

coughs, and sore throats; the stomach aches, diarrheas and constipations; the headaches and rheumatic pains; women's ailments and skin troubles, all of these disable millions of people. It has been estimated that in the United States on an average day four million people or over three per cent of the population are disabled by illness, and many more without interrupting their work are reduced in their efficiency and feel uncomfortable. The average person has from one to two disabling illnesses a year and loses about ten days from his work.

Illness, even in a country with good health conditions, not only causes endless suffering but is also a tremendous economic burden to the population. It has been estimated that the people of the United States lose not less than ten billion dollars every year on account of illness, including the cost of medical care, loss of earnings, and capital loss due to premature deaths.

## II. HEALTH

**A**FTER having discussed disease and its significance for the welfare of the individual and society, we now approach the problems of health. We feel tempted simply to reverse the picture drawn in the preceding lecture and to declare that health is the absence of disease and that its significance for human welfare is the contrary of that of disease. Such a statement, however, would be utterly wrong because health is immeasurably more than just the absence of disease. What then is it?

Most people are not aware of health and take it for granted as long as they have it, becoming conscious of it only when illness sets in, just as they are not aware of having a stomach until they feel a pain in it. Pain is an alarm signal which warns us that some part of our body is threatened. Pain, a symptom of so many diseases, compels us to realize that we were enjoying health and that we are losing something that now seems highly desirable. Absence of pain undoubtedly is an important factor of health but it is only one factor. What then is health?

Many physicians tell us that it is impossible to give an accurate definition of health. And yet they all have, more or less consciously, a practical concept of it. Otherwise they would be unable to treat patients. They often have to determine whether a man is sick or not and the immediate goal of their treatment is the restoration of health. Therefore they must have



*Fig. 8.*

*The Apoxyomenos of Lysippos.*

Representing the Greek ideal of a harmonious body.

an idea of what it is, even if it is not formulated. It is one weakness of our present system of medical education that health plays a very small part in it. The student's interest is directed primarily toward disease.<sup>1</sup>

In order to obtain a clear view of what health is and what it means we must again attempt a historical analysis. Our present concept is the result of a long historical development. The attitude toward health has changed a great deal in the course of time. While it always seemed desirable to the individual, the degree of desirability and the motivations changed considerably. The valuation of health was determined by the attitude toward the human body and by a variety of religious and philosophic factors.

Again we must go back to the foundations of our Western civilization, to ancient Greece. What seemed most desirable to the Greek? In the early days the Homeric hero prayed to the gods for glory, for a long life, or possibly for a painless death.<sup>2</sup> But later, in the sixth and still more in the fifth century B.C., the philosophers considered health one of the highest goods. The testimonies are endless. "For mortal man the highest good is to be healthy," was declared in an old scolion.<sup>3</sup> In a dialogue ascribed to Plato<sup>4</sup> it is said that it is better to have little money and to be healthy

1. See E. Stanley Ryerson, "Human Health and Its Assessibility," *Journal of the Association of American Medical Colleges*, XV (March, 1940), 91-97.

2. See Ludwig Edelstein's illuminating study "Antike Diätetik," *Die Antike* (1931), VII, 255-270, which I have used extensively in discussing the ancient concept of health and ancient dietetics.

3. Attic Scolion 7, *Lyra Graeca*, III, 564. Loeb Classical Series.

4. Eryxias 393.

than to be sick with all the wealth of the great king; and the poet Ariphron praised health in a paean:

Health, eldest of Gods, with thee may I dwell for the rest of my life and find thee a gracious house-mate. If there be any joy in wealth, or in children, or in that kingly rule that maketh men like to Gods, or in the desires we hunt with the secret nets of Aphrodite, or if there be any other delight or diversion sent of Heaven unto man, 'tis with thy aid, blessed Health, that they all do thrive and shine in the converse of the Graces; and without thee no man alive is happy.<sup>5</sup>

This high valuation of health soon became general and disease, therefore, was considered a curse, as we have mentioned before. The Stoics endeavored to overcome this view by declaring health and disease to be *adiaphora*, indifferent matters. Virtue alone is a good, wickedness alone an evil. But even the Stoics had to make concessions to the general views, and in its later development the school felt obliged to admit that among the indifferent matters some like health were desirable, while others like disease were to be rejected. Chrysippus declared it to be madness not to desire health, wealth, and absence of pain, and an incurable illness appeared sufficient reason for suicide. Zeno hanged himself on account of a broken finger.<sup>6</sup>

It is obvious that the philosophers' high valuation of health was shared by the physicians. The Hippocratic writer of the book *On Diet* stated: "Without health nothing is of any use, not money nor anything

5. *Lyra Graeca*, III, 400-402.

6. The testimonies to these views in E. Zeller, *Die Philosophie der Griechen in ihrer geschichtlichen Entwicklung* (4th ed. 1909), Vol. III, Part I, 219.

else."<sup>7</sup> And the Alexandrian physician Herophilos expressed this view still more strongly in the sentence: "When health is absent, wisdom cannot reveal itself, art cannot become manifest, strength cannot fight, wealth becomes useless and intelligence cannot be applied."<sup>8</sup>

The physicians had an explanation for health. Health, they believed, was a condition of perfect equilibrium. When the forces (*dynamcis*) or humors or whatever constituted the human body were perfectly balanced, man was healthy. Disturbed balance resulted in disease. This is still the best general explanation we have. Whether medicine thinks in terms of humors, vital forces, or physics and chemistry makes little difference. Health appears as a perfectly balanced condition.

The followers of Pythagoras, whose school had much more the character of a religious order than of a philosopher's school, endeavored to preserve the balance of health by leading a pure life and by subjecting themselves to a specific diet and practices. If illness occurred they sought medicine and music to restore the balance. Medicine and music were highly cultivated in their schools, whose influence upon further medical developments soon became apparent.

Attic education, the *Enkyklios Paideia*, including grammar, music, and gymnastics, tended to develop a harmonious, well-balanced individual, and palaestra

7. *Peri diaites*, Littré, VI, 604.

8. In Sextus Empiricus, *Adversus mathematicos*, II, 50; see Edelstein, *loc. cit.*, p. 268.



*Fig. 9.*

*Discobolos.*

Greek athletics.

and gymnasium became the experimental fields of physicians.

From the fifth century B.C. on, and throughout its course, Greek medicine was never exclusively curative medicine. The preservation of health seemed from the very beginning the more important task and in the fifth century physicians devoted a great deal of thought to problems of hygiene.

To the Hippocratic physician diet was the most important therapy, and dietetics therefore were highly developed. Drugs were given chiefly to intensify diets, and the knife was resorted to only when all other means failed. If appropriate diet was the chief method to cure disease, it seemed obvious that faulty diet was the principal cause of disease. The word diet, however, had a much broader meaning in antiquity than today. It implied a man's whole mode of living.

