.

Or, when we find that a doctor gives any man or woman *six lessons*, in which to acquire the requisite knowledge of anatomy, physiology, disease and its treatment by manipulation; and grants, forsooth, a certificate by means of which such person trades upon the ignorance of a gullible public, causing pain and exhaustion, if not serious injury, and so brings "Massage" into sorry disrepute.

Surely such responsibility is further incurred when a so-called "School for Massage" can exist where the same work is compassed in six weeks

by an "accomplished head," who, disdaining even the information to be obtained from her physiology primer, gravely alleges that "the *only* thing really required is knack."

Or, when a doctor in response to a patient's request for massage informs her: "There is not the slightest need to send for a specialist, the gardener or housemaid could just do it"—this, too, in a complicated abdominal case of displacement and constipation! Or when another medical man of high standing carelessly replies to a similar question from a delicate woman suffering the acute pain caused by a wrenched muscle: "Oh, yes, if you want massage I can send you a woman who could knock you into the middle of next week."

And these, be it noted, are not fancy cases; they are but typical of many similar instances that have come into the direct experience of the writer, and have been among the influences leading her to the conclusion that this slight explanation might possibly not be altogether superfluous!

Not until the evil arising from this deplorable state of things in our country is fully realised and condemned by the medical profession, and by public opinion, will it be remedied. Following the example of Sweden, a Government School could

then be established, certificates from which alone would qualify for Registration and authorise the practice of massage.

Excellent results are obtained by massage as given by a thoroughly experienced kinesipathic practitioner, who, in addition to the essential knowledge of the structure and functions of the body, should be possessed of highly organised hands, capable of extreme delicacy of manipulation. The celebrated masseur, Dr. Metzer, of Amsterdam, who has now practised between thirty and forty years, states that it takes five years' work to develop a good massage hand. The sensitive tact and thoughtful discrimination which proceed from a cultivated mind are most desirable qualifications in this work, as well as the healthful influence which emanates from a good physique. Nevertheless an erroneous impression does exist, unfortunately not even confined to the lay mind, that great bodily strength is the *sine quâ non*, whereas in reality other qualifications are far more important, and "It is as absurd to suppose that 'rubbing' and 'shampooing' is massage as to suppose that a daub of paint is a work of art." *

* "The Lancet."

For obvious reasons men should be treated by a masseur, while a masseuse should always be employed for women and children. Some lubricant, slightly used, is advantageous in permitting of greater friction without injury to the skin.

Primitive forms of massage were much used in far back ages, in India, Egypt, Persia, and in China as remotely as B.C. 3,468; very old Chinese illustrations have been found representing manipulations. It is interesting to find that Plato reproached those who used this kind of treatment, on the ground that they thereby prolonged enfeebled lives; and that about the year B.C. 380 Hippocrates taught that: "The physician must be experienced in many things, but assuredly also in rubbing; for rubbing can bind a joint that is too loose and loosen a joint that is too tight, rubbing can make flesh and cause parts to waste. Hard rubbing binds; soft rubbing loosens. Much rubbing causes the parts to waste; moderate rubbing makes them grow." And it is further instructive to note that Hippocrates proved it more effectual to rub *up* the limbs rather than downwards; although it would be an anachronism to suppose that he attributed this to the fact that by so doing aid was given to the venous

and lymphatic circulatory systems, whereas working downwards impeded the natural course of flow. In the year B.C. 150 Asclepiades found out the soporific influence of gentle strokings in cases of insomnia.

The word massage comes from the Greek, *μάσσειν*, "to knead, rub," or from the Arabic, *mass'h*, "to press softly."

By means of pressure and purposeful movements the conversion of potential into kinetic energy takes place, and the processes of oxidation and metabolism are quickened and increased. Dr. Lauder Brunton states* that the flow of blood through the muscles can sometimes be trebled by massage, and it has been recently discovered that a larger number of red corpuscles appear in the blood. To sum up in Schreiber's words, the masseur has power :—

"(1,) To cause an increased flow of blood to muscles and soft parts, increasing thereby the circulation, and removing accumulations of waste tissues, the retention of which causes various disturbances of function. To strengthen muscle fibres, and by setting up molecular vibrations

* "The Lancet," Oct. 12, 1895.

to induce changes, not only in the muscle and nerve fibres, but perhaps even in the nerve centres themselves.

"(2,) To cause the re-absorption of exudations, transudations, and infiltrations, in such organs as are accessible. To effect the separation of adhesions in tendon sheaths and in joints without recourse to the knife. To remove, by grinding away, interarthritic vegetations.

"(3,) To increase by passive and active exercises of all the muscles the oxidising powers of the blood, in this way correcting disturbances in its composition, and stimulating all the vegetative processes.

"(4,) To relieve the congestion of such internal organs as the brain, lungs, intestines, etc., by increasing the flow of blood to the muscles.

"(5,) To stimulate directly the sympathetic nervous system, thus increasing secretion, and reflexly the activity of unstriped muscle fibre, and so relieving various functional derangements.

"(6,) By systematic exercise—health gymnastics—to educate morbidly affected muscles, to convert abnormal into normal actions, and to suppress useless movements."

The descriptive terms of the French language are

generally used in classifying the variations of massage, and consist of:—

Effleurage.—Slow, gentle strokes with the palm in the centripetal direction, aiding the flow in the venous and lymphatic vessels by gentle intermittent pressures—passive peristaltic action. Slight movements of surface on surface to excite superficial reflexes. These movements are chiefly used on the head, neck, and upper extremities.

Pétrissage consists of kneading and rolling movements to stimulate secretion, by means of which the deep parts are acted upon, muscles, vessels, and nerves, working with gentle, even, close movement, and following the interstitia between the muscles.

Friction is employed in the treatment of joints, and for purposes of diagnosis; the finger-tips move in narrow ellipses quickly and with facility, and in neuralgic cases pause to vibrate upon the nerve.

