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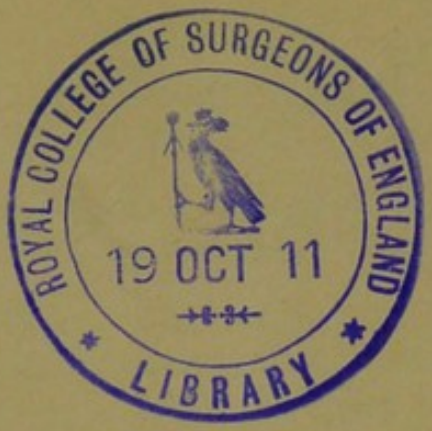

A Note on Heart Strain, Neuroses, and Muscular Exercise.

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A NOTE ON HEART STRAIN, NEUROSES, AND MUSCULAR EXERCISE.

By F. PARKES WEBER, M.D., F.R.C.P.,
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In the expression "heart strain" I suppose that the word "strain" means "violent action," and, probably, an *excessive* effort made by this muscular organ in order to do the work which is demanded of it. I take it that "strain" in this sense can seldom be good for the heart.* Whether it does harm or not must depend on the degree and duration of the "strain" and the condition (temporary or otherwise) of the individual and his heart. What is "strain" for one person is often an ordinary pleasurable effort for another. The least voluntary muscular exertion may be too much for the heart in some cases, as for instance in the case of a child with myocarditis from diphtheria or in a person chronically poisoned by carbon dioxide owing to laryngeal obstruction (*e.g.* from laryngeal œdema connected with syphilitic disease, before tracheotomy has been performed). The cardiac valves, soon after apparent recovery from an attack of acute rheumatism, may, as is well known, be in a state which renders them specially liable to damage from strain. Thus, a young member of our profession recovered from a severe illness, probably acute rheumatism, apparently without any cardiac lesion. On recovery he went in for rather violent muscular exercise (sport of some kind), and when I had to examine him, about three years later, when he was 30 years old, for life insurance (in connection with his approaching marriage), I found the characteristic signs of well-marked aortic reflux. The aortic valves had probably been prematurely strained by the sport he indulged in after his illness.

The amount or kind of exercise which constitutes "strain" (*i.e.* "over-exercise") depends of course upon individual conditions. It is quite obvious, for instance, that in cases of chronic cardiac disease with commencing failure of compensation almost any muscular exertion throws a "strain" on the heart, but patients with ordinary compensated valvular disease react to muscular exercise, and often even to "strain," like ordinary healthy

* *Cp.* especially the remarks of Sir Lauder Brunton, *Collected Papers on Circulation and Respiration*, First series, London, p. 18.

individuals. Lately I have been seeing a man, aged 28 years, with congenital pulmonary stenosis. The cyanosis is very great and is increased by walking. Sometimes he looks almost black in the face. His fingers and toes are clubbed, and examination of his blood shows a remarkable condition of (*compensatory*) polycythæmia and "polyhæmia" ("plethora vera"). The blood is so "thick" that it is relatively difficult to suck it up into a capillary tube. The number of red cells in the cubic millimetre and the percentage of hæmoglobin are about double the normal figures, whilst the total quantity of blood in the body (as kindly estimated for me by Dr. J. S. Haldane and Dr. C. Gordon Douglas by means of Haldane and Lorrain Smith's carbon-monoxide method) is greatly above the normal for the body-weight. This man enjoys life, works well at his business, and takes a good deal of open-air exercise. He attributes his relatively good condition to the exercise to which he has accustomed himself, and says he can do as good a day's work as anyone in his trade, and walk for hours without ill effect. He tells me he finds that "an easy and lazy life" does not agree with him.

Persons with compensated cardiac valvular lesions seem to derive benefit from open-air exercise in the same way as ordinary healthy persons do, even if they cannot stand as much and have to be more careful to avoid "strain." Two groups of patients who are sometimes said to have "weak hearts without organic disease" probably benefit even more than ordinary normal individuals do from regular open-air muscular exercise (short of strain). I refer (1) to the group of young, tall, lanky ("over-grown") adults with "bad circulation" (with circulation more or less of the "chilblainy type") and often with orthostatic albuminuria; (2) to a group of patients with cardiac neuroses, especially sensory neuroses. With regard to the latter group, I would compare the beneficial effect of open-air exercise to the well-known effect of fevers on certain (but not all) functional nervous troubles (*febris dissipat spasmos*), and I think that this effect of fevers is really due to the extra work which they force the body to do, for the necessity of resisting an infection is a greater stimulus to a form of tissue-exercise (the work thrown on the metabolic tissues, &c.) than any other goad or any ordinary voluntary effort.

From this point of view I would remark that some functional nervous troubles may almost be regarded as the expression of a misdirected expenditure of nervous energy, and for such cases

open-air exercise (with a non-stimulating form of diet) has undoubtedly a special value. For such cases Pope's lines are really appropriate:—

> "Better to hunt in fields for health unbought
> Than fee the doctor for a nauseous draught."

Perhaps it was more to his recommendation of open-air exercise than to the use of the mineral waters that Jephson owed his success at Leamington Spa:—

> "For all his disciples who Jephson obey,
> Walk out in all seasons all hours of the day."

In chronic non-febrile cases of pulmonary tuberculosis the great use of graduated open-air muscular exercise under medical supervision is now generally acknowledged, but I do not think this beneficial action is merely due to auto-inoculation. Graduated exercise seems to do good in nearly all kinds of chronic disorders. Suitable and regular exercise (mental as well as muscular) prevents "rusting" and reveals defects in the vital mechanism, so that it exerts perhaps an even more preventive than curative action in regard to disease. No age contra-indicates exercise in some form and in some degree or other.

When one notes the great utility of muscular exercise (of some kind or other) in nearly every condition of chronic disease or ill-health, one is inclined to ask—What are the contra-indications to voluntary muscular exercise? The real contra-indications are obvious enough: conditions of extreme exhaustion of the myocardium, of acute toxæmic causation or resulting from the advanced progress of chronic disease, and conditions in which the patient is of necessity being, or has just been, sufficiently exercised. Thus no one would recommend muscular exercise when the patient's metabolic organs are already being driven (like an express train at full speed) by some raging fever. Severe pain (articular, etc.) on movement is of course a practical contra-indication. An uncompromising attitude of laziness or disbelief on the part of the patient unfortunately sometimes constitutes a kind of contra-indication, because the mere suggestion of the advisability of more exercise leads to an immediate change of medical advisers.

Unsuitable exercise may, of course, produce exacerbations of many quiescent diseases, such as pulmonary tuberculosis and cholelithiasis. However, even in regard to cholelithiasis, a life

necessitating constant open-air muscular exercise, especially climbing exercise (with increased respiratory movements), such as the life of peasants in mountainous districts, seems to act to some extent as a preventive; though when gall-stones are already present unsuitable muscular exercise (especially exercise necessitating sudden and violent movements) may induce attacks of gall-stone colic and various inflammatory complications.