And so the Hippocratic physicians and their followers studied how a man should live in order to maintain his health. And they came to the conclusion that it was impossible for a man to remain in perfect health unless he organized his entire life for such a purpose. This attitude is illustrated by an extraordinarily interesting document, a fragment from a book on hygiene written by one of the most talented fourth-century physicians, Diocles of Karystos.<sup>9</sup> It describes a day spent in what the physicians considered a hygienic way. The text is too long and too detailed to be

9. Oribasius, ed. Bussemaker and Darenberg, III, 168 ff.

rendered literally and the following is a mere abstract and paraphrase:

The cultivation of health begins with the moment a man wakes up. This should as a rule be when the food he ate the previous day has already moved from the stomach to the bowels. A young or middle-aged individual should soon before sunrise take a walk of about 10 stadia, in the summer however of only 5, and older men will take a shorter walk in winter as well as in summer. After awakening one should not arise at once but should wait until the heaviness and torpor of sleep have gone. After arising one should rub neck and head thoroughly in order to overcome the stiffness caused by the pillow. Then the time has come to rub the whole body with some oil. Those who are not accustomed to empty their bowels immediately after arising should perform this rubbing before the evacuation, while others will do it after the evacuation but before undertaking anything else. . . . Thereafter one shall every day wash face and eyes with the hands using pure water. One shall rub the gums in order to strengthen the teeth or shall simply rub the teeth inside and outside with the fingers using some fine peppermint powder and cleaning the teeth of remnants of food. One shall anoint nose and ears inside, preferably with well-perfumed oil. . . . The head is a part that requires a great deal of care such as rubbing, unction, washing, combing, and close shaving. One shall rub and anoint the head every day but wash it and comb it only at intervals. . . . After such a morning toilet people who are obliged or choose to work will do so, but people of leisure will first take a walk. Long walks before meals evacuate the body, prepare it for receiving food, and give it more power for digesting it. Moderate and slow walks after meals mix foods, drinks and gases contained in the body. . . . After the walk it is good to sit down and to attend to private affairs until the time arrives when one has to think of caring for

the body. Young people and those who are accustomed to exercise or who need it should go to the gymnasium. For older and weaker people it is better to go to the bath or to some other warm place to be anointed. For people of that age if they have a gymnasium exclusively for their own use a moderate rubbing and light exercise are sufficient. . . . After such physical exercise it is time for breakfast which in summer should consist of white barley groats with aromatic white wine well mixed with some honey and water—or some other gruel that does not produce flatulence, is nourishing and easy to digest. Those who do not care for such foods shall take cold bread for breakfast. In addition to that, one shall eat some boiled vegetable such as gourds or cucumber, prepared simply. One shall drink white wine and water until the thirst is quenched but before eating one should drink water in large quantity if one is thirsty, otherwise less. Soon after breakfast one should go to sleep in a shady or cool place well protected from wind. After the siesta one can attend to private affairs, take another walk and go to the gymnasium. After having exercised and being covered with dust it is good for strong young people to have a cold bath. Older and weaker people, on the other hand, shall be anointed and rubbed gently and shall then have a hot bath. A general rule is that one should never or only rarely wash the head with hot water. . . . The chief meal is to be taken when the body is empty and does not contain any badly digested residue of food. Dinner should be taken in summer soon before sunset and consist of bread, vegetables and barley cake. Dinner begins with raw vegetables, with the exception of cucumber and horseradish, for these are vegetables that should be eaten toward the end of the meal. Boiled vegetables are eaten in the beginning of the meal. Other dishes are cooked fish and meats, kid or lamb meat shall be preferably from very young animals, pork from middle-aged pig, and as far as birds are concerned one shall eat chicken, partridge, or pigeon. All must be cooked

simply. . . . Before dinner one shall drink water and continue to drink it some time afterwards. Lean people shall drink dark and thick wine and after the meal white wine. Fat people shall drink white wine all the time, and they all shall drink their wine with water. Fruits from trees are of little use, but if one takes them in moderate quantities before the meals they do relatively little harm. . . . After dinner lean and flatulent people who do not digest well should go to sleep at once while others will take a short and slow walk before going to sleep. It is good for everybody to lie on the left side first as long as the food is still in the region of the stomach, but when the abdomen has become soft one should turn to the right. It is not good for anybody to sleep on the back.

This passage from Diocles' book gives a splendid picture of what the physicians of the period considered the ideal mode of living—one devoted to the preservation of health in which nutrition and evacuation, exercise and rest were perfectly balanced. It was an individual regimen taking sex, age, constitution, and the seasons, into careful consideration. A tremendous amount of research was done by Greek physicians on the influence of physical and nutritional factors on the human body, and their writings are full of splendid observations.

But it was perfectly obvious that very few people could afford to lead such a life. It was a regime for the wealthy few, for a small upper class leading a life of leisure, a class produced and supported by an economy in which all manual labor was performed by slaves. It was an aristocratic hygiene and one that was concerned with the body alone.

But what about those who had to work or chose to work, who were busy in politics, in science and learning, and in trade? The physicians had rules of conduct for them also. The Hippocratic writer of Book III, *On Diet*, mentioned above, devoted a long chapter to "the mass of people who drink and eat what they happen to get, who are obliged to work, and to travel by land and sea in order to make a living, who are exposed to unbecoming heat and unwholesome cold and who otherwise lead an irregular life."<sup>10</sup> All they can do is to remember the season in which they happen to be and try to adapt their meals, exercises, and sex life to the season as well as they can. It is little enough. They are people who "by necessity must lead a haphazard life and who, neglecting all, cannot take care of their health."

Nothing is said about the slaves, the farmers, and small artisans. There was no hygiene for them. They had no choice of food, no gymnastics. Regulation of work and rest was beyond their control. A really healthy life was accessible only to the rich and leisured class.

These views of the Hippocratic physicians and their followers did not remain unopposed and Plato was one of the first to attack them. The perpetual care for one's health appeared to him as just another disease. In a well-regulated state everyone has a function to fulfil. Nobody has time to be sick all his life under the pretence of attending to his health. This is

10. Littré, VI, 594-604.

perfectly obvious in the case of artisans but not so apparent in the case of the rich.<sup>11</sup>

The great social changes that occurred in the Hellenistic age reduced considerably the number of people who could lead a life of idleness. In principle the physicians still clung to their hygienic views, but they had to make concessions to the realities of life. And this was still more the case in the Roman period.

The Roman of wealth was a man of action, farmer, administrator, statesman, and soldier. Greek hygiene seemed useless and effeminate not only to men of Cato's type. The opposition to traditional hygiene became more and more articulate. Plutarch in the first century A.D. voiced it unmistakably in his *Advice About Keeping Well*, an essay which is full of common sense:

For health is not to be purchased by idleness and inactivity, which are the greatest evils attendant on sickness, and the man who thinks to conserve his health by uselessness and ease does not differ from him who guards his eyes by not seeing, and his voice by not speaking. For a man in good health could not devote himself to any better object than to numerous humane activities. Least of all is it to be assumed that laziness is healthful, if it destroys what health aims at; and it is not true either that inactive people are more healthy. For Xenocrates did not keep in better health than Phocion, nor Theophrastus than Demetrius, and the running away from every activity that smacked of ambition did not help Epicurus and his followers at all to attain their much-talked-of condition of perfect bodily health. But we ought, by attention to other details, to preserve the natural

11. *Republic* 3, 406c.

constitution of our bodies, recognizing that every life has room for both disease and health.<sup>12</sup>

The physicians began to express similar views. Celsus even went so far as to declare that a healthy man needed no special diet and no medical advice at all. Only weak individuals had to devote some attention to their bodies.

