

platform, which gave me an opportunity of seeing the effect of the lecture on the faces of the audience. The close attention and eager open eyes were striking. And yet the speaker was telling his audience what they already knew. But he spoke with authority. And we came away impressed and inspired with the truth that law obeyed is the prime good, and law disobeyed is the prime evil. Medicines might aid, as crutches do, but we must go back to the laws of health for essential permanent good, otherwise there is no remedy. It is the absolutely necessary condition of preserving youth—of postponing old age, of having if possible no old age at all.

IMPORTANCE OF EXERCISE

It would be impossible to take up these conditions of health, even one of them, in proper detail within the limit allowed this article. I shall therefore restrict myself to a few remarks on EXERCISE. Many concede its all-importance, few obey its law, and fewer still understand why they should. To begin with, what is its effect upon a *muscle*? For authoritative information we must draw from the fountain of the specialist. Dr. McGregor-Robertson writes—"The stimulus to nutrition which the exercise has produced affects every part of the muscle, and not only those substances in it or of it, involved in the chemical changes. Every fibre of it shares in the benefits of the increased flow of the nutritious fluid through it, and increased size and vigor of the fibres, and, it may be, the production of new fibres, are directly encouraged. Not only does the movement of the muscle and the quickened flow of blood through it serve to remove the waste matters by the activity of the moment, but effete material, formerly produced, whose retention in the muscle has been encouraged by a period of comparative inaction, is now swept out. Thus the muscle is strengthened by the formation of new material in increased amount and reinvigorated by the cleansing process to which it is subjected." In other words, in exercise not excessive the duration or life of the muscle is prolonged. Again, "If, instead of limiting our view to the results of the contraction of one muscle, we reflect what must be the consequences of the activity of a large number of muscles, as is necessary for walking, and still more pronounced in running, in cricketing, in boating, etc., we shall begin to realize how great must be the effect upon the whole body by the increased activity of the circulation induced, by the greatly increased demand for nutritive material for repair, by the call for more oxygen to effect the increased chemical changes, by the stimulation of the kidneys, lungs, and skin that subsequently results from the increased waste products thrown into the blood, which it is the business of these organs to remove, and we begin to perceive how it is that the exercise has a marked influence not only on the muscles called into

play, but an immediate and stimulating effect upon every other organ of the body."

EFFECT OF EXERCISE ON HEALTH

The heart beats quicker, more nutritive material is carried to the muscles, and the indolent body is roused into exhilarating life. The lungs, expanding more quickly and completely, inhale a much greater quantity of oxygen and exhale much more carbonic acid gas, with increased flow of blood and better development of chest, results that cannot be overrated. The liver, shaken up, increases the consumption of energy-yielding foods, and ceases to be sluggish. The kidneys and the skin are enriched by the extra flow of blood, and remove not only normal waste but the waste products of previous inaction. And the brain and nervous system, in essential connection with the muscular system, are invigorated, strengthened, and enabled or made to do superior work, the command being held, not now by a set of nerves, weak, sensitive and anarchic, but by a strong will.

"Exercise, then, is not a mere matter of muscle. It is not a mere question of firm energetic muscles against small flabby ones; it is a matter affecting the whole being, body and mind. It is a question of the vigor of the whole man, concerning the general well-being of the whole body, not an activity suitable for boys and young men, but necessary for both sexes and at all ages, a potent, nay an absolutely indispensable agent in the growth and development of the child, and as necessary for the continued health and active life of the fully grown as are food and air."

MODERATION IN EXERCISE

It is of course assumed in all that has been said that the exercise is enough and not excessive. The effects of exercise under or over the well-balanced necessity are, in the degree that law is broken, certainly detrimental. Transgression, negative or positive, has one effect, the accumulation of waste products, involving fatigue. Over-exertion exhausts the nerve-centres of supply of muscular energy and wears out the muscle itself. But insufficient exercise has more numerous evils than those of excess. Children are stunted in body and mind; girls, particularly, suffer most, often in bad development of figure or lateral curvature of spine; and adults, weakened in heart and circulation, and acquiring unhealthy deposits of fat, fall off in general health and vigor. Men of business wonder what is wrong. But they above all, especially such as control a factory with its complicated machinery, should understand. Disuse, rust, dirt, want of oil, and want of attention will clog and render useless any set of wheels. How much more complicated and in need of attention is the human machine! And every man can understand that when his furnace is neglected or clogged with ashes the fire is burning low.