Flick. (L. F.)

The hygiene of phthisis.

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THE

HYGIENE OF PHTHISIS.

BY

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OF PHILADELPHIA.

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By LAWRENCE F. FLICK, M.D.

From the earliest days of the medical profession the sad fact has been recognized that when consumption has once been fully established and lung tissue has been destroyed, recovery seldom takes place. "Many,[1] and, in fact, the most of them died," said Hippocrates, when writing about the disease, and what physician, who has practised medicine since, has not in truth been compelled to say the same thing? For twenty-four hundred years, and probably during all preceding ages, some of the best minds the world has ever produced have studied and coped with this disease, and, in spite of the accumulated knowledge of all those years, about one-fifteenth[2] of the human family falls a victim to it yearly. There is not a clime in which it does not exist, nor a period of life at which it does not occur. The rich and the poor, the civilized and the uncivilized, become its prey. Since it cannot be cured, it is but reasonable to try to prevent it, and much has been done in this direction during the last century.

What percentage of deaths was due to consumption in the days of Hippocrates cannot be known, but that it was large would appear from his words in speaking of a certain period, namely, that "consumption[3] was the most considerable of the diseases which then prevailed, and the only one which proved fatal to many persons." Writers upon the subject subsequent to Hippocrates are equally barren in statistics until about the seventeenth century. The first figures that I have met with are in a foot-note in Dr. Bateman's *Diseases of London*, in which a Dr. Heberden is quoted as saying "that[4] in 1669 the deaths

[1] Epidemics, Book I., page 353. Francis Adams's translation.

[2] In 1880 the percentage of deaths from phthisis in the United States was 12,059 in every 100,000, and in England 9141 in every 100,000. Taking these two countries as a basis, we may assume that, the world over, about 7 per cent. of the deaths are due to phthisis.

[3] Francis Adams's translation, page 353.

[4] Historical Survey of the Diseases of London, page 22. Thomas Bateman.

from consumption were to the whole as one to about six and two-tenths; in 1749 one to about five and five-tenths; in 1799 one to about three and eight-tenths; in 1808 one to about three and six-tenths; and in 1818 one to about four and two-tenths." In the beginning of the present century Dr. Willan, in his statistics on the diseases of London, gives the percentage in his private practice as about one in three; and says that the proportion in the general mortality reports for the winter months at that time varied from one-third to one-half. In 1880 the percentage of deaths from phthisis in England was 9141 in every 100,000, which indicates a marked improvement. This improvement is not due to a larger number of cures, but to a more successful prevention which follows in the wake of civilization.

It is scarcely disputed by any one at the present day that consumption is due to the bacillus tuberculosis. Concomitant with this doctrine is necessarily that of its contagiousness, and whoever accepts the one must accept the other. And why should it not be accepted? It is the reasonable doctrine, and the one consistent with all modern teachings about disease. It is, moreover, the only doctrine which can explain all the phenomena of the disease without appealing to one's credulity, and upon the assumption of which we can ever hope to construct a barrier to the progress of the disease.

Heredity ought to be out of the question at the present day. It is an unreasonable theory, and at variance with all modern knowledge about the etiology of disease. Its complete eradication from the public mind is one of the first steps necessary in a sanitary crusade against phthisis. So long has it held sway, and so thoroughly has it been woven into our literature, into our ways of thinking, and even of acting, that it has actually become a remote cause of the disease. Men and women are daily dying victims of consumption because they have not the courage to escape its clutches. Their grandparents or parents, their uncles or aunts, or somebody in their families has died of the disease, and it is a foregone conclusion that some day, sooner or later, they too will die of it. They are tabooed by society as foreordained victims, they are refused life insurance on the slightest pretext, and are at a discount in the marriage market unless heavily endowed by purse or landed estate. Their lives are one continuous worry lest the disease overtake them, and yet they do nothing to avoid it, or the depressing influences which lead to it. If they do finally succumb to the disease, their education and that of the public have been factors in its production.