And gradually the concept of health broadened. While before it had been chiefly physical, it now was extended to include mental health. It was the Romans who expressed the wish *ut sit mens sana in corpore sano* and thus coined a slogan for centuries to come.

Oribasius in his great compilation has preserved a fragment on hygiene from the works of the philosopher Athenaeus which is a perfect gem. It is a document not only of physical but also of mental hygiene and I cannot resist the temptation to quote a few passages from it:

Little children who have been weaned must be permitted to live comfortably and playfully. They must be left in peace and when you exercise them do it with little jokes. They must be given very light food in moderate quantity, for people who stuff them with rich food after weaning pervert their nutrition and hinder their growth since their nature is weak still. . . . From the age of six or seven years boys and girls must be entrusted to gentle and humane teachers. Those who attract the children and in their teaching use persuasion and encouragement and praise them often, have better results and stimulate their zeal much more. The children love such teaching and feel at ease. Now relaxation

12. *De tuenda sanitate praecepta* 135, II, 280. Loeb Classical Series.

and a joyful mind contribute a great deal to good nutrition. Those masters, however, who nag and reprimand the children bitterly make their character servile and fearful, and make them loathe the subject of their teaching. They force them to learn by beating them and expect them to remember things while they are beaten when they have lost their presence of mind. It is not necessary either to bother the children the whole day long with instruction. On the contrary the greater part of the day should be devoted to play. Indeed we find even among robust mature people that the body weakens if they study without interruption. Children of twelve years already must follow courses in grammar and geometry and must exercise their bodies. But it is necessary that they have reasonable and experienced tutors so that they come to know the right measure and time for food, exercise, bath, sleep, and other details of the regimen. Most people pay a high price for their grooms and select careful and experienced people, while to teach their children they take individuals without experience who already have become useless . . .<sup>13</sup>

Mystics, such as the followers of the Neo-Platonic school, began to disregard care of the body and to concentrate their attention on the soul, but the physicians moved in another direction. Rome had conquered Greece materially but Greek culture had subjugated Rome. Gone were the old Roman virtues of republican days. Imperial Rome looked back to Greece. To the men living in the second century A.D. the fifth century B.C. appeared as the Golden Age. Romans endeavored to live like Greek gentlemen, watching their diet, exercising in the palaestra, spending their days

13. Oribasius, ed. Bussemaker and Daremberg, III, 161 ff.

in luxurious *thermae*. And the physicians encouraged them. Galen, although an eclectic, considers himself a disciple of the divine Hippocrates. In his voluminous book *On Hygiene* old Hippocratic views are clearly reflected:

Those who on account of ambition or other passions have chosen a life of action that leaves them little time for the care of the body, voluntarily serve evil lords. It is useless to try to teach them what the best care of the body is. He, however, who is totally free, by destiny and determination, he alone can be shown how he may live in the best possible health and be sick only rarely, and how he may get old most gracefully.<sup>14</sup>

This sounds like a familiar tune. And in the same chapter Galen distinguishes four types of men in respect to health. By far the best is the one who has a perfect constitution and leads a totally independent life. Next follows one whose organism is defective but whose life is free. The third type is represented by a man who has a perfect constitution but lives in servitude. Last, and worst of all, is a sickly body combined with an unfree life. Freedom from passion, and economic independence were to Galen the chief prerequisites of health, more important than good physical constitution because it seemed impossible to lead a life of health without complete independence.

The road was closed. Health and hygiene again were a privilege of the leisure class. The working class did not count. Labor was cheap as long as imperial

14. Ed. Kühn, VI, 82-83.

wars provided a constant supply of man power. And when the empire was pacified, conditions had changed and the institution of slavery was challenged.

The Greek concept of health was onesided, and hygiene was limited in its application. It was the concept of a sensual people who had discovered the beauty of the human body and worshiped it.

Christianity reacted against these views. The people to whom the new religion addressed itself had no hygiene. They did not exercise or anoint themselves. The *thermae* were not for them and they ate what they could get. They were working people. Christianity did not recognize a leisure class that lived on the labor of others. In the new religion work became an ethical postulate. He who would not work, neither should he eat. And the constant care of the body seemed utterly ridiculous. What is a beautiful woman if not a mere bag filled with excrements? Pagan hygiene cannot preserve health. It is the soul that counts. Everybody is sick without Christ. Not diets nor exercises are needed, but baptism is the bath that gives health. The water of baptism is medicinal water,<sup>15</sup> a healing remedy.<sup>16</sup> Therefore all heathen are sick, whatever their hygiene may be, and the Church is the hospital to treat them.<sup>17</sup>

This was a concept of health totally different from Greek views. It was a purely spiritual concept, which emphasized health of the soul, not of the body. A

15. *Aqua medicinalis*, Tertullian, de baptismo 1.

16. *Paionion pharmakon*, Clemens, Paedog. I, 6, 29.

17. See Adolf Harnack, *Medicinisches aus der ältesten Kirchengeschichte* (Leipzig, 1892).

beautiful soul could reside in a sick body, and a man could be a wreck physically and yet enjoy perfect health. Such health was not the privilege of a few. It was available to all, could be attained and preserved by whoever followed the precepts of Christ.

Ancient hygiene was violently opposed to this view, at least in its exaggerated form. One could not serve the body and God at the same time. But, just as the Church gradually reconciled itself to Hellenistic medicine, in the same way elements of ancient hygiene were admitted in the course of time. Was not the body the vessel of the soul created by God to serve him? Whoever wilfully destroyed it sinned. It became the Christian duty to consult the physician in case of need and to follow his prescriptions. Physician and medicine were considered secondary aids in the preservation of life. The primary cause was God. According to Gratian the Christian was not obliged to live *medicinaliter*, following the precepts of hygiene, *quia sanis omnia sana*, because to the healthy everything is wholesome, but he sins if knowingly and without sufficient reason he takes or does something which might make him sick or even destroy him.<sup>18</sup>

And since the body was to be preserved, as vessel of the soul, there was room for hygiene in the Middle Ages, too. It was derived from two main sources. Old pagan customs survived. Tacitus reports that the German people were fond of bathing and so we find

18. See Paul Diepgen, *Die Theologie und der ärztliche Stand* (Berlin-Grunewald, 1922), where the various passages are indicated.

that the bath played an important part throughout the Middle Ages. In the spring, to celebrate the resurrection of nature, men and women bathed in wooden tubs, sang, and drank wine. To those of us who live in well-heated, evenly ventilated, and well-lighted houses it is difficult to visualize the hardships that winter brought upon our ancestors. Even the homes of the rich were cold and dark, and to the poor winter meant endless suffering. The advent of spring, therefore, was a tremendous relief, to be celebrated in many ways. The May bath was one of these old rituals that had survived from pagan days. A new man came out of the water—cleansed of the impurities of winter.