Tapotement signifies percussion, the stimulation of which brings about vibration of nerve substance and muscle fibre. This is given in various ways: with finger-tips on the head; on the limbs, back, and chest with the palmar surface or ulnar border of the hand; with perfectly loose wrist

and flexed hand on the large muscles, or where specially required to penetrate to the deep muscles.

The change of colour visible on the surface of the skin, which shows rosy, is accompanied by increased oxidation and absorption. As heat is favourable to chemical change, there is a condition of increased metabolic activity and greater susceptibility, and, therefore, when it is desirable to bring the additional force of electricity to bear upon a case, this is most advantageously applied after the massage.

The range of Ling's Medical Movements is so wide that it is outside the compass of the present work to do more than indicate their type; this may be best done by selecting a single case, such as is recorded in the next part. For this purpose spinal curvature has been selected, by request, owing to its frequency and, therefore, more general interest. But it is hoped that the foregoing will serve to suggest the possibility of utilizing this method with advantage in many other cases. For instance, the treatment is eminently successful when applied to lung diseases—in early stages of asthma and consumption, and as a preventive measure to strengthen lung tissue and increase the vital capacity where an inherited tendency

to these diseases may exist; to diseases of the digestive system and discomforts arising from flatulence, constipation, and so on; in nervous cases, such as the various phases of hysteria, chorea, paralysis, and neuralgia; in joint diseases, such as rheumatism, gout, synovitis, stiff joints, sprains, and dislocations; and in cases of general want of tone, as anæmia, sleeplessness, and debility.

Proof of this statement may be found in the results of a few such cases, which having (with one exception) been treated by the writer, and being medically attested, may be briefly quoted, viz.:—

BRONCHITIS.

Under Nelson C. Dobson, F.R.C.S.—Miss —, aged 5 years. The child was extremely delicate and had been troubled from infancy with frequently recurring attacks of bronchitis. She suffered from dyspepsia, and the abdominal muscles were very flaccid; there was also considerable lordosis and slight lateral curvature, the back was round and the chest much contracted. During three months' treatment, respiratory exercises being largely used, the lung power increased, digestion improved, and the patient grew gradually

straighter and stronger in every respect, and bore the following winter better than any previous one.

GASTRALGIA.

Under Eliza W. Dunbar, M.D.—Miss —, aged 38 years, suffered for four years from gastralgia and neuralgia of various nerves, the effect of repeated attacks of influenza. She was unable to take sufficient food, fearing to bring on pain, and had therefore fallen into a wasted condition. On visiting Clifton in January, 1896, she consulted Dr. Dunbar, who ordered complete rest with general massage, which gradually induced a healthier nerve state and completely relieved the gastric pains. The patient also gained in weight and strength during the six weeks she was under treatment, and is still—eleven months later—in good health.

CHOREA.

Under H. Marshall, M.D., F.R.C.S.E.—Miss —, aged 15 years, had suffered for some months from chorea brought on by a shock. The entire nervous system was affected—the spasmodic movements were stronger and more frequent on the right side than on the left, the leg was flung out in walking, the

movements of the arms were sudden and violent, rendering it impossible to sew or write, and unsafe for the patient to use a knife and fork. After massage with specialised exercises, ordered by Dr. Marshall, the abnormal movements were gradually brought under control.

A recurrence of the disease, from a similar cause, took place two years later, when the case was again treated with success.

TIC DOULOUREUX AND EMACIATION.

Under P. Watson Williams, M.D.—Miss —, aged 58 years. Right facial neuralgia had appeared four years previously and had persisted with hardly a day's intermission. The pain, which was agonising, was almost confined to the region supplied by the right inferior dental branch of the fifth nerve, the paroxysms being associated with motor spasm. The patient usually wrote on a slate, being afraid to speak or smile, as movement started the pain; and being able to take only a very small amount of liquid food for the same reason, she had become extremely weak and emaciated, weighing exactly five stone, although about 5 feet 3 inches in height.

General massage was given, and very delicate facial movements and nerve frictions were rendered possible by the use of a mixture of chloroform and castor oil to slightly deaden the pain. During rather more than three months' treatment, the patient became considerably stronger, the appetite improved rapidly, the pain was far less frequent, and she recovered much more easily from a paroxysm when it did occur. Her spirits improved, she could talk and smile without fear, and her weight increased to 6 stone 2½ pounds. The general health then admitted of the possibility of risking the operation of resecting a portion of the inferior dental nerve, from which the patient made a good recovery, and she was able to leave Clifton a fortnight later.

RHEUMATISM.

Miss —, aged 24 years, had, for six months, been suffering increasing pain, chiefly in the knees, ankles, wrists, and finger joints, which almost incapacitated her from walking, and rendered manual occupations difficult. Massage was given, followed by passive movements of all the joints, and then active movements

against resistance by the operator. The patient had to leave Clifton in ten days, yet at the expiration of that time, after daily treatment, the right side was quite free from pain and the left nearly so; she could also move easily and without pain. This result was unusually rapid, nevertheless the patient wrote subsequently to report that the improvement was maintained.

Fröken Dahl, under E. Long Fox, M.D., F.R.C.P.—Miss —, aged 8 years, suffered from rheumatism affecting the membranes of the spinal cord. Walking became a laborious process, with rotatory movements from the heels. The pain was acute, and the whole body was very sensitive to the touch; digestion was impaired, and the general condition was one of delicacy. Dr. Fox ordered massage, followed by passive and active movements, under which treatment the child gradually improved and recovered health in three months. She still walked on the heels however, and could not run or jump for some time, but she attended classes in the gymnasium and slowly regained the power of natural and easy movement.

The condition recurred slightly in the following year, when the patient was again

under treatment for four months. The result was successful, and no further difficulty has ensued.

SURGICAL.