Somewhat akin and often confounded with heredity is the doctrine

of predisposition. That some families are more apt to develop certain diseases than others is beyond dispute. What this predisposition consists in, and whether dependent upon the blood, the nerves, or tissues, is as yet one of the hidden secrets of nature. It is certain, however, that it can be transmitted for generations, and that, like complexion and features, it may go to only certain members of a family, may skip a generation or two and reappear, or may disappear entirely. It sometimes goes with one or the other sex, and sometimes accompanies certain complexions and features. Whilst it often exhausts itself by the laws of survival, it may also be generated *de novo* by the modes of life and habits of the parents. The tight-lacing girl, the pale-faced, dissipated young man, the overworked store girl and factory hand, the tea-drinking, bibbling servant girl, the drunken father, the half-starved, badly clothed mother—these are some of the progenitors of predispositions to phthisis.

So much in brief about the theories on the etiology of consumption. Their consideration has been necessary in order to study intelligibly the means for its prevention.

Both in theory and practice we find that consumption, though contagious, is but mildly so. This is, in my estimation, not so much due to the inefficiency of the bacillus tuberculosis as to the withstanding power of the lungs of most people. The bacillus tuberculosis never finds a nidus in a healthy lung—by healthy, I mean not only freedom from pathological change, but a strictly physiological condition in which every function is properly performed. Like the brain, I believe the lungs may be functionally abnormal, and yet there be no pathological change discoverable. There is a very close relationship between this functional abnormality of the lungs and the digestive apparatus, and, in a sequential way, the whole nutritive system. It is upon the stomach, then, almost as much as upon the lungs, that much depends in the prevention of phthisis. The stomach is usually the first traitor in the human economy. Through its derangement many diseases gain entrance into the body. When the stomach fails to perform its work, the lungs will soon do the same. A vicious circle is established, and they mutually derange each other. Malnutrition follows, and the lungs become a proper soil for the bacillus tuberculosis. Every care should therefore be taken to keep the stomach healthy, and to do this a sufficient and proper supply of food is necessary. Too much food is as injurious as too little, and improper food worse than either. When the stomach is filled with indigestible food,

nutrition is not only withheld, but the stomach is unfitted for the proper performance of its work for some time thereafter.

It is generally in overfed and improperly fed people that we have what is called galloping consumption. Though apparently well nourished, their entire appearance is suggestive of too much foreign matter in the blood. It is from this class of people that the mortality list from consumption is kept so high in America, and it is chiefly the foreign element in our population which constitutes the class. The deaths from consumption in the United States are nearly twice as numerous among the foreign population and their children as among the children of the native born. In Rhode Island, according to the health reports of that State for 1880, one person in every 486 of native parentage dies of consumption, while one in every 286 of foreign parentage dies of the disease. According to the United States census reports for 1880, out of every 1,000,000 deaths, 242,842 males and 302,046 females die of consumption. This represents all nationalities and colors. Among the colored race every million deaths represent 248,179 males and 326,973 females as having died of consumption. Among people of Irish parentage 309,507 males and 375,636 females die of consumption to every million deaths; and among people of German parentage the victims of the disease number 249,498 males and 254,958 females to every million deaths. It will be seen that the largest percentage of deaths from the disease is among Irish immigrants and their children. This is usually ascribed to the change in climate. Ireland has a much damper climate than America, and therefore one better suited to the development of phthisis. The real cause for the larger mortality from consumption among foreigners, and especially among the Irish, is the change in diet. At home they have been accustomed to a plain, healthy diet, and when they come to this country they at once take to the varied heavy diet of Americans. Where they have eaten little meat at home, they eat it in profusion here. Where they have drank good milk and eaten vegetables at home, they drink teas and coffees and eat spiced foods here. They soon become thorough Americans in their stomachs, and even outdo the natives. The consequences are indigestion, malnutrition, tuberculosis. The German, though frequently pursuing a similar course, is often spared by his characteristic thrift and economy. He partakes more sparingly of the good things that come in his way, because of his anxiety to prepare for a rainy day. His fondness for beer, a beverage which he manages to secure wherever he goes, may likewise have some influence in shielding him against phthisis.