Another old custom: the guest in the manor was welcomed with a hot bath to which sometimes rose petals had been added. Fair maidens waited on him. The monastery in the early Middle Ages already had its bathroom for friars and pilgrims. Ekkehard IV, the chronicler of Saint Gall, tells the whimsical story of a lame Italian traveler who sought the hospitality of the cloister. Following the custom, he was led to a bathtub into which the friar poured hot water. This was apparently too hot because soon the pilgrim began to yell in his mother tongue, "Cald, cald est!" The Germanic friar understood that the water was too cold and poured still hotter water until the half-boiled guest forgot his lameness and jumped out of the tub.<sup>19</sup>

The public bathhouse was a permanent institution

19. See Conrad Brunner, *Über Medizin und Krankenpflege im Mittelalter in schweizerischen Landen* (Zürich, 1922), p. 49.

in the medieval city. It was licensed by the authorities and provided both steam and water baths. On Saturdays, or several times in the week, it was announced all over town that the bath was hot. People from all walks of life came, sweated, whipped themselves with switches, made hot and cold ablutions, had their hair cut and washed, had cupping glasses applied if some old rheumatic pain bothered them. If a lady had a pimple on her nose, the bathhouse was the place where



*Fig. 10.*

*Medieval Bathhouse.*

Woodcut by Hans Sebald Beham.

she could get advice. The owner of the house was a barber; he practiced minor surgery and was an expert in matters of cosmetics. He often had more experience in the treatment of skin diseases than the learned physician. He was the hygienic adviser of the people and the "beautician" of the medieval city. The bathhouse was the hygienic center of the town until syphilis began to plague Europe at the end of the fifteenth century, whereupon it became a center of infection and was gradually abolished.

The sweat and steam bath can be traced far back in history. It was known and was used for hygienic and curative purposes by primitive tribes all over the globe, particularly in the north. It was developed by the Romans, spread to the East, and came back to the West as the Turkish bath. It became an institution of the Russian village.

The medieval literature *de conservanda valetudine*, on the preservation of health, was derived from Greek and Roman sources. It consisted of reminiscences of the highly developed dietetics of classical days. The original works of the Hippocratic writers and of Galen were too long and too complicated for the period. Short treatises were needed setting forth brief hygienic rules that could be applied without undue trouble. In the fourth century A.D. such treatises were compiled in Greek and they were translated into Latin in the sixth century. They were anonymous or pseudonymous, carrying the name of some ancient sage or great physician. Two such short dietetic treatises were composed as epistles, and the fiction was that

they had been written by Hippocrates, one to Maecenas and the other to a king Antiochus. Their great popularity is evidenced by the large number of manuscripts preserved.<sup>20</sup> In a few pages they give advice on how to live in the various seasons. Similar equally brief texts provided short hygienic rules for the months of the year. In the sixth century a physician at the court of Theodoric, Anthimus, wrote a treatise on the hygienic significance of various foodstuffs. It was dedicated to a Frankish king, Theuderich. Abstracts from various ancient writers were published as separate treatises. All monastic rules had articles regulating the periods of work and rest, prescribing the number of meals and of dishes, frequently with special regulations concerning friars of weak constitution.

Literature on hygiene was scanty in the early Middle Ages but was common enough to preserve the memory of ancient dietetics and to supply rules of conduct to those who sought them.

Conditions changed in the twelfth century when ancient literature became available through the medium of translations from the Arabic. A Spanish Jew converted to Christianity, John of Toledo, wrote in Arabic a treatise on hygiene that was to become extremely popular. In order to make it more authoritative he published it as a letter of Aristotle to Alexander the Great. The text was translated into Latin and

20. They were transmitted and are published with the book *De Medicamentis* of Marcellus, *Corp. Med. Lat.* (Leipzig and Berlin, 1916), vol. V.

thence into the vernaculars. The Alexander letter established a definite style. From then on the medieval treatise on hygiene was as a rule a *regimen sanitatis*, addressed to a person of high rank, advising him how to live in order to preserve his health. It often pictured a day spent in the manner most becoming to health, very much as Diocles had done. And what was good for a king was good for a person of lower rank.

A large number of similar treatises were written from the twelfth to the fifteenth centuries, in Latin and vernacular languages. Whoever had a body-physician urged him to write such a regimen, and special treatises were composed, giving hygienic advice to people who had to travel over land or seas.

Undoubtedly the most popular book on hygiene not only in the Middle Ages but of all times was the *Regimen Sanitatis Salernitanum*. Few medical books have had such wide distribution and have lived for such a long time. Composed in the thirteenth century, it gained its wide reputation because it was—rightly or not—connected with the famous school of Salerno, because it was written in verse so that it could be memorized easily and, last but not least, because of its sound common sense and keen sense of humor. The introductory verses illustrate this:

The Salerne Schoole doth by these lines impart  
All health to Englands King, and doth advise  
From care his head to keepe, from wrath his heart,  
Drinke not much wine, sup light, and soone arise,  
When meate is gone, long sitting breedeth smart:  
And after-noone still waking keepe your eyes.

When mov'd you find your selfe to Natures Needs,  
Forbearc them not, for that much danger breeds,  
Use three Physicians still; first Doctor Quiet,  
Next Doctor Merry-man, and Doctor Dyet.<sup>21</sup>

It was an ideal manual for the people. There was hardly a situation that did not call for the quotation of some verses from this *Regimen*. How very much alive the text was is best illustrated by the fact that additions were constantly being made to it. Early manuscripts have a few hundred verses while some later editions number several thousand. The temptation to add to such a text was irresistible. Over one hundred manuscripts are preserved and there must be around five hundred printed editions.<sup>22</sup> The book was commented upon endless times, first in the thirteenth century by Arnald of Villanova, one of the leading physicians and medical writers of the period. In the following centuries whoever had a message to convey in matters of personal hygiene put it down in a commentary to the *Regimen Sanitatis Salernitanum*. As late as the nineteenth century, in 1880, a new edition was published in Paris, with a new commentary the purpose of which was not to explain the text historically but to add the experiences of modern medicine. The history of personal hygiene from the thirteenth to the nineteenth centuries could be writ-

21. *The School of Salerno, Regimen Sanitatis Salernitanum*, The English Version by Sir John Harington [1607] (New York, 1920), p. 75.

22. They are listed but by no means completely in L. Choulant, *Handbuch der Bücherkunde für die ältere Medicin* (Leipzig, 1841), p. 264 ff.

ten by merely discussing the various editions of this unusual text.

I have devoted so much space to medieval hygiene in order to show that in spite of the Christian emphasis on spiritual health, physical health was by no means neglected. It seemed desirable at all times. It is true that the health of the soul stood in the foreground and if it conflicted with physical health the body had to be sacrificed. Salvation was the purpose of life. But the realities of life were strong enough to force a compromise.

Looking back we can say that the Greek concept of health was primarily physical and that Greek hygiene was aristocratic. The Christian concept of health, on the other hand, was primarily spiritual and Christian hygiene was catholic, addressing itself to all. The synthesis of both, the development of a concept which would embrace physical and mental health without compromise, the revival, general adoption, and democratization of the *mens sana in corpore sano* of Juvenal—this ideal became the program of the ensuing centuries.

The process was slow, however, and the fulfilment of this program is far from accomplished. Little progress was achieved in the period of the Renaissance. Where the state power was strong, as in Elizabethan England, urban sanitation was improved following a trend that began in the fourteenth century after the ravages of the Black Death. The Reformation had a sobering influence upon the people. Luther

had sound views about health and so, among the philosophers, had Montaigne.

Humanism, as a whole, was a spiritual and aristocratic movement. Its educational ideal was the *homo Ciceronianus* of Quintilian and centuries of monastic scholarship had also contributed to favor intellectual education at the expense of physical development.