Under J. Greig Smith, M.B., C.M., F.R.S.E.—Miss —, aged 16 years, had fallen and injured the wrist, which was put into splints. As the pain was constant and no improvement shown in seven months, Mr. Greig Smith was consulted, who treated the case, and some months later ordered massage to be tried, but it was to be stopped if inflammation resulted. The wrist was still useless and painful, and was bandaged; the patient still wore a splint and a sling. The pain was at once relieved by the massage, and in five days the splint was given up, as were both the bandage and sling a day or two later. The movements became gradually less painful, and the muscular condition improved. After twelve visits the pain had left the wrist, and the hand was in constant use, normally, and without any consciousness of discomfort; extreme flexion could be made without any pain whatever, if the fingers were also flexed; a faint sensation of pain was still present if they were

extended. Mr. Greig Smith pronounced the case cured.

Under Wm. Adams, F.R.C.S.—Miss —, aged 7. The left foot was deformed, first noticed when the child began to walk. Mr. Adams operated in September, and ordered massage in the following May. The patient wore an iron support and was generally wheeled out in a chair, for the muscles were wasted from inactivity, and she moved with much difficulty. After massage treatment, which extended over six months, but was broken by the summer holidays and by lesser interruptions, restoration was complete, the chair and supports were discarded, and the child was able to walk, run, and jump quite normally. This result would, doubtless, have been attained in a shorter time had the treatment been given daily and consecutively.

This exhaustive method of treatment is also eminently successful when applied to some forms of heart disease, thereby aiding the circulation, lessening the strain, and regulating the action of that organ. Also in cardiac dropsy,* which arises

* The Arris and Gale Lectures, "The Lancet," May 9, 16, and 23, 1896.

from derangement in some stage of the absorbing process. The excess of fluid appears in the connective tissue spaces; hence it is important to cause the serous exudations to pass on into the lymph channels. The lymph is more or less stationary when the body is motionless, but by appropriate muscular movements it can be caused to move on through the lymphatic vessels to the thoracic duct, whence it flows into the junction of the left subclavian and internal jugular veins and joins the circulation of the blood. Such movements can further accelerate the circulation of the blood, causing increased absorption and elimination, and thus re-establish a normal balance between exudation and absorption, so that the dropsy disappears.

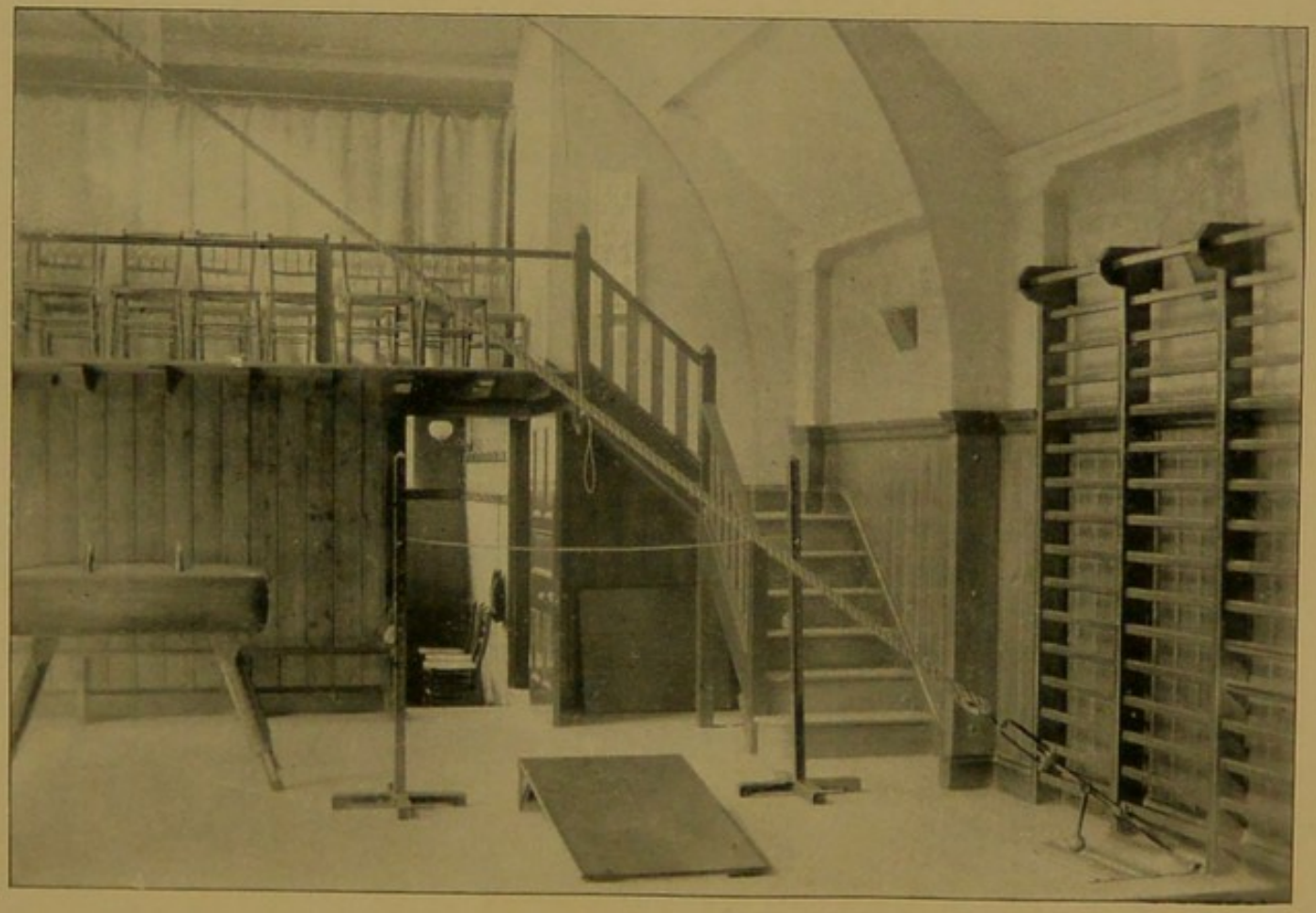
The department of Gynæcology has been almost revolutionised in Scandinavia, Austria, and Switzerland, while specialists constantly arrive in Stockholm to study the methods of applying massage and movements to this group of diseases, as demonstrated and developed by Major Thure Brandt.