Sufficient fresh air, sufficient food, and sufficient rest and sleep are the watch-dogs of health, and where they are on the alert consumption can never enter. Bacilli tuberculosis may permeate the air, but they can do no harm. Could civilization reach such a stage of perfection as to make it possible for every human being to have all these, it would be in the power of everyone to avoid phthisis. Such a condition of things is, however, impracticable. It therefore becomes necessary not only to deprive the bacillus tuberculosis of its proper soil, but also to destroy the bacillus. This function belongs as well to the State as to the individual. Modern governments are beginning to appreciate the importance of preserving the health of their people, and are everywhere establishing health boards. As yet, however, they do not go far enough. Medical science has grown beyond the mere art of prescribing remedies; it has become a science of protecting man against disease and enabling him to attain his three score and ten. As government exists for the good of society, it ought to avail itself more extensively of so powerful a means to its end. The medical profession should be represented in our government. There should be a department of medicine, as there is a department of agriculture, of justice, of finance, etc. Surely human lives are as valuable as those of dumb brutes, and we want protection as much against the invisible foes which threaten our health as the visible ones that threaten our hearths. Unfortunately, public sentiment has not yet been educated to appreciate sufficiently the importance and benefit of sanitary measures, to make such a thing practicable. Did such a department exist, and did physicians in good standing and with scientific attainments occasionally enter the field of practical politics and allow themselves to be returned to city councils and State and national legislatures, sanitary science might shed its light upon legislation and many existing hygienic evils be remedied; many social and commercial customs and practices which are daily generating predispositions to consumption by the thousands might be corrected. Plainer living would come through proper instruction upon the subject and the instillation of the necessary sentiment in our schools. Not only ought children to be taught what to eat and drink, but also how to prepare their food and what quantity they can take consistent with health. Nor should instruction upon the proper adaptation of food to the time of life be overlooked. Many children are already dyspeptic when their school days begin, and in their cases the benefit of instruction could only accrue to the second generation. The depressing influences of private vices in children and young people could often be averted by early instruction of the proper kind. Such

instruction should, of course, come through the parents, but parents are themselves frequently devoid of the proper knowledge, hence the government might supply it to them by the free distribution of appropriate books. How many social and moral evils might be warded off were the proper knowledge brought to the thousands who would gladly avail themselves of it, were it within their reach!

Legislation might in a measure protect the weak against the oppression of the strong. One needs but visit the parts of large cities where the poor live, and note the crowded, filthy courts, alleys and tenement houses; or take a stroll through a badly ventilated factory or retail store in which the employés are compelled to work long hours in unhealthy positions and with the most wretched accommodations for the ordinary demands of nature; or examine some of the articles of food and drink that are openly sold in shops and on the streets, to understand what could be done in the way of sanitary science by wise legislation. The remedying of such wrongs and oppressions would very much lessen the mortality from consumption by withdrawing the soil necessary for its development. But all this is mere speculation of what we may hope will take place in the future. For the present we must content ourselves with discussing the weapons against the bacillus tuberculosis, which governments can use as they are now constituted.