Health conditions remained appallingly bad for a very long time. The brilliant court of Louis XIV was filthy and perfumes were needed to cover the stench emanating from unwashed bodies. Simple craftsmen of a medieval city had been far cleaner than were the noblemen in the seventeenth and even eighteenth centuries.

More than once conflicts occurred between the desire to keep the people in good health and fiscal needs. In the first half of the eighteenth century the consumption of gin increased tremendously in England.<sup>23</sup> It was encouraged by Parliament because it created a market for the farmers and brought revenues to the state. The result was that there was one tavern in London for every six houses and that alcoholism increased considerably. The same happened with tobacco. It was Richelieu's idea to make the use of tobacco a source of revenue for the state.<sup>24</sup> Other countries learned the lesson very quickly and today the tobacco industry has developed to such an extent that

23. Sir George Newman, *The Rise of Preventive Medicine* (London, 1932), p. 158.

24. Corti, *A History of Smoking* (London, 1931), p. 149 ff.

few countries could afford to suppress it in spite of the obvious harm it does to the people's health.

The eighteenth century marks a turning point in the history of public health. The importance of health, both physical and mental, for the individual and society was fully recognized and great efforts were made to promote it by applying the scientific and social means available at the time. The very powerful health movement of the eighteenth century shows two totally different trends, both determined by definite political philosophies.

One of them took its origin in the philosophy of enlightened despotism. In the absolutist, autocratic state the monarch was to the subjects what the father was to his children. He was responsible for them and, knowing what was good for them, ordered what they should do so as to keep well. The absolutist state recognized the protection of the people's health as one of its obligations, which was to be met by administrative measures. Laws and police regulations prescribed what people should do and avoid to maintain or restore their health. The administration of public health became a police function.

The internal security of the State is the aim of the general science of police. A very important part thereof is the science that teaches us to handle methodically the health of human beings living in society and of those animals they need to assist them in their labors and for their sustenance. Consequently we must promote the welfare of the population by means which will enable persons cheerfully and for lengthy periods to enjoy the advantages which social life

can offer them. . . . Medical police, therefore, like the science of police in general, is a defensive art, is a doctrine whereby human beings and their animal assistants can be protected against the evil consequences of crowding too thickly upon the ground; and especially it is an art for the promotion of their bodily welfare in such a way that without suffering unduly from physical evils, they may defer to the latest possible term the fate to which, in the end, they must all succumb. How strange it is that this science, which day by day grows more essential to our race, should still be so little cultivated. . . . This may be due to the fact that only of late have people begun to realize the value of a human being, and to consider the advantage of the population.

The man who wrote these lines in 1779, Johann Peter Frank, was one of the chief exponents of this health movement. Born in the Palatinate, he grew up in that borderland between French and German civilization and spent all his life in the service of various rulers, in Germany, Austria, Italy, Poland, and Russia. Napoleon tried to lure him to Paris. He treated patients, reorganized hospitals, taught students, and instructed monarchs how to protect the health of their subjects. In Pavia he once gave a brilliant address in which he denounced poverty as the chief cause of disease. And throughout his life he worked on one great book that was published in six volumes from 1779 to 1817 under the title *System einer vollständigen medicinischen Polizey*. In this book Frank investigates and discusses the life of man from the moment of conception to the moment of death, as it evolves in its physical and social environment. He examines the factors that threaten health

and recommends methods of counteracting them. His approach to public health is as broad as it can be. Man is a social being and in the causation of disease social factors are just as important as physical factors. He goes so far, for instance, as to examine the influence of the theater on the people's health.

Frank was a staunch supporter of the authoritarian state. His aim was to promote health through legislation and to enforce it through state organs. But he was well aware of limitations and in a significant passage he stated: "An intelligent police does not interfere with the privacy of the homes. If the police, this ruler of people, let itself be misused for spying, it degenerates and becomes the tyrant of human societies, and it disturbs the public order which it is called upon to protect."<sup>25</sup>

There was another totally different trend in the health movement of the eighteenth century. The philosophy of the Enlightenment was its background. It did not call upon the state for the protection of health but addressed itself to the individual. The state was corrupted, was an instrument of tyranny and oppression. Nothing good could be expected from it. Man, on the other hand, was good and reasonable by nature. He suffered from lack of knowledge, was unhappy because he was not enlightened, and sick because he was ignorant. Civilization had corrupted him and removed him from nature, from the natural condition of health and happiness. Education and en-

25. Frank, *System einer vollständigen medicinischen Polizey*, III, 957.

lightenment were needed in matters of health and hygiene.

Jean Jacques Rousseau was one of the exponents of this trend. But long before him John Locke in *Some Thoughts Concerning Education* [1693] had formulated a program of physical and mental health through education:

A Sound Mind in a sound Body, is a short, but full Description of a happy State in this World. He that has these two, has little more to wish for; and he that wants either of them, will be but little the better for anything else. Men's Happiness or Misery is most part of their own making. He, whose Mind directs not wisely, will never take the right Way; and he, whose Body is crazy and feeble, will never be able to advance in it. . . . And I think I may say, that of all the Men we meet with, nine Parts of ten are what they are, good or evil, useful or not, by their Education. 'Tis that which makes the great Difference in Mankind.

Since education seemed so all-important, great attention was given to the child, who was closer to nature, and still innocent. But, left to the care of nurses and tutors who had no understanding of its needs, the child soon lost its health and happiness. Emphasis was laid on the fact that the child is not a miniature adult, but a developing human being which has a physical and mental life of its own. Mothers were urged to nurse their children themselves. Century-old practices such as the tight swaddling of infants were denounced as injurious to health. In 1741 Nicolas Andry wrote *L'Orthopédie ou l'art de prévenir et de corriger dans les enfants les difformités du corps*, a



*Fig. 11.*

*Swaddling the Infant.*



*Fig. 12.*

*Feeding the Infant.*

Both from Heinrich Louffenberg's *Verschung des Leibs*, 1491.



*Fig. 13.*

*The Incorrect Handling of Children.*

From Andry's *Orthopédie*, 1741.

book that coined the term orthopedics and in which the author demonstrated that many deformities were due to the wrong handling of children. In 1760 Jean Charles des Essartz published a *Traité de l'éducation corporelle des enfants en bas âge* which had the characteristic subtitle of *Réflexions pratiques pour procurer une meilleure constitution aux citoyens*, a book which Rousseau used extensively when he wrote his novel *Émile* which was published in 1762.

In the following years a great many books and pamphlets were written for the purpose of educating the people in matters of health and one of the most popular was the *Catechism of Health* of Bernhard Christoph Faust, published in 1794.<sup>26</sup> It is a delightful document, full of sound common sense, as true today in many respects as it was when it first came out. Faust is a typical representative of the period, a German country doctor and small-town practitioner who devoted his whole life to improving the people's health and promoting general welfare. A dreamer, he advocated a league of nations, an ideal community embracing all mankind, ruled by the same laws, enjoying the same liberties. He wrote a little book on midwives and midwifery in rural districts and fought to break some sexual taboos. The woman in labor should bear her child in the sanctuary of the home, surrounded by the entire family. Then the children would see what their origin is, accepting birth as a natural

26. H. E. Sigerist, "Faust in America," *Medical Life* (1934), XI, 1, 192-207. On some further editions of Faust's "Catechism of Health," *Bulletin of the Institute of the History of Medicine*, II (1934), 392-401.



