SCIENCE

NEW YORK, SEPTEMBER 11, 1891.

THE CURE OF CONSUMPTION.[1]

No words of mine are required to impress upon you the great importance of this subject, to express the intense interest that is universally taken in it, or to point out the far-reaching influence its public establishment will have upon scientific investigation. But it is, perhaps, necessary for me to say that I fully recognize the grave responsibility that rests upon any one who makes the statements I am about to make, and that I am completely justified in accepting that responsibility. Perhaps it may be within the recollection of some of those present that at the Birmingham and Manchester meetings of the association in 1886–87 I read papers giving the results of a series of investigations on consumption and chest types. I showed in the former paper that consumption was directly produced by the conditions that tend to reduce the breathing capacity below a certain point in proportion to the remainder of the body, and contended that it could be both prevented and completely recovered from by the adoption of measures that were based upon that interpretation of its nature. In the latter I adduced evidence that proved that the size and shape of the chest after birth solely depended upon the conditions to which it was subjected, that there was the same relationship between the size and shape of the other parts of the body and the conditions to which they were subjected, and that this law obtained in the animal and vegetable kingdoms. The research, as a whole, showed that there was a complete series of types that had on the one hand extreme consumption, and on the other the finest type of health, directly produced by the conditions to which they had been submitted. And I referred to the immense importance of the issues that were raised, both from a practical and scientific point of view.

At that time the evidence was mainly derived from experiments, although I had some most valuable and significant practical experience, and I found the general opinion was that it would be extremely difficult, if not impossible, to practically apply that knowledge. Since then, however, the practical evidence of the relationship between conditions and types of chest has been irrefutably established at the Polytechnic. By the application of that knowledge in the ordinary routine of daily life, the members of the Polytechnic Physical Development Society, although engaged for many hours daily in all sorts of trades and occupations, some of them under very unfavorable conditions, have shown how greatly the chest girth, its range of movement, the vital capacity, and the power of inspiration and expiration can be increased. Last year, at Leeds, I gave the measurements of one hundred members. If you will refer to the report you will find the average increase of the chest girth was $1\frac{3}{4}$ inches, that of the third class being $1\frac{1}{4}$ inches, the second $2\frac{1}{8}$ inches, and the first class $3\frac{5}{8}$ inches. At a subsequent examination for the society's gold medals and certificates the first three members had obtained an increase of $6\frac{1}{2}$, 5, and $4\frac{3}{8}$ respectively, and although some of our best members are constantly leaving the Polytechnic, and new ones joining us, I am glad to say there has been a further average increase of one-quarter of an inch in all classes. Many of the members are engaged in the trades that have a high rate of mortality from consumption, and not a few of them would have long been in the ranks of the consumptives had it not been for the efficacy of the directions given them by the society,—that is to say, the practicability and certainty of the measures that are necessary to secure the prevention of consumption have been fully demonstrated.

Whilst one part of the work has been practically applied at the Polytechnic, the practical application of the other has been equally successful in the amelioration and, where the disease was not too extensive, the cure of consumption. I cannot enter into medical details here, but I may state that by the cure of consumption I mean the possession and appearance of sound health, natural breathing from base to apex, a well-formed and fairly developed chest, a good range of movement, and vital capacity that have stood at least a twelve months' test. The cases that were referred to at Manchester in 1887 as having completely recovered remain well, and those that have subsequently recovered went through last winter without giving the slightest indication of a relapse. There has been no relapse in any of these cases of cure, and no failure. Up to the present the mortality of all the cases has been under ten per cent, and has been limited to those who were most extensively diseased, and who were, in fact, *in extremis*. There are others who have derived great benefit, and some of them will ere long take their places in the ranks of the cured. One of the latter has stolen a march upon me. He presented himself for life assurance, was accepted as a first-class life, and obtained a reduction in his premium He is unquestionably well, but he would not allow me my twelve months' test. There is not a sufficient number of cases to compare with the statistics obtained at the Polytechnic, but I may say the increase in the chest girth ranges from $1\frac{1}{2}$ inches to over 4 inches. We have chest girths of over 38 and 39 inches, the range of movement varies from 3 to 6 inches, and the vital capacity greatly exceeds in some cases Hutchinson's standard of health.

I have now shown you that the results that had been experimentally obtained have also been equally well obtained in the practical application of that research, that each part of the investigation confirms the other, and that they together form a complete and harmonious whole. Consequently I have also shown you that we now have before us and within our grasp the real cure for consumption, that we can effectually prevent its production, and that by united and continuous action in both directions we can, ere long, practically remove this curse of civilization from our midst.