The usual methods employed by our boards of health for combating disease are isolation and disinfection. Against consumption, isolation, if it were even practicable, would be both useless and cruel. It is a question in my mind whether the existence of the bacillus tuberculosis is solely for the destruction of human lungs! In view of the universality of phthisis it is not entirely a matter of fancy to suppose that the parasitic life of the bacillus in man is incidental and that it plays some useful rôle in the great chain of transition between organic and inorganic matter. It seems to be everywhere and to be wafted about by the air. Isolation could therefore not confine it, nor afford protection. The only benefit that could be derived from it, would be the withdrawal of the relatives of patients from an atmosphere saturated with the germs of the disease and their protection against contamination by the sputa. This would be a poor return for the dreadful inhumanity of separating the poor victims for years from their relatives. The same results can, moreover, be attained without isolation by disinfection. With well-equipped, thorough boards of health and properly instructed laity, satisfactory protection could be secured to those who by family ties or otherwise are compelled to live in the

same house with the afflicted. The house, and especially the room, in which the patient sleeps ought to be frequently disinfected with some suitable germicide, and particular care should be taken to disinfect the sputa. For the former purpose sulphur may be burnt or a spray of a strong solution of carbolic acid be used, and for the latter carbolic acid or corrosive sublimate solution be placed in the vessel that receives the sputa. To carry out these measures in practice, consumption would have to be placed upon the list of contagious diseases returnable to boards of health, and the present force of existing boards of health would have to be largely augmented. The beneficial results, however, would be ample compensation for the inconvenience and expense. That there would be a marked decrease in the mortality from phthisis I have not the slightest doubt. Better opportunities, too, would be afforded to study the disease, as more reliable reports would be made and fuller statistics be gathered.

Health boards should, moreover, help to disseminate proper knowledge upon the subject. If ignorance is the parent of vice, it is certainly the grandparent of disease. It is a matter of daily occurrence that people who have consumption and who are constantly expectorating infectious matter, fill positions in which they must necessarily contaminate the clothing, food, and drink of others. There are consumptive tailors and dressmakers, consumptive cooks and waiters, consumptive candy-makers, consumptive bakers, consumptives indeed in every calling of life. These people do not suspect for a moment that they are spreading the disease, and take no precaution against doing so. They are often poor people who have to work for their living and who as long as life remains in them have to earn its support. They do not even know that they have consumption, or at least they persuade themselves that they have not got it. They expectorate on the public highways, in church, at the theatre, at their places of business or work—in short, anywhere and everywhere that is convenient, and the sputa dry up and are carried into the lungs of others, or find their way into food and drink. First of all, people ought to be made thoroughly familiar with the infectiousness of the sputa, and ought to be taught how to disinfect them. This knowledge should come from the government through the boards of health. Physicians and public teachers can do much toward creating a proper sentiment, but they cannot convey the instructions in an authoritative and effective way. In the next place, no consumptive should be employed in any capacity in which he may contaminate the clothing, food, or drink of others. To obviate hardships in such cases, the

government should make provision out of the public treasury for the maintenance of such people as have to give up their means of livelihood for the public good. Whether this be done by pension or by offering an asylum must remain for political economists to decide. No hesitancy is felt in spending millions for the resentment of an insult to our national honor, or for some commercial advantage : Why should not something be expended in the protection of our people against the ravages of a disease which in the United States carries off nearly a hundred thousand people annually? Small remedies will avail nothing with so great an evil. Our government should act and act with gigantic strides.

As regards individual effort to prevent the spread of consumption, it must necessarily be confined almost entirely to those who by predisposition are likely to develop it. They should not only lead strictly hygienic lives in every particular, but should avoid everything that might even remotely lead to the disease, and avail themselves of every weapon against it. The nearer they follow Nature in her dictates as to how to live, the better. They must not revel in excess, turn night into day, overload their stomachs, overtax their brains, strain their physical endurance, and play havoc with their constitutions generally, as their more favored brothers and sisters do with impunity. They must lead correct, orderly lives, and be ever on the alert that their physical condition may not fall below par. As regards the weapons to be used against the disease, it may be well to pass some of them in review.