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Wie vorstehendes Kind gekleidet ist, so sollten alle Kinder, sowohl männlichen als weiblichen Geschlechts, vom Anfange des dritten, bis zum Ende des siebenten oder achten Jahrs gekleidet werden.

*Fig. 14.*

*Bernhard Christoph Faust's Hygienic Dress for Children.*

From *Gesundheits-Katechismus*, 1791.

process and not a mysterious operation. It would extinguish morbid curiosity and, as a result, innocence and peace would return among men.

In another study published in 1791, *How To Regulate the Sexual Instinct of Men and How To Render Men Better and Happier*, Faust came to the conclusion that wrong clothing of children was frequently responsible for sexual precocity, and he advocated a loose dress for children of both sexes. He was anxious to have it adopted officially and since the German governments were not responsive he had the book translated into French and presented it to the National Assembly in Paris. The revolutionary government of France, however, was busy with other problems.

Faust's most important contribution undoubtedly was his *Catechism of Health*. It was written for teachers, parents, and children as a manual of health education. It was translated into several languages, reprinted frequently, and it has been estimated that over 150,000 copies must have been sold within a few years. It was translated into English the year it came out and two American editions were printed, warmly recommended by Dr. Benjamin Rush and Dr. Hugh Williamson. The book was written as a catechism, in questions and answers. Its character and the underlying concept of health are best illustrated by quoting the first paragraphs:

Q. 1. Dear Children, to breathe, to live in this world, created by God, is it an advantage? Is it to enjoy happiness and pleasure?

A. Yes. To live is to enjoy happiness and pleasure; for life is a precious gift of the Almighty.

Q. 6. What is understood by a state of good health?

A. That the body is free from pains and infirmities, fulfills its duties cheerfully and with ease, and is always obedient to the soul.

Q. 7. How does he feel who enjoys health?

A. Strong; full of vigour and spirits; he relishes his meals; is not affected by wind and weather; goes through exercise and labour with ease, and feels himself always happy.

Q. 9. Can you children be merry and laugh, joke, and jump about, eat, drink, and sleep, when you are ill?

A. No. We can only do so when we are in good health.

### OBSERVATION

If a child be present who was ill not long ago, the Master will take the opportunity of asking him the following question:—"You was ill; tell me did you feel yourself so happy, so easy as you do now?" To this a sensible child will answer, or will be taught to answer—"I found myself exceedingly ill, I could neither eat, drink, nor sleep; nothing afforded me pleasure or joy; I was full of anxiety and pains; but now restored to health; thanks be to God, I know it is the greatest good."

Q. 15. Is it sufficient if he take care of his own health?

A. No. It is also his duty to take care of the life and health of his fellow-creatures.

Q. 16. And what is the duty of parents towards their children?

A. They are bound to take the tenderest care of their health and life.

Faust was by no means alone. Wherever the spirit of the Encyclopedists had penetrated, doctors arose

spreading the gospel of health enthusiastically. Numerous popular magazines were founded for the purpose.<sup>27</sup> All of them were short lived because the great health movement broke down. It did so for various reasons. The apostles of health of the type of Faust were humanitarians and idealists, who assumed that education was all-powerful and thus neglected economic factors. They told the people what they should eat in order to keep well and overlooked the fact that most people could not afford the recommended food. They addressed themselves primarily to the middle class, not to the peasants and city workers, most of whom could not read anyway.

Another factor which retarded developments was the dark political reaction that set in after the Napoleonic wars. Frank's last volume was published in 1817. It came too late. Most of his recommendations were never carried out. The bourgeoisie was growing rich and had no overwhelming interest in the public welfare. There was no break in continuity, to be sure. Books appeared like Christoph W. Hufeland's *Art of Prolonging Life*, first published in German in 1797, translated into eight languages, and reprinted constantly almost throughout the nineteenth century. Nevertheless, the health movement had lost its momentum and was not to recover until the emergency created by the Industrial Revolution.

The introduction of the steam engine into industry

27. See, for instance, Fridolin Lustenberger, *Schweizerische medizinisch-naturwissenschaftliche Zeitschriften von 1751-1871. Ihre Bedeutung und ihre Ziele* (Inaugural Dissertation, Zürich, 1927).

and the resulting industrialization of the Western World created a totally new situation. Factories provided employment for unskilled men, women, and children whose only property was their labor power. The new means of transportation made it possible to import food so that the population could increase beyond the capacity of the soil. Large masses of people were crowded in suburbs of cities, where they lived on starvation wages under appalling conditions, working endless hours unprotected against the new hazards of industry. In the working-class parishes of Saint John and Saint Margaret in London 5,366 families, or 26,830 individuals, lived in 5,294 rooms, and in Little Ireland, a district of Manchester, there was one toilet for every 120 inhabitants.<sup>28</sup>

When a worker was disabled or became unemployed in the course of one of the many crises, there was no other way open to him than to seek help under the Poor Laws, which meant virtual slavery.

Health conditions of the working population of England were atrocious. Hundreds of thousands died prematurely "from the effects of manufactures, civic states, and the intemperance connected with these states and occupations,"<sup>29</sup> and hundreds of thousands dragged on a miserable life crippled by disease.

This was a new situation, which could not be remedied through education, with health catechisms,

28. Friedrich Engels, *Die Lage der arbeitenden Klasse in England* (2d ed. 1848), p. 44 ff.

29. C. Turner Thackrah, *On the Effects of Arts, Trades, and Professions, and of Civic States and Habits of Living, on Health and Longevity* (1832), p. 5.

but required drastic measures. The seriousness of the problem was dramatically revealed when an epidemic of cholera invaded the country. People became aware that a sick working class is not only wasteful but also a menace to the rich. Therefore action was taken, coming from many sides and with different motivations. Humanitarianism characterized the efforts of social reformers and Utopian socialists of the type of Robert Owen. They felt indignant at the injustice of the existing order and strongly felt the disgrace of having such conditions in a country that claimed to be civilized. But, as Utopians, they believed that simply to demonstrate how much better conditions could be would suffice to improve matters, even in the teeth of a system of ruthless exploitation.

There was sound utilitarianism in the efforts of the government to revise the Poor Laws, a movement in which Edwin Chadwick played an important part. Chadwick, who became the pioneer of the English public health movement, was close to Jeremy Bentham. It was not a matter of philanthropy but in the interest of all to have a healthy working class. Chadwick seized the bull by the horns and endeavored not to relieve the effects of evil conditions but to remove their causes, economic, social, and physical. It was primarily due to him that the early English public health movement was so broad in its approach. His major crime in English eyes was that he believed in the greater efficiency of centralized administration.<sup>30</sup>

30. See Sir Arthur Newsholme, *Fifty Years in Public Health* (London, 1935). Iago Galdston, "Humanism and Public Health," *Bulletin of the History of Medicine*, VIII (July, 1940), 1032-1039.

And then—and this is probably one of the most important factors—there were the efforts of the working class itself. Health cannot simply be dispensed to the people. They must themselves want it and must fight for it. Militant unions were organized for the purpose of improving working and living conditions. Benefit societies were founded. The industrial workers lost their slave attitude, refused to accept conditions with fatalism, and struggled to improve them.