What steps are to be taken to secure the great benefits of this advance in knowledge? Let me, in the first place, remind you that consumption is a disease of civilization, a part of the process of evolution by which an adjustment is made between the body and the work it has to perform under the ever-changing conditions of advancing civilization, by the re-

[1] An address by Godfrey W. Hambleton, M.D., president of the Polytechnic Physical Development Society, at the meeting of the British Association for the Advancement of Science, Cardiff, August, 1891.

moval of those who have a body incapable of that work, and that it is directly produced by the habits and surroundings that tend to reduce the breathing capacity below a certain point in proportion to the remainder of the body. Obviously, the first thing that has to be done is to prevent the production of this disease, and for that purpose we must see that the body is used to the extent its size demands, and that the work it has to perform is carried on under conditions that are favorable to the body, — that is to say, we must so arrange our habits and surroundings that their tendency as a whole is to develop the lungs. Each act of man, each factor in his environment, tends either in his favor or against him. We must avoid as far as possible — and where that is not practicable we must counteract their action — those that tend to reduce the breathing capacity. Close, badly-ventilated, or hot rooms, the inhalation of any kind of dust, the habit of taking small quantities of alcohol (termed "nipping"), stooping, positions that cramp or impede the full and free movement of the chest, the corset or tight-fitting clothes, overloading the body with clothes, etc., are examples of such conditions. And we must place ourselves as far as possible under the conditions that tend to develop the lungs. We should spend as much time as possible in some form of active exercise in the open air, live in rooms that are in direct free communication with the external air night and day, summer and winter, and keep their temperature down. We ought to have the clothing quite easy over the chest at full inspiration, wear wool next the skin, take a tub daily, hold the body erect with the chest thrown well forward and the shoulders held well back, get into the habit of taking deep inspirations followed by full expirations, and breathe through the nose. And we should go in for singing, swimming, gymnastics, — Ling's system by preference, — and for one or, better still, several forms of athletic sports, rise early, and maintain the temperature of the body by muscular exercise. I have briefly indicated the conditions that are favorable or unfavorable to lung development, and to that I will only add that measurements by the tape, the spirometer, and the manometer should be regularly taken, recorded, and compared with the standards that indicate a fully developed chest, and that it is the plain duty of each one of us to see that he stands well in that respect, for we can protect ourselves from the possibility of an attack of consumption by securing and maintaining a lung capacity far above the point at which the disease originates.

The second direction in which we must take action, if we mean to remove this curse of civilization from our midst, is to recognize early, and that promptly and adequately, those who have the great misfortune to be its victims. This is the state with which we have to deal here. The lungs are being progressively destroyed by a process of irritation caused by more work being thrown upon them than they are able to effect, and this inability has been produced by their having been and still being subject to conditions that tend to reduce their capacity; and, further, during the progress of these events, the other organs have become involved by attempting to perform compensatory work, with the result that the general health is more or less seriously compromised. Consequently, in order to adequately deal with this state of things, we must treat consumption upon the following principles: To establish an equilibrium between the amount of interchange required to be effected and that effected, to enable the other organs of the body to perform their ordinary functions, to restore to the lungs their power of adjustment to their external conditions, and to obtain the above without producing indications of friction. That is, in other words, we must arrest this process of irritation, restore the general health, and develop the lungs to the required amount, in order to effect the cure of consumption. I will now briefly indicate the method of applying the principles above laid down. We must, to arrest this process of irritation, remove the conditions that impede the effecting of those interchanges by placing the patient under conditions that tend to develop the lungs, and make good any deficiency that may remain by causing compensatory action by one or more of the other organs. We shall proceed with measures for the restoration of the functions of any organ that may have been deranged, and when we have obtained the arrest of the disease and effected an improvement of the general health we shall begin to develop the lungs. We must carefully select appropriate medicines and measures for each purpose we have in view, use them at the right time and to the right extent, and watch their effects, so that if there be any indication of friction we may at once effect the necessary modification or use some other medicines or measures for that purpose.

It is easy to cure consumption at the commencement, even when both lungs are affected. It can be cured when there is a large amount of disease, and it may at least be ameliorated when both lungs are extensively diseased. I speak from practical experience, and I for one will not attempt to place a limit upon the great power of Nature when all her forces are called forth and aided.

The links of evidence slowly forged by men who have gone and by others still with us I have put together. Test the chain thus formed where and how you please, and you will find that it is complete and unbreakable. We have performed our part of this work, and in the name of those who have taken part therein I now call upon you to give effect to it by uniting together in the great work of suppressing consumption.

PROGRESS OF PREVENTIVE MEDICINE.[1]

UNPRECEDENTED progress in human knowledge characterizes the present century, and has not been wanting in preventive medicine. It is, however, during the last half of it that advance has been most remarkable, whilst it is in a later part of that period that it has so established itself in the popular mind as to have passed from the region of doubt and speculation into that of certainty. It is now pretty generally understood that about one-fourth of all the mortality in England is caused by preventable disease, that the death-rate of large communities may be reduced much below that at which it has been wont to stand, that the average duration of life may be made to approximate nearer to the allotted fourscore, and that the conditions of living may be greatly ameliorated. The chief obstacles to improvement have been ignorance and want of belief. A better knowledge of the laws of life and health, a more rational comprehension of the nature and causes of disease, are gradually but surely entailing improvement in the conditions of living and in the value of life, and the diminution and mitigation, if not extinction, of morbid conditions which have in past times proved so injurious or destructive to life. Such are the subjects contemplated in the work of this section, and as far as time permits the most interesting of them will be discussed, Those selected are of great importance in their relations to public health; let us hope that observers who have formed their opinions from experience in other countries and under different circumstances may throw new light on them

In the brief space of time at my disposal it would be impossibl to give a continuous outline of the progress of preventive medicine during the past, or to trace its growth and development ou

[1] Abstract of the inaugural address before the Section of Preventive Medicine of the Congress of Hygiene, in London, England, Aug. 11, 1891, by Sir Joseph Fayrer, K.C.S.I., F.R.S., president of the section (from Nature Aug. 20).