Climate has always been looked upon as an important factor in the production and prevention of consumption. Its importance, however, seems to me to have been much exaggerated. A non-porous soil is undoubtedly a contributing agent to the production of consumption, but not more so than of many other diseases. Consumption occurs in every country and every climate on earth, being modified in prevalency by the various modes of life. Vicissitudes of climate have really little to do with the disease. Those people who are most exposed to the weather seldom die of consumption, whilst those whose lives keep them indoors are its most frequent victims. Women, for example, die much more frequently of the disease than men. Nor does warmth or cold or altitude exert much influence. The colored people, who live largely in the warmer portions of the United States, have a higher mortality rate from consumption than the white people, the majority of whom live in the colder portions. In short, consumption prevails everywhere, no matter what the climate, where people are compelled,

by the demands of society, to crowd together and live much indoors. The practical lesson to be drawn from these facts is, that persons who are predisposed to consumption by reason of the lives of their forefathers, or the peculiar circumstances surrounding their childhood, ought to adopt a calling in life which keeps them out of doors and away from cities.

There is a popular belief that alcoholic drinks are powerful preventatives of consumption. This, like all popular beliefs and superstitions, has undoubtedly some truth for its foundation. But, as is usual with the bastard progeny of desire, this grain of truth has grown into such immense proportions as to have become the stumbling-block of many. No one who has carefully studied consumption can have a doubt that there exists some relation between its production and the non-assimilation of hydrocarbons. Very many cases of phthisis have traces of sugar in the urine, and probably all of them have indigestion of heat-producing food. These symptoms frequently exist for months before cough and discernible local congestion sets in. As beverages containing a small amount of alcohol present a most readily assimilating form of hydrocarbons, they no doubt, when properly used, buoy up the weakened system in its struggle against the bacillus tuberculosis, and often enable it to gain the mastery. But what is good in moderation is always hurtful in excess, and in this instance precipitates the very evil it might otherwise prevent. Excess of alcohol and the adulterating ingredients in alcoholic beverages derange the stomach, and thus by interfering with nutrition predispose to consumption. In this way a long life of hard drinking sometimes ends in phthisis.

A very noticeable fact in the mortality statistics of consumption is the predominance of females among its victims. This is in a measure due to the indoor life of women, but not altogether. The many accidents and diseases incidental to the physiological life of women greatly predispose to consumption. These are, however, nearly all of an avoidable character and have their fountain-head in carelessness during the menstrual period and during the puerperium. Women should be taught from childhood that these are sacred epochs, and that during them nature demands rest and especial care. The Semitic six weeks' rest after childbirth is true to nature and should be observed by every woman who becomes a mother. Lactation frequently predisposes to consumption, but usually in those cases which have made bad recoverie after confinement and are in want of the proper food and care which are necessary for a nursing woman.

Pulmonary gymnastics are powerful weapons against phthisis and

should be especially used by those who are unable to extricate themselves from the unhygienic surroundings and circumstances in which their necessities have placed them. Though the use of a gymnasium is very desirable for practising these, it is not necessary. The principle involved is ventilating the unused air-cells, and any combination of forced respiratory movements that will thoroughly inflate the lungs will accomplish this. Gradually filling the lungs with air whilst retracting the shoulders and extending the chest or taking a deep inspiration whilst extending the arms above the head and expiring whilst placing them parallel with the body, are two simple exercises which do all that is necessary and can be taken without interfering with the most busy life or causing fatigue. A habit should be made of thus ventilating the unused portions of the lungs, and it should be done at times when the purest air can be secured. The most practical germicide that we as yet know of for the bacillus tuberculosis is fresh air, or, more correctly speaking, it furnishes the least favorable habitat for its development. A better oxygenation of the blood is, moreover, secured by such exercises, the circulation is stimulated, and, indirectly, the digestion and assimilation improved.