The nineteenth-century public health movement began in England because both the Industrial Revolution and its evil effects on health were felt there first. But wherever industries were developed similar effects resulted and called for similar remedies. Chadwick published his *Report on the Sanitary Condition of the Labouring Class* in 1842. In 1840 a French physician, Louis-René Villermé, published a report in two volumes on conditions among French textile workers.<sup>31</sup> But in 1807 the French prefect of police Dubois had already presented a report that exposed the appalling health conditions of the industrial population.<sup>32</sup> It was in France that Patissier in 1822 drew up a sound program for the improvement of conditions. Dangerous trades should be forbidden entirely or, if this proved to be impossible, only criminals sentenced to death and pardoned to hard labor should be allowed to work in them. Research should

31. *Tableau de l'état physique et moral des ouvriers employés dans les manufactures de coton, de laine et de soie* (Paris, 1840).

32. International Labour Office, *Occupation and Health: Encyclopaedia of Hygiene, Pathology and Social Welfare* (Geneva, 1931), II, 379.

be undertaken in order to improve working conditions and reduce health hazards of industry. Public baths should be made easily available to workers and, finally, workers disabled through their labor should be compensated and should have old-age insurance. It took a long time before these principles were generally accepted, but in 1822 France already had one hundred and twenty mutual benefit societies.

Germany in the first half of the century consisted of over thirty small and semifeudal states. Industry developed late and slowly. In 1837 there were only 419 stationary steam engines in Prussia, but then their number increased in the following 12 years to 1,444 and by 1849 Prussia had in addition 429 locomotives and 90 steamships. Health conditions were even worse than in England.

Health problems became so acute that in Germany, just as in England and France, action had to be taken. A powerful reform movement developed in the years preceding the Revolution of 1848.<sup>33</sup> Directed against bureaucracy, special privilege, and clerical obscurantism, it fought for a complete reorganization of health services. It was led by liberal physicians, and since the battle had to be fought in the political arena, doctors did not hesitate to enter the field of politics.

The head of the movement was Rudolf Virchow who later was to become Germany's outstanding pa-

33. See the excellent study of E. Ackerknecht, "Beiträge zur Geschichte der Medizinalreform von 1848," *Sudhoffs Archiv für Geschichte der Medizin*, XXV (1932), 61-109, 113-183.

thologist. He was born in 1821 and was young and fiery in the revolutionary years. In 1847 an epidemic of relapsing fever was devastating the industrial districts of Silesia. The government, under pressure of public opinion, appointed a committee of investigation of which Virchow was a member. He soon came to the conclusion that the causes of the epidemic were as much social and economic as they were physical. His report was a passionate indictment of the regime. The remedy he recommended was prosperity, education, and liberty, which can develop only on the basis of "complete and unrestricted democracy." These were unusual words in an epidemiological report, but they are characteristic of the whole trend. Back in Berlin Virchow founded in 1848 a new journal, *Die medizinische Reform*, which became the organ of the movement. "The physicians," he wrote in the introductory article, "are the natural attorneys of the poor, and social problems fall to a large extent within their jurisdiction."

This great health movement is little known outside of Germany. And yet when today, after almost one hundred years, we read the numerous books and pamphlets written at the time, we find them incredibly modern. They still have a message to carry. What were the leading ideas and postulates?

"Medicine is a social science," wrote Virchow, the pathologist, "and politics is nothing else but medicine on a large scale."<sup>31</sup> The physician who lives in such close touch with the people knows social conditions

31. *Die medizinische Reform*, p. 2.

better than anybody else and, being an expert in these matters, he must have a voice in government, if conditions are to be improved.

The goal is health for the people, for all the people, whether rich or poor. What are the means? Capital and labor must have equal rights: the living force of labor must no longer be subjected to dead capital. Only a free association of labor and capital can improve social conditions. This requires full-fledged democracy, equal rights for all. Education is needed and it must be free and available to all, even including free university education.

The people's health is a direct concern of government. This had been repeated in Germany since 1820, when L. Mende had written, "The State must protect health as its most precious property,"<sup>35</sup> and in 1848 it was formulated in the sentence, "The State representing the totality of all its members has the duty to care for their physical welfare and, therefore, has the duty to make provisions for the cultivation and maintenance of health and for the restoration of disturbed health conditions." Demands were made for public medical services for the indigents, for an increase in hospital facilities which would not only serve the people better but also raise the standard of medical care. The hospital was to be the center of medical practice. Voices were raised asking compensation for the loss of wages due to illness, and demanding sickness insurance financed by contributions from the workers

35. *Die Medizin in ihrem Verhältnis zur Schule, zu den Kranken und zum Staat* (Greifswald, 1820).

and from the propertied classes with municipal and state subsidies. Further postulates included the erection of a central Ministry of Health advised by a Physician's Parliament; the foundation of an Academy of Medicine to serve as a clearinghouse for medical research; uniform license, entitling physicians to practice in every German state; appointment of physicians to public offices on the basis of contests.

This was the Germans' National Health Program one hundred years ago.

In all these discussions the citizens' *right to health* was postulated more and more loudly. It was justified in a way which proves that the whole movement was by no means socialistic but a true middle-class liberal movement. The right to own property, even the means of production was not contested. S. Neumann, one of the most brilliant minds of the period, in his book *Public Health and Property*,<sup>36</sup> justifies the right to health in the following way. The state claims to be a state of property rights. Its purpose is to protect the people's property. Most people, however, possess nothing but their labor power, which depends entirely on their health. This is their only property and the state, therefore, has the duty to protect it and the people have the right to insist that their health, their only possession, be protected by the state.

The German Revolution of 1848 collapsed and with it the health movement declined. After having published ten numbers, Virchow had to discontinue his journal. In his last editorial he wrote:

36. *Die öffentliche Gesundheitspflege und das Eigentum* (Berlin, 1847).

We must wander through the desert and struggle. Our task is an educational one. We must raise men able to fight the battle of humanism. Further publication of our journal will be useless because we have nothing more to expect from the government. It is only left for us to accept the task: to educate the people concerning the problems of health, and to assist them toward winning the final victory by continuously providing for them new teachers. The medical reform which we intended to bring about was a reform of science and society. We discussed its principles; even without the continuation of our organ will they eventually be acknowledged.<sup>37</sup>

The great, forceful, and promising German health movement with its far-reaching program had broken down. Why? Chiefly because it was a movement of liberal middle-class physicians *for* the people but *without* the people. The people were never consulted. They had no voice in all these deliberations. The people's health, however, is the concern of the people themselves. They must want health. They must struggle for it and plan for it. Physicians are merely experts whose advice is sought in drawing up plans and whose coöperation is needed in carrying them out. No plan, however well devised and well intentioned, will succeed if it is imposed on the people. The war against disease and for health cannot be fought by physicians alone. It is a people's war in which the entire population must be mobilized permanently.

One of the tragedies of mankind is that most people refuse to learn from the teachings of history, and that mistakes are repeated over and over again.

37. *Die medizinische Reform*, p. 273 ff. Translation by Gertrude Kroeger, *The Concept of Social Medicine* (Chicago, 1937), p. 12.

The German health movement did not mature, but the seed was sown—and some of the principles of 1848 were fulfilled after the unification of the German empire. Sickness insurance was introduced in 1883.

Wherever industries began to develop the same problems became acute, even in Tsarist Russia. An industrial development is impossible where the peasants are tied to the soil and have not the freedom to leave the land and join the factory. And so serfs were liberated in Russia in 1861. Factories cannot work if laborers are in ill health. And so Russia established a system of state medical services for the rural districts in 1864, and in 1866 a law was issued requiring factory owners to have one hospital bed available for every one hundred workers.

The establishment of conscript armies in most European countries during the nineteenth century brought a new factor into the attitude toward health. Nations now urgently needed a healthy and fit young generation to defend the country or to carry out imperialistic aims. And since the training of armies was in the hands of the government, the promotion of health automatically became a concern of the state. Athletics were a privilege of a small upper class in ancient Greece, a privilege of the nobility in the Middle Ages. In the eighteenth century philosophers recommended physical exercise as a method of education. In the nineteenth century governments and national interests encouraged athletics for military and disciplinary reasons. After the Napoleonic wars *Turnvereine*, or athletic clubs, were organized in Ger-

many to prepare a healthy well-disciplined generation. They were highly political bodies, torchbearers of the country's national aspirations. The same was true of the *Sokol* movement founded in the 1860's in Slavic countries of central Europe and the Balkans, athletic organizations which became most active centers of pan-Slavism. When it became evident after the Treaty of Versailles that the world was marching toward still greater catastrophes than the World War, and new imperialisms became manifest, a race set in, not only in armaments but also in developing youth organizations whose purpose it was to prepare the new generation for the slaughter.

The great progress of medical science in the second half of the nineteenth and in the twentieth centuries forged new weapons for warding off disease and particularly for the control of communicable diseases. Bacteriology confirmed the hazy guesses of previous generations that infectious diseases were caused by living agents and revealed that certain diseases were due to the action of definite bacteria or other microorganisms. Accordingly, the protection of man against germs became one of the chief tasks of public health. It had always been assumed that drinking water should be pure, but bacteriology enabled us to control and measure the purity of water. Immunology indicated methods of building up resistance against definite diseases. Inoculation of smallpox was practiced successfully throughout the eighteenth century and vaccination was a great improvement in that it reduced the hazards considerably. The work of Pas-

teur, Koch, Behring, and others opened up new horizons, and diseases such as diphtheria, typhoid, cholera, and lockjaw became preventable.

Bacteriology revealed external, biological causes of diseases and, blinded by the great success of the new science, physicians were often inclined to overlook the social, economic, and individual factors that are just as decisive in the genesis of disease. There is no tuberculosis without tubercle-bacilli, but while most people are exposed to infection, very few actually develop the disease. A low standard of living can be as much responsible for the disease as the bacilli.

Even at the height of the bacteriological era, however, there were men who, like Pettenkofer in Munich, were fully aware of the significance of the social environment, and others, like Rosenbach, Hueppe, and Martius, who pointed out the importance of the constitutional factor in the causation of disease. Pettenkofer, in his classical lectures on health conditions in Munich,<sup>38</sup> successfully inaugurated the field of medical economics.

Sanitation and the protection of society against communicable diseases are still a major function of public health, but the field has broadened considerably in the last few decades. In the United States today only one tenth of the work carried out by public health services is devoted to the traditional tasks and nine tenths are devoted to new tasks, such as prenatal and maternity care, infant welfare, school hygiene,

38. *Über den Wert der Gesundheit für eine Stadt* (Braunschweig, 1873).

treatment of venereal diseases, etc. Wherever private medicine proved unable to solve a problem, public services had to step in, in order to protect the people's health.

This long historical analysis has given us a clearer view of health and its significance for human welfare. Like the Romans and like John Locke, we think of health as a physical and mental condition. *Mens sana in corpore sano* remains our slogan. But we may go one step further and consider health in a social sense also. A healthy individual is a man who is well balanced bodily and mentally, and well adjusted to his physical and social environment. He is in full control of his physical and mental faculties, can adapt to environmental changes, so long as they do not exceed normal limits; and contributes to the welfare of society according to his ability. Health is, therefore, not simply the absence of disease: it is something positive, a joyful attitude toward life, and a cheerful acceptance of the responsibilities that life puts upon the individual.

It may seem farfetched to extend the concept of health into the social field. And yet there can be no doubt that an individual who is maladjusted socially does not possess the balance that constitutes health. A criminal who lives outside of society following rules of his own is like a malignant tumor governed only by its own metabolism. Both may seem healthy for a while, but ultimately the tumor destroys itself, and so with the criminal. He is sick and in need of a physician. Physical restoration is not the end of a medical

treatment. Since illness gives the patient a special position in society the cure is not complete before the patient has been readjusted socially and enabled either to resume his old position or adjust himself to a new one. The goal of medicine is social and medicine actually is a social science. The German physicians of 1848 were right.

Health, of course, is desirable today as it was in former periods. It is one of our most precious possessions and is a prerequisite for human welfare and happiness. But it is more than desirable, it is necessary. A highly differentiated, highly specialized industrial society in which every member depends for his welfare on the coördinated efforts of his fellow-men, has no room for unnecessary sickness but requires healthy members in order to function normally. A democracy in which the destiny of the nation is the personal responsibility of every citizen requires health.

We do not hesitate to accept the concept of man's right to health or, more correctly, of man's right fully to benefit from all known means for the protection and cultivation of health. We need no longer justify health, as Neumann did, by declaring it to be a form of property which the state is pledged to protect. If we believe that life, liberty, and the pursuit of happiness are inalienable rights of man and that government is instituted to secure these rights, then we must conclude that man has a right to health and is entitled to having this right secured. Disease is a threat to life, holding man in bondage and obstruct-

ing him in the pursuit of happiness. And when a country establishes a constitution with the purpose of promoting the general welfare, it thereby admits that the health of the people is a direct concern of government.

If we recognize the right to health we are justified in postulating a duty to health. This is a new attitude which has developed only recently, as a result of a sharpening social consciousness. We mentioned earlier that in several countries the venereal patient who evades treatment is punishable and so is the soldier who evades his duty by wilfully letting himself become sick. More and more we accept the view that man has a civic duty to fulfil which requires health.

Health is not inevitable or obvious: it must be protected and cultivated, and this requires, first of all, knowledge. The more we know about health and disease, the more effectively we can act. Scientific and sociological research is, therefore, the source that feeds all our actions. But knowledge alone is not enough. In order to become effective it must be applied and this is only possible if it is shared by all the people. Education, therefore, is all important. I must repeat that the people's health is the concern of the people themselves. They must be enlightened in matters of health. They must want it and take an active part in its administration. And since the protection of health is a task of great magnitude the people will endeavor to fulfil it collectively through the state and its organs. This is why health is a primary concern of the people *and* of government. The physicians and

medical officers, those who have both general and expert knowledge in matters of health, are, therefore, best able to advise and guide the people of whom they are a part.

The state can protect society very effectively against a great many dangers, but the cultivation of health, which requires a definite mode of living, remains to a large extent an individual matter and is the result of education. It is no exaggeration to say that the school is one of the most important public health institutions. It must help the child to develop all his physical and mental faculties, to acquire health habits, and to build up that attitude toward life which is part of health. The school provides the ideal opportunity to have children