

mends that the governments of the United States and Canada amend existing laws and secure such new enactments as may be needed to afford complete conservation to all units of what it terms "a unique continental exposition of inestimable value to science and to the popular education of future generations."—*Boston Evening Transcript*.

SCIENTIFIC BOOKS

Exercise in Education and Medicine. By R. TAIT MCKENZIE, M. D., director of physical education, University of Pennsylvania. The W. B. Saunders Company, Philadelphia, 1923.

Here is a book published by the W. B. Saunders Company of Philadelphia that quite delights us. The author has the courage of his convictions and has dared to put forward as the main title of his book that good virile word exercise—from the Latin *exercitium*, which originally meant "to drive out," "drive on," "set at work." The derived meanings of this word are full of significance at the present time: "to set in action," "to give employment to," "to school or train"; and consequently "to exert for training or improvement" and "to improve by practice" or "to perform for training."

At an age when the would-be leaders of men and creators of public opinion are playing to the intelligence of the lowest mentality for the sake of reaching the largest numbers, is it not time to call a halt to the descent to moral mushiness and spineless effort and make an appeal for higher standards of mental and physical activity? It does us no good to ascribe our soft, safe and superficial way of doing things to the relaxation that always follows a war. Rather should we profit by the lessons learned in the conflict. The recent war taught us two most valuable lessons—the feebleness and incapacity of over one half of the drafted men for service who had spent little time in exercising for self improvement, and the hardihood and efficiency of the men who were trained by vigorous pursuits for the army. Here again we meet our effective *exercitium*, the vigorous physical efforts which were first used to train and develop the Roman army which made the term applicable. Again it was *ex-*

ercitium that laid the foundation for the training and discipline of the German army. One conquered the world under Caesar, the other held the world at bay for three years under a Prussian Kaiser.

Waiving for the time being the great Christian, moral, ethical or political issues at stake, this fundamental biological principle can not be set aside; we can not get strength, either as individuals or as a nation, without making strong and vigorous efforts. The ability to drive on and guide and direct our efforts toward our own improvement is a God-given faculty that man can not afford to despise. It is only by perfecting our own mechanism that we can hope to maintain a footing in the world and be of any service to others. Here is the philosophy of physical education in a nut shell. The individual gradually acquires those qualities which his special activities require him to put forth. Thus if the activity requires strength, strength will follow with each effort. If it requires skill, skill will come with practice. If it requires alertness, poise, courage, self-command, all these qualities will be further developed as a matter of course.

With these simple fundamental truths in mind, it is interesting to see how Dr. McKenzie has followed the evolution of the general subject of physical education in the United States. Tracing as a physician the physiological effect on the individual of light, heavy and strenuous exercise upon the muscles, heart, lungs and nervous system, he proceeds to analyze the effects of different exercises upon age, sex and occupations.

All exercises are modified in their effects by environments and the supplementary agents of health, air, diet, sleep and clothing—which must be properly regulated and adjusted in order to bring the best results.

He has reviewed the German and the Swedish systems of gymnastics and traced their influence through our American schools and colleges. The influence of English sports and games and the modifying effects of athletics upon our foreign systems of gymnastics develop as we progress through the different chapters. The growth and spread of the general movement for physical improvement of the masses show themselves in the physical program adopted by the Christian Associations,

the Boy and Girl Scouts, the Camp Fire Girls and by many other social organizations. Such movements as the growing interest in public baths, the establishment of city playgrounds and the universality of summer camps all testify to the public consciousness of the importance of physical exercise.

Dr. McKenzie has done much to popularize this great movement through the publication of previous editions of this book. The greatest service, however, which he has rendered to the cause of education and to the general public is in calling attention to what physical exercise properly directed will do for the blind, deaf mutes and mental and moral defectives. The interest in physical education has opened a new world to these unfortunate members of the community.

The advent of the great war brought into prominence the value of physical methods in the practice of medicine. No one in the country was better posted than Dr. McKenzie in this branch of therapeutic service, after his extensive study in private and institutional practice. Because of this interest, Dr. McKenzie devoted the last part of his previous book to "Exercise in medicine." It is all the more fitting that the author should devote more attention to this branch of the work in this edition when his previous experience has been supplemented by two years' service as physical training and medical officer in the army during the war and as inspector of physical therapy in convalescent camps and hospitals throughout England, Canada and the United States.

The chapters in this part of the book naturally take up the application of exercise to diseased conditions. Since all parts of the body, including the back, chest, arms, legs, hands and feet function through the use of the muscles and nearly all of the important organs of the body, such as the heart, lungs, stomach, glands, blood vessels and viscera, are dependent upon the contraction of muscles for the proper performance of their functions, the health and tone of the muscular system is a matter of the greatest importance. Not only this set of organs, but even the functions of the brain and nervous system which regulate the rest of the body are dependent upon the condition of the master tissues of the body, the muscles. "This was (to most physicians) for

some time a paradox, but now time and experience seem proving it true."

It seems only a natural step from education and developmental gymnastics to medical gymnastics as Hippocrates and Herodotus advocated it.

Dr. McKenzie has shown in this book on exercise how the modified and judicious use of the muscles may be made to restore all parts dependent upon muscular activity to their normal functions. Armed with this knowledge, the physician or his attendant may undertake the treatment of flat feet, weak joints, round backs, drooping heads, uneven shoulders, curved spines, flat chests, abdominal weaknesses and many other bodily weaknesses and imperfections with reasonable hope of complete recovery. Even many diseases of the heart, lungs, stomach and brain may be safely treated through the effect of moderated exercise on the circulatory, respiratory, digestive and central nervous systems.

The author's experience with wounded and diseased men in the war has enabled him to bring the physical treatment right up to date. His ingenuity in devising mechanical appliances to assist the patient in helping himself, and, through his knowledge of applied anatomy, his understanding of the action of the muscles and joints through practice in gymnastics has contributed to make this part of the book unsurpassed as a guide to physicians in physiotherapy.

Perhaps the crowning feature of the book is the apt use of illustrations in both the educational and the medical sections. Here again the author, being a sculptor as well as a physical educator and a physician, has used his artistic eye in selecting the appropriate photographs and the best kinds of models, displaying the proper poses to show the particular action to which he desires to call attention. In fact the work is so meritorious that all people, whether they be physical educators, practicing physicians or intelligent laymen, have reason to thank Dr. McKenzie for taking the time from his absorbing profession to prepare such a book for their benefit. Suffice it to say that every one interested in the general subject should own a copy.

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