As regards the hygiene of phthisis, when the disease is once established, it is based upon the same principles as that for its prevention. Sufficient nourishing food, and sufficient fresh air, these are the *sine qua non*. The prime object in every case of phthisis should be to secure a good digestion and assimilation. Everything that is done should be done with this object in view. Good, nourishing, and easily digested food should be taken in abundance, and every care taken that the stomach be not deranged by indiscretions in eating and drinking, or by overloading. As soon as the body begins to nourish, the lung trouble will improve. As an aid to digestion outdoor exercise is very important. Without it the system cannot be made to use up a large quantity of food. Inasmuch as warm climates offer greater inducements to keep invalids out-of-doors, and make bedroom ventilation a little more agreeable, they are highly commendable to consumptives; but they are by no means essential to their well-being. A cold climate will do just as well if the patient has the courage to endure the discomforts entailed by it. It is much better that a consumptive have home comforts in the worst climate in the world, than that he be compelled to undergo the tortures of boarding-house or fourth-class hotel life at a health resort. In all warm climates the houses are built for warm weather use, and no provision is made for the stray blizzard that occasionally comes along. Though the temperature

may be very equable from day to day, there is always a marked variation between day and night. In consequence of the rapid radiation of heat the houses become cool and damp during the night, against which there is likewise no provision, except in first-class modern hotels. In many places suitable food is difficult to obtain even at the most extravagant prices. All in all, the average person who has consumption had better remain at home, unless his home is in a large city, and then he should go into the neighboring country, where he can secure home comforts and plenty of suitable food. Let him dress warm, take outdoor exercise whenever he can, eat plenty of light, nourishing food, take ample rest and sleep, and he will get along much better in his native heath than he would with small means in the most model consumption climate.

It is important that the entire body be warmly clad in cold weather. Either silk or woollen clothing ought to be worn next to the skin. The circulation should be kept equable throughout the whole body, hence the extremities ought never to be let get cold. When the feet get cold, the lungs become congested. Rubbing the body with a coarse towel has a good effect in equalizing the circulation. The ancients recognized this fact, and laid stress on it. "Balneum alienum est," says Celsus. Sponge baths, if carefully taken, will do good. They should, however, be taken in a warm room, and followed by a rest.

Sea-voyages used to be highly recommended in the early days of medicine, and theoretically, at least, ought to be beneficial in the first stages of the disease. The ocean offers a pure atmosphere, and frequently the salt air stimulates appetite and improves digestion. In the advanced stages of the disease they are, however, impracticable, and should never be attempted.

Gypsy life, or travelling through the country by easy stages and camping-out, is most beneficial to consumptives, even in advanced stages. The ancients had their patients carried from place to place in chairs. In the territories most remarkable cures are brought about by this mode of living. Persons unable to walk are hauled in wagons on improvised beds, and it is astonishing what a revivifying effect constant exposure in the open air has.

But, as said in the beginning of this paper, when consumption is once established it is rarely cured, and though much can be done to ameliorate the condition of the consumptive, the most important duty of the medical profession, at the present day, is to lend its aid in

bringing about such a change in public and private hygiene as to give the disease less chance for development.

Civilization is the keystone on which the barrier to the progress of phthisis must be built; but it must be a high order of civilization, a civilization in which charity for our fellow-man is the guiding star—which teaches not only how to live, but how to let others live—which banishes want from the earth, gives every body sufficient breathing space, and removes the foot of monopoly from the neck of the working-man and the goad from his side; which will remove morbid ideas about dress, society, customs, and education, and banish all vice and excess from the world. So long as the "summa bona" of man's existence is to live at ease, gratify every desire, and tower head and shoulders above everybody else in importance; so long as one-half of the human race must be without the necessaries of life in order that the other half may revel in excess; so long as crowded tenement-houses must tower in the sky in order to let palaces spread out on the surface; so long as soulless corporations can drive man to do more than a whole day's work for half a day's pay, and under circumstances and surroundings which are in conflict with every rule of health; so long as the rich lead and the poor follow in health-ruining fashions and customs; so long as children have their minds made morbid and their bodies ill-developed by school-cramming processes; so long, indeed, will consumption continue to be epidemic, no matter what progress scientific medicine may make.