In some cases massage alone may be employed. In others, as has been indicated, passive movements may be added, or active exercises, simple

or compound, given by one or more skilled operators, with or without the adjunct of the Bar, Posts, and Plints, which are adjustable, in order to obtain the best position for the patient (lying, sitting, standing, or suspended) according to the needs of the case in the discriminating judgment of the acting medical-gymnast.

THE SWEDISH INSTITUTE.

GYMNASIUM.



Vaulting Horse: Jumping Apparatus: Slanting Rope and Ribs.

IV.

SPINAL CURVATURE AND ITS TREATMENT.

Forms of Scoliosis—Old method of treatment—Effort and Activity *versus* Support and Rest—Liable to recur—Stages of development—Consequences if neglected—Constitutional liability to scoliotic developments—More general among girls—Causes of curvature—Flat-Foot—Symptoms—Co-operation between family practitioner and kinesipathic attendant—Method of examination—Time required for cure—Necessary conditions—Typical case described—Its treatment—Further cases cited.

LING'S method of overcoming developmental defects by means of systematic exercise produces very favourable results when applied to correct the different forms of scoliosis—either as kyphosis, lordosis, or any of the numerous variations which lateral curvature may assume. Without endorsing the statement that every one is more or less crooked, it must be admitted that a far larger proportion of the population present scoliotic defects than is at all generally appreciated. This would hardly be the case had the disease yielded to any of the received methods of treatment, or had the causes which

give rise to curvature of the spine been made known to parents and educationists, and preventive measures been exerted during the years of childhood and adolescence.

The older methods of treatment, among which may be noted Sayre's plan, Glisson's swing, plaster of Paris jackets, felt jackets, iron or steel supports, and the recumbent posture, have all more or less failed because their fundamental principle was erroneous. Supports have not only been unable to correct to any great extent the eccentricities of the bony framework, but they have invariably weakened and rendered more useless those muscles which, when strong and well-developed, assist in maintaining the spinal column in position. Lying down, too, has wasted countless hours in ineffectual weariness, for muscular tissue tends to atrophy when unused, and by exercise alone can that muscular strength and power of co-ordination be developed which are necessary for the maintenance of a perfectly upright, well-balanced physique.

In adopting a curative method it is advisable, therefore, to lay aside the idea of *support and rest*, and without going to the rigorous and dangerous extreme advocated by Dr. Delore, to substitute

the reverse principle of *effort and activity.* Much can be done for a delicate child by preventive measures, such as daily gymnastic classes, out-door games, country walks, and constant care in the matter of posture and bearing; but whenever slight curvature appears it should at once be placed under treatment, as the time required for the process of cure bears a direct ratio to the period of contraction, and a curvature taken at an early stage is soon corrected by means of judiciously selected exercises.

Where this tendency to curvature has once existed, it is wiser to guard against its very probable recurrence by examination from time to time, and, when necessary, to undergo a course of treatment.

The first appearance of lateral curvature, however, the stage of rotation and muscular weakness, where unaccompanied with pain, frequently passes unobserved; and the complementary or secondary curves, twisted thorax and pelvis, unequal shoulders and consequent injury to health ensue. This second stage in its turn progressively develops, causing misplacement and functional derangement of various organs. In the long course of years, kyphosis or lordosis, or both.

complicate the case, and ossification of the intervertebral cartilages with consequent adhesion of vertebræ supervene, and thus the body becomes more contorted, and permanent deformity is ensured.

Curvature is often first noticed by the dressmaker, for the lateral inequalities and projection of the scapulæ upon differing planes subject her to complaints that a dress is crooked, and the instinct of self-preservation leads her to prove that the fault lies, not in the dress, but in the figure. Sometimes the defect is concealed by means of padding and trimming, while the curvature develops unmolested beneath. Sometimes disquietude is aroused, and medical examination results in the declaration of curvature, but the patient is still in danger, for the mother may decide to leave it "until it shows worse." This often happens through failure to realise the consequences of delay, or through pecuniary or other difficulties involved in coping with the case at the time. Or the medical practitioner may condemn the child to the misery of wearing an iron support, or he may adopt one of the equally objectionable instruments above deprecated, or—having proved their inefficacy without

having found a successful substitute, he may resort to the assurance that it "can be left, and the child will grow out of it." But if neglected, curvature, in common with other defects, is more likely to grow worse than to improve, and when, from whichever of these causes, ill-health has become permanent, deformity established, and a life is thus marred, bitter regret may result, but it is powerless to undo the wrong, whether wrought in carelessness or in ignorance.

Children of lymphatic temperament and delicate constitution are most liable to curvature. This temperament is frequently accompanied by mental languor, and it is therefore difficult to arouse the necessary spirit to assist in the cure. For the will of the patient must be actively exerted in order to realise the importance of the case, and, by constant care, to overcome the habit of lounging in bad positions, and to substitute the adoption of correct attitudes.

Curvature is much more frequent among girls than among boys, because they take less natural healthy exercise, and are more constrained by their clothing. The tight corset not only impedes the expansion of the thorax and abdomen in full inspiration, but acts as a support, causing the

muscles beneath to resign their natural work in favour of the artificial supplanter; whereas these important lateral and dorsal muscles are the same in both sexes, and could serve the girl just as well as the boy, if left free to do so. As it is, however, hundreds of girls assert that, if deprived of this aid, they could not hold themselves up, and should feel as though they were "falling to pieces." Then, too, at the age of development, when every possible means should be employed to establish a strong and healthy physique, comes the extra strain of increasing mental work and examinations, into which a conscientious girl usually throws all her powers, thus innocently robbing herself of the stamina which should have been employed in building up the physique, and laying herself open to the consequences of weakness, and liability to developmental defects. If we indeed believe in the force of hereditary tendency, and consider the relation that the girls of to-day bear to the future of the race, surely it must be admitted that this is a somewhat reckless squandering of national wealth.

Among the chief causes of curvature are the following:—

(*a*,) Accident, as a fall in childhood, often unconfessed by the nurse.

(*b*,) Long continued habit of sitting and standing in bad positions. This should be prevented by care, and by the use of good school desks with adjustable desk and seat, as Glendenning's Adjustable Desk.

(*c*,) Deformity of the lower extremities, as from hip disease, infantile paralysis, or congenital shortening of one limb. A raised boot will often prevent the natural consequences resulting from such inequality.

(*d*,) General weakness of bones and muscles, which is not seldom hereditary.

(*e*,) Falling in of the chest walls, following on unilateral emphysema, pleurisy, etc.

(*f*,) Defective eyesight, undetected, and leading to resultant stooping.

(*g*,) Caries or osseous deformity, in which case it is incurable.

In many cases one or more of these different causes are co-existent, and it is to be noted that the same constitutional tendency which confers liability to curvature induces *flat-foot*. Mr. Bernard Roth cites* as many as thirty-two such instances

* "The British Medical Journal," May 18, 1882.

present out of fifty cases of curvature which he examined. Flat-foot should be treated by massage and by special exercises to contract the arch of the foot, while judiciously padded boots may sometimes be worn with advantage.

The onset of curvature is gradual. It may be painless or accompanied by symptoms which, though aggravated by lateral curvature, may or may not be entirely due to it, but may indicate the presence of other conditions which require diagnosing and treating medically. This possible combination necessitates the harmonious co-operation of the family practitioner with the kinesipathic attendant, without which the best results can never be secured in cases requiring the skill of both. Such symptoms include: Shortness of breath, anæmia, disinclination for exercise, depression, apathy and indolence, dyspepsia, constipation, and pains in the back. The appearance of these symptoms, or of the objective signs of inequality of shoulder or hip, should be followed by examination without delay.

In examination a patient stands with the heels together, the back to the window, and in a good even light, while the ilio-cæcal lines, the angles of the scapulæ, the iliac crests, the spinous processes,

and general muscular condition come under observation. The anterior surface of the thorax, also the sternum and costæ, usually present evidence of curvature. The chest is measured with the calipers, and sketches or photographs are taken of the front and side views, as well as of the back.

The medical-gymnast enters particulars in a case-book, and subsequently makes out a list of exercises suitable for the special case. If the patient wears a jacket turned back to front it is easy to watch the effect of each movement upon the spine, and thus to regulate it.

Massage is given first over all the muscles; even, careful, and close working to strengthen and restore the power of contraction where the muscles are relaxed, and in such a manner as to relax those which are contracted, and so restore the muscular balance. The curative effect can thus be produced less slowly than is possible by means of the exercises alone.

Restoration to the normal condition is usually effected in from three to six months,* according

* One parent, in whose daughter's case double curvature and its consequences were far advanced, once stated with an indescribable air of condescension, that "if it could be cured in an hour she would have it done"!

to the case, and "Home Exercises" are prescribed to be carried on for three months more by the patient, to ensure the maintenance of the effect, and to further improve the general physical condition.

Far the best results are obtained by daily treatment. The medical-gymnast is often hampered by a medical man giving directions for treatment "once or twice a week," or this request may be made by parents, on the ground that the patient's time is so completely filled by lessons that daily treatment will be impossible. It is wiser to give up one or two subjects for a time, than to run any risk of sacrificing the permanent health, and disfiguring the child for life. In the present state of general ignorance on this subject it is undeniable that the trained medical-gymnast alone understands his work. Experience, too, has taught him, and, as Jean Paul Richter says, "Those who learn in her school, learn well; although the school fees are somewhat heavy." Knowing best, therefore, under what conditions successful results are obtained, he should firmly decline other suggestions, for the disciples of Ling are no workers of miracles—time, and steady consecutive treatment, are imperatively required for the process of cure.

TYPICAL CASE AND ITS TREATMENT.

Under J. Greig Smith, M.B., C.M., F.R.S.E.—Miss —, age 27, was sent by Mr. Greig Smith, who had seen her in consultation with Dr. A. Haines, the family practitioner. The patient was suffering much pain in the back from a double lateral curvature of about twelve years' standing. (See illustration (*Fig.* 11) traced from case-book drawing, made on Aug. 2nd, 1893.*) The chest was very undeveloped and contracted. The measurement taken with the calipers gave: Antero-posterior, $6\frac{1}{2}$ inches; lateral, 8 inches. The family showed a bad record of consumptive tendency, several relatives and one parent having died from phthisis. The left scapula was protruding considerably more than the right, the back

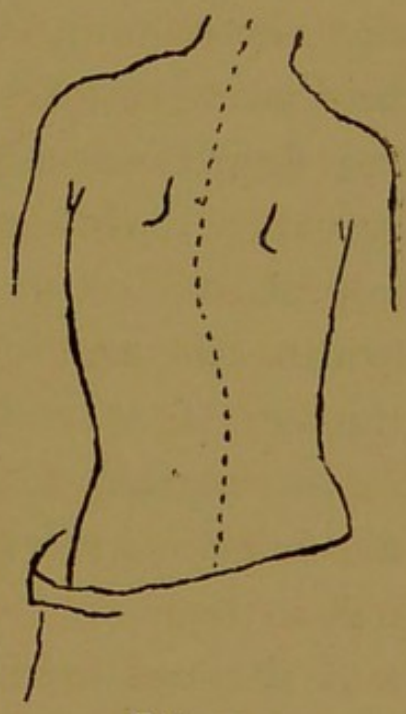


Fig. 11.

* I am aware that a photograph would be more convincing to the reader, but not having had any idea of publication at that time, I am reduced to tracing the sketch from my case-book.

rounded and giving a four-inch space between the inferior angles of the scapulæ. The nervous system was very low, the patient was hopeless and despondent, partly owing perhaps to deafness, which was considerable, and she evinced a total absence of inclination to walk or occupy herself in any way. These symptoms were all on the increase.

By explaining the method of treatment proposed, and representing to the patient that much could be done to restore her general health and improve the figure, develop the chest and improve the curvature; while owning that complete cure was improbable, owing to the long continuance of ill health and firm establishment of a curvature at the age of 27, still sufficient interest was aroused in the patient to win her co-operation and give her hope. At first she was obliged to drive both ways, then one way, in coming to the Institute, and the treatment was carefully adapted to her delicate condition. She became gradually able to bear more, until the full prescription could be carried out, and she walked to and from the Institute with ease. As her strength increased she was encouraged to interest herself in other matters. The hearing was improving.

The following exercises were given with rests between each at first. The sketches have been taken from a boy-patient, as showing the positions more easily.

The apparatus is represented in the illustration facing page 36:—the adjustable low plints, the high plints, the poles between the windows and the bar on the extreme left.

1.—LYING ARM BENDING AND STRETCHING. The patient lies on the high plint (*Fig.* 12), and against resistance from the operator stretches the

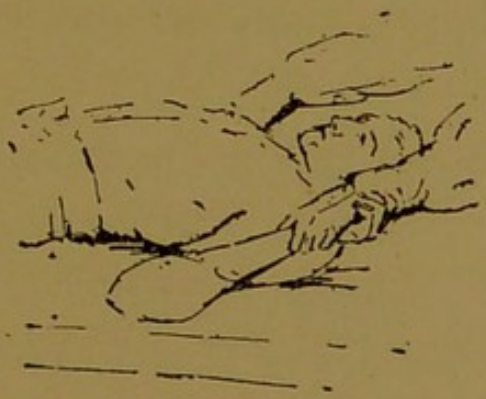


Fig. 12.

arms upward during deep inspiration, and during expiration draws them slowly down until the elbows are close to the sides.

2.—ARCH STOOP SITTING TRUNK UPRAISING. The patient—seated on the high plint, the feet fixed in the straps—inclines forwards

(*Fig.* 13), and as he raises himself, the operator exerts pressure on the convexities, pressing

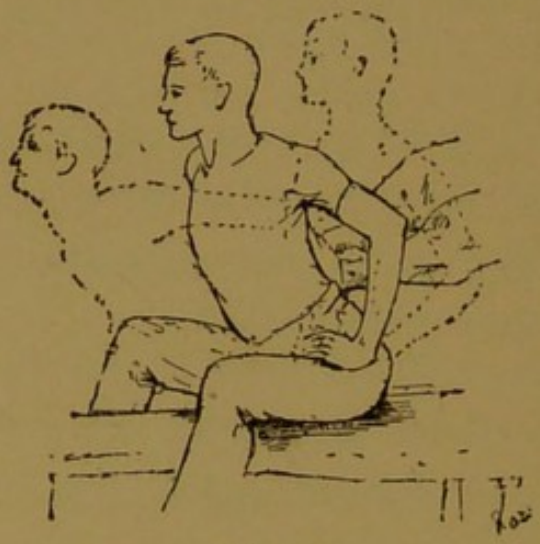


Fig. 13.

downwards and inwards to rotate the vertebræ correctively.

3.—HEAD BENDING BACKWARDS. (*Suspended from the bar, or this can be done standing, the arms extended horizontally and hands grasping the bar.*) The patient springs on to the bar; the operator places one hand at the back of the head (*Fig.* 14) and the other at the waist to prevent oscillation of the trunk during the movements of the head. The spine is thus extended by the weight of the body, while the cervical muscles

Fig. 14.

work against resistance, which strengthens the effect. As this position impedes respiration, one of the respiratory movements then follows.

4.—SIDE LYING UPRAISING. (*On the high plint.*) The patient lies with the trunk projecting beyond the apparatus (*Fig.* 15). One operator gives heavy support at the feet, and a second operator gives assistance in exactly correcting the curvature by bending reversely from the concave side. Most

Fig. 15.

curves can be correctively affected if the position be judiciously regulated by the patient resting more or less on the apparatus. This exercise is used more in single curvature, as it is sometimes difficult to affect one curve without emphasizing the other in cases of double curvature.

5.—Stoop Sitting Right Arm Stretching. The patient sits on the low plint with the body arched forward, the left hand rests on the hip. The right wrist is grasped by the operator who resists the upward stretching of the arm and so strengthens the effect on the muscles. The spine is stretched by this position and the low shoulder raised. It can be given for one or both arms as required.

6.—Forward Arch Lying Arm Flinging. The patient lies prone on the high plint extending beyond it, support being given at the feet (*Fig.* 16). The hands are at the hips, and as he slowly arches

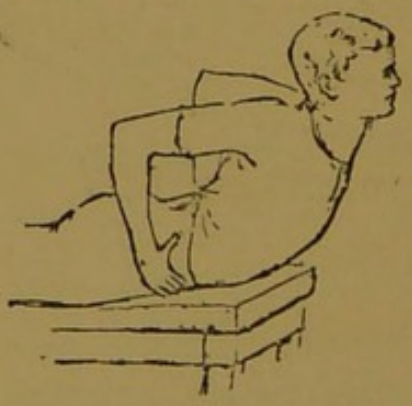


Fig. 16.

upward he raises them in front of the chest, in a line with the shoulders, and flings them outward into a horizontal line, level with the shoulders. The movement is repeated. This extends the

spinal column, works the dorsal muscles strongly, draws the scapulæ together, and expands the chest.

7.—Lying Left Hip Lifting. Extended on the high plint with hands grasping the bar (*Fig.* 17), the patient raises the low hip against resist-

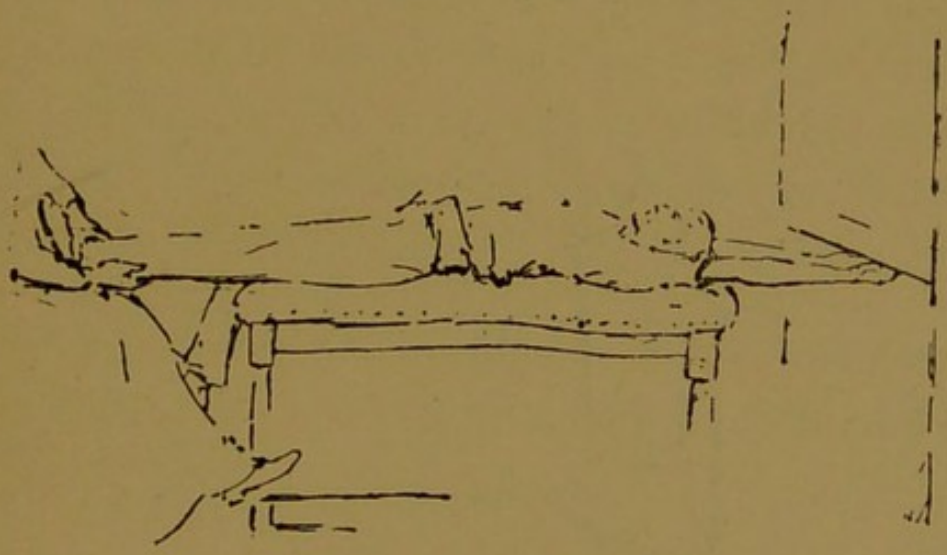


Fig. 17.

ance given by the operator at the foot, so causing strong contractions in the lumbar muscles which hold the hip in position.

8.—Arm Abduction and Adduction. The patient sits on the low plint with feet firmly planted on the ground, trunk arched forward, and arms stretched forward. The operator stands in front and gives resistance on the arms as they

are abducted to a horizontal line with the shoulders. This contracts the back, expands the chest, and retracts the scapulæ.

9.—Leap Sitting Right Arm Stretching. The patient half-sits with his lower hip across the corner of the low plint and stretches back the other leg (*Fig.* 18). The lower arm is stretched

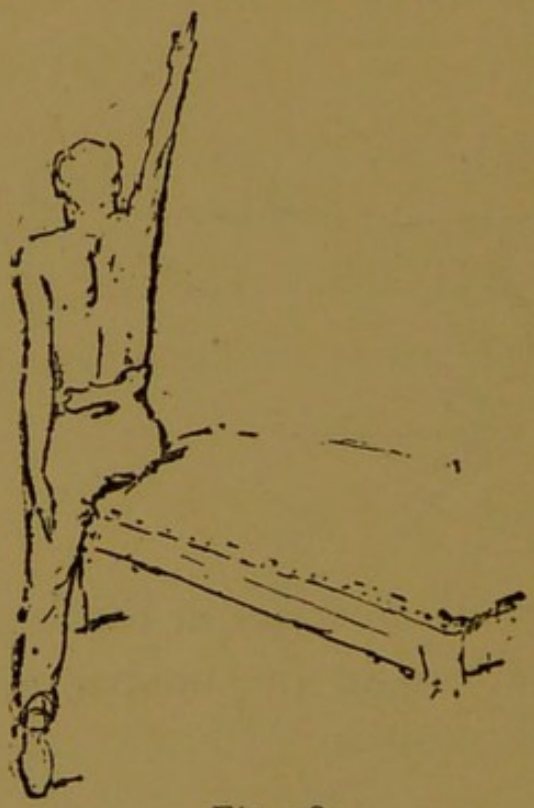


Fig. 18.

upward, the higher one backward. The spinal column is thus extended and the curvature corrected. The operator must carefully see that the desired effect is exactly obtained.

10.—Lying Leg Drawing to Right. The same position is adopted as in *Fig.* 17. The patient remains passive, the operator slowly draws the lower limbs to the side and to that angle which correctively affects the curve in the lumbar region.

11.—Right Shoulder Raising. The patient stands at a right angle to the bar, which is placed on a level with his shoulder, and grasps it with the left arm fully extended, to obtain a fixed position. The patient then raises the low shoulder while the operator resists at the wrist.

12.—Arm Rolling. The patient is seated on the high plint. The operator from behind

Fig. 19.

executes wide half-circles with the patient's arms (*Fig.* 19), while he remains passive save that he

inspires as the arms ascend, and they descend during expiration. This draws the blood from the head and slows the respiration and circulation.

To continue, Miss — attended the Institute three or four times a week only. The principal ordered this, owing to the nature of the case, and the difficulty in coming each day from a distance. But in a short time "Home Exercises" were practised daily, and twice on those days on which the Institute was not visited. Hygienic instructions as to food, rest, outdoor exercise, and clothing were carefully obeyed. When Miss — accomplished the walk to and from the Institute with ease, classes in the Gymnasium twice a week were added to her *régime*. She entered into the exercises with pleasure and energy, and could, before long, swarm a rope 28 feet in height.

After rather more than three months' treatment the general health was restored to the normal. Cheerfulness and interest were regained, the nervous system strengthened and the hearing further improved. The thorax increased to antero-posterior measurement $7\frac{1}{2}$, lateral $10\frac{1}{2}$; the chest expanded and the back contracted, so that articles of dress had to be considerably

altered. The spine was quite straight, and on her being sent to Mr. Greig Smith on November 13th, 1893, he pronounced this to be the case, and desired that Dr. Haines should also see it. Dr. Haines did so with the same result.

Miss — continued the "Home Exercises" and attended classes in the gymnasium for some time; the improvement has continued and she has now sufficient nerve and muscular strength to enjoy cycling. The patient cordially concurs in the publication of the case, and lest these results should appear incredible to those uninitiated in this method of treatment, the medical men who attended her and recommended it, have courteously consented to endorse this statement.

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*A few additional cases of Scoliosis may be cited.**

CASE I.—Miss —, aged 18 years, had kyphosis and a double lateral curvature of some years' standing, the spine had rotated to the right, the left shoulder and hip were consequently prominent and the patient stooped badly (*Fig.* 20). The difficulty in

* The four tracings (*Figs.* 20—23) are taken from sketches in Case Book.

maintaining the correct position was great at first, but with the increase of muscular strength became easier, and gradually habitual without conscious effort. After four

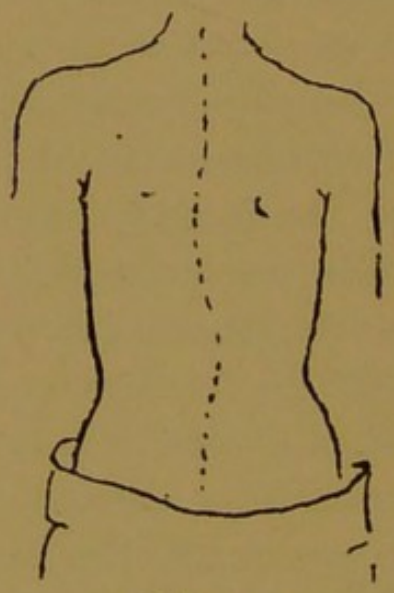

Fig. 20.

months' treatment, on the principle above described, Miss — was pronounced by her medical man to be quite straight. The improvement is fully maintained.

CASE II.—Miss —, aged 12 years, was delicate and emaciated, the spine shewed a double curvature with very projecting scapulæ, the inferior angles being especially prominent (*Fig.* 21); the dorsal muscles were weak and toneless. In addition to treatment by massage and movements it was necessary to raise the sole of

the right boot as the left leg was found to be slightly longer, thus causing or increasing the tendency to scoliosis. The

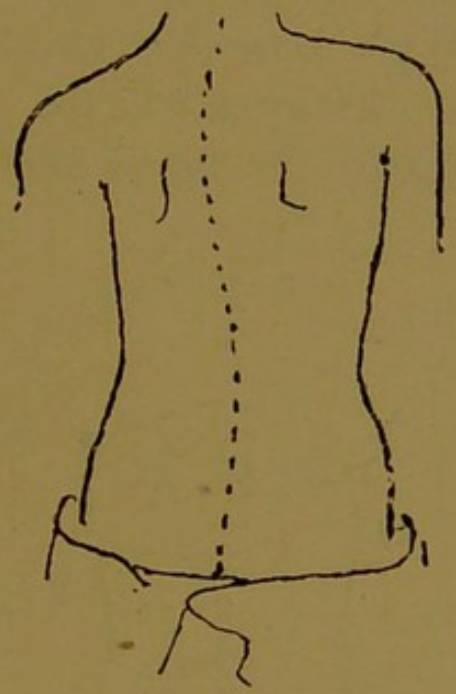

Fig. 21.

curvature was cured in four months, while the general health and muscular condition were much improved.

CASE III.—*Under T. D. Nicholson, M.D.* Miss —, aged 12 years, suffered from slight double curvature and lordosis with constant pain in the back and a weak spot by the second lumbar vertebra (*Fig.* 22). The patient came of a consumptive family, and her chest was delicate and much contracted, the measure-

ments taken with the calipers were:—Antero-posterior $7\frac{1}{4}$ inches, lateral $9\frac{1}{4}$ inches, circumference $25\frac{1}{2}$ inches. She was under treatment for six months, with interruptions however, during which time the pain disappeared, the spine became quite straight, the lungs much stronger and

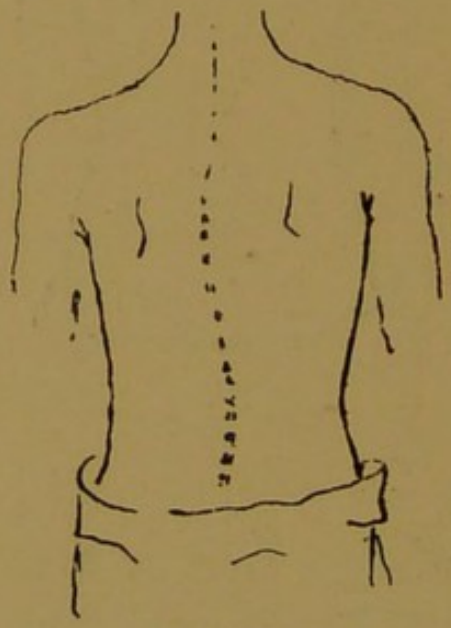

Fig. 22.

the chest measurements increased to antero-posterior $8\frac{1}{4}$ inches, lateral $10\frac{1}{2}$ inches, circumference 28 inches. Dr. Nicholson also considered the improvement in general health, strength, and bearing most satisfactory.

CASE IV.—*Under W. H. Harsant, F.R.C.S.* Miss —, aged 11, had a consider-

able single curvature and was much twisted, the left shoulder was forward and the right hip. When standing in her habitual position there was eight inches distance between the inferior angles of the scapulæ. The chest was much contracted and the breathing

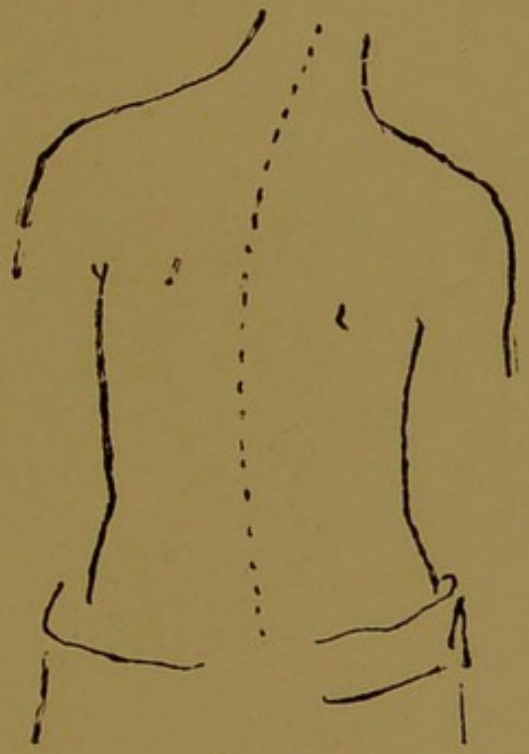

Fig. 23.

was impeded by adenoid growths, which were removed later. After three months' treatment and a continuation of the "Home Exercises" through the summer holidays, the spine was straight and the defects were all quite corrected. Mr. Harsant expressed complete satisfaction with this result.