

Correspondence.

Cause and Treatment of Consumption.

To the Editor of the SCIENTIFIC AMERICAN:

Medical science claims that the presence of the tubercle bacillus in the lungs is the fundamental cause of phthisis, or consumption.

After several generations of study and experiment, the medical profession of the entire world have finally come to the conclusion that this disease is not amenable to drug treatment; they seem to have directed their attention to discovering some means of destroying the life of the germ in the lungs, in place of removing certain fundamental causes which make it possible for the germ to exist there. The fact that so little progress has been made in the treatment of the disease, would indicate that some of the important conditions of causation have hitherto been overlooked. Some modern medical writers claim that malnutrition is the cause of phthisis, but people suffer from malnutrition, in a severe form, and yet do not have phthisis; in fact, they could not have it unless they had some unhealthy lung tissue especially suited to the development of this germ.

The tubercle bacillus requires an unhealthy tissue and a certain amount of moisture to favor its development, and the lungs are most frequently infected because they are seldom fully developed. This is due to the fact that the apex or top of the lung is seldom filled with air, and consequently the tissue in that part of the lung becomes weak and unhealthy—usually the result of improper breathing. When this microscopic vegetable germ becomes established in the unhealthy or diseased tissue of the lungs, no drug has yet been discovered which will stop its rapid growth. Unhealthy tissue is absolutely necessary for its development. A person with active, healthy lungs can inhale these germs, and will experience no harm from them. The facts herein described explain the leading and fundamental causes, which become operative when other concomitant and requisite conditions are present.

It is not the germs which make *all* the trouble (they are only an accidental condition—merely like a scavenger that lives on diseased tissue); they are only active because of a weak condition of the tissues, resulting from various causes. Of course, phthisis could not exist without the germ; neither could the germ exist without the unhealthy tissue to favor its development. The unhealthy tissue in the lungs could not exist unless there was a cause for it, which condition usually results from an undeveloped state of the lungs, although the same condition could be caused by an attack of pneumonia, or grippe, and from other causes. Even if the germ has the unhealthy tissue favorable for its development, the disease can progress but little, unless the vital force of the patient has been greatly impaired, as a result of mental or nervous strain. Therefore, *the disease cannot be caused by the germs, unless the necessary accompanying conditions are present.* The germ, therefore, is only *one factor* in the cause; the leading fundamental cause being the condition of the mind, which made it possible for the patient's vital force to become so reduced. It is this phase, or condition of causation, which has hitherto been overlooked; and accounts for the unsatisfactory results experienced in the treatment of this disease.

I do not claim that the condition of the mind represents the direct cause of phthisis, but it is, without any doubt, the fundamental and most important condition to be considered in the *treatment* of this disease.

Phthisis is made possible on account of the weakness of the motor and other nerves of the lungs; also of the heart, stomach, and any other internal organs which have to do with the proper digestion and assimilation of food. As all the motor and other nerves are controlled entirely by the mind, we must look there for the leading fundamental trouble. If anything goes wrong with the engine or motor power of a large manufactory, so that it does not run in perfect smoothness, or rhythm, the uneven motion is transmitted to every machine in the entire establishment; and if the motor is allowed to continue running out of balance, it will soon be worn out and ruined. Now, the mind is infinitely more sensitive and powerful than any machine motor, and if it has full control of all the nerves in the body, then when it becomes overstrained or excited through worry, fear, or irritation of any kind—either from physical or mental causes—it will be thrown out of perfect balance, or rhythm, and this disturbance will extend through the entire nervous system. If this strain, or irritation, is continued for some time, the mind becomes correspondingly weakened and loses its power over the body, and subsequently all the nerves become similarly affected, and are unable to perform their normal functions.

When the mind is depressed or excited, the action of the heart is correspondingly changed, and the stomach and other digestive organs are affected in the same way; thus preventing the proper digestion and assimilation of food, producing, in time, malnutrition, which

accounts for the emaciation which usually accompanies this disease. The motor nerves of the lungs also become weakened, and make it impossible for them to expel the tuberculous matter which has already collected, and which continues to collect with great rapidity for the same reason. With a weak heart, which cannot keep up a proper circulation of the blood, and a weak stomach and digestive organs, which cannot digest and assimilate the food properly, and weak lungs, which have not sufficient power to expel the tuberculous matter, it is no wonder that the pus collects there and the germs multiply, and the patient has an increased pulse and temperature.

Recent tests have demonstrated the fact that when the real causes are corrected, and the action of the heart is increased by a proper massage treatment, the pulse and temperature are very quickly reduced to normal, and will continue to remain so, notwithstanding the fact that the lungs continue to retain large quantities of tuberculous matter for some time afterward. The pulse and temperature will seldom rise again, unless caused to do so by some mental worry or disturbance. Nature will afterward take care of the tuberculous matter remaining in the lungs, just as soon as the motor nerves and tissues of the lungs have acquired sufficient strength to expel it.

The *treatment* of phthisis is, of course, the most important subject to consider. The environment, and conditions of the disease in different patients, are so variable, that no single treatment can be specified for all. The following suggestions will answer for most cases, and are especially recommended for patients suffering from the disease in an advanced stage.

It has always been truly stated that this disease was incurable, on account of the patient not having sufficient vital force or nervous energy to resist it. Such being the case, the matter of first importance is to retain all the nervous strength the patient now possesses, and cut off every influence which could possibly reduce it. Every person understands that if he spends more money than his income, financial distress will surely follow; but most people waste their nervous energies with the utmost extravagance, and then seem surprised that they should experience any nervous weakness as a result.

When a motor machine does not run properly, the first thing to be done is to put every part of it in perfect balance, so that it will run smoothly. The same rule applies to the human body. When the mind, through mental irritations, is thrown out of balance, then the whole body is correspondingly affected, and the first thing to do is to restore it to a rhythmic condition. To do this, the patient must be taught how to think, breathe, and act in a rhythmic manner.

Some physicians have met with most pronounced success in treating incipient cases of phthisis by deep, rhythmic breathing. This favorable result is not due entirely to the fact of opening the air cells and introducing fresh air into the lungs, but to the additional fact that the patient, in breathing rhythmically, acquires the habit, more or less, of thinking and acting in a rhythmical manner, which gives great rest to the mind and all the nerves of the body. If the patient is suffering from the disease in an advanced stage, he should be given a large, sunny room, and the windows should be kept wide open, both day and night. He should be carefully instructed as to the real cause of his condition, and it should be impressed fully on his mind that his recovery will depend largely on his own individual efforts to control his thoughts and mind, so as to eliminate the elements of worry, fear, anxiety, or anything which will irritate the mind or waste his nervous energy. He should be taught how to practise slow, deep, rhythmic breathing. He should not commence by counting slowly six or eight for each inhalation or exhalation, because he may not at first be strong enough to do so; but instruct him to count as many as he can and breathe with perfect ease, and then continue to increase the number as his increased lung capacity and strength will permit.

Members of the family should not ask him how he feels; and if he coughs, should make no remarks about it whatever—if he wants to cough, let him do so peacefully; it is a necessity, and he cannot help it. Do not allow well-meaning but ill-advised people to tell him about their own troubles, or those of their friends—he has troubles enough of his own to consider. Exclude all visitors who would be liable to excite or irritate him in any way. Do not urge him to take a walk on some fine, sunny day—let him have the fresh air and sunshine without active exercise; it will be time enough for him to take a walk when he has recuperated his physical and nervous strength sufficiently to do so without experiencing any reactionary weakness afterward. Massage treatment will make up for lack of exercise. Save his physical and nervous strength in every way possible. Many patients are kept in a continual state of worry about their pulse and temperature, and therefore it is best to ignore that condition as much as possible, especially when in the presence of the patient.

In addition to these suggestions, the proper kind of massage treatment will be found of great value in assisting the heart to do its work, and in promoting the proper circulation of the blood.

Limited space will not allow an extended description of massage treatments especially suited for this disease, but, in all cases, the massage manipulation should be given firmly and in perfect rhythm, but very slowly; no strokes should be given on any part of the body more rapidly than the normal pulse rate. If strokes, with a heavy pressure, are made more rapidly than the normal pulse rate, then an abnormal pressure is produced on the walls of the veins and arteries, which will cause additional congestion, and consequent irritation of any inflamed parts of the body. In order to cure phthisis, it is of the utmost importance that the mind be relieved of all irritations. In some cases, even a painful tooth is sufficient to irritate the mind and cause it to be out of rhythm, not that any single irritation will do so much harm, but the combination of a number of mental or physical irritations is sufficient to cause the condition which makes phthisis possible, and also prevents its cure.

Always remember that what the patient needs most is perfect quiet and rest for the mind until it can recover its normal strength and be able to fulfill its natural functions.

If the medical profession will direct their skill and energies to the treatment of this disease, on the lines herein described, their efforts will soon result in the discovery of new truths and new treatments; and in a comparatively short time, consumption will be controlled and cured as easily as any other disease.

New York, May 12, 1904. CYRUS L. TOPLIFF.

A Radium Clock.

A radium clock, which will keep time indefinitely, has been constructed by Mr. Harrison Martindale, of England. The principle of this apparatus is simplicity itself, the registration of time being made in two-minute beats, while its function is to exhibit the dissipation of negatively-charged alpha and beta rays by radium. The clock comprises a small tube, in which is placed a minute quantity of radium supported in an exhausted glass vessel by a quartz rod. To the lower end of the tube, which is colored violet by the action of the radium, an electroscope formed of two long leaves or strips of silver is attached. A charge of electricity in which there are no beta rays is transmitted through the activity of the radium into the leaves, and the latter thereby expand until they touch the sides of the vessel, connected to earth by wires, which instantly conduct the electric charge, and the leaves fall together. This simple operation is repeated incessantly every two minutes until the radium is exhausted, which in this instance it is computed will occupy thirty thousand years.

Death of Prof. Maxwell Sommerville.

Prof. Maxwell Sommerville, of Pennsylvania University, died recently in Paris at the age of seventy-five years. He was a well-known glyptologist.

He spent forty-eight years wandering about the earth and trafficking with the inhabitants of the most out-of-the-way places in his quest for rare gems, cameos, intaglios, and specimens of lapidaries' art of historical value. His collection in the archaeological museum of the University of Pennsylvania is considered the largest and finest in the world. He also created and installed in the museum the Indian Hindoo museum and Buddhist temple, of which a description will shortly be published in the SCIENTIFIC AMERICAN.

The Current Supplement.

Striking pictures and a well-written, authoritative account of the Ogden-Lucin cut-off of the Southern Pacific Railway open the current SUPPLEMENT, No. 1481. The engineering work described is one of the most important feats in railway engineering to which the West can point. A combined gasoline motor and electric generator for railroad traction is a railway novelty described by the English correspondent of the SCIENTIFIC AMERICAN. Submarine navigation is the title of an article which briefly reviews a most important development in modern naval warfare. "The Soldering of Metals and the Preparation of Solders and Soldering Agents," is the title of an exhaustive discussion. Emile Guarini writes an instructive review of some interesting experiments with the mercury arc. Dr. Gustav Eisen writes on the fig and its history.

Recently Dr. Macdonald, of Mombasa, East Africa, encountered a puff adder, which is one of the most deadly snakes. He discharged his rifle at it and killed it. He took the body to the hospital verandah, and, finding it to be a male, returned to the spot to search for the female, but without success. A few nights later, however, while sitting on his verandah, the doctor espied the snake he had been seeking, and fired at her. Afterward no fewer than ninety-one young adders were found scattered on the ground, and had all been killed by the shot fired at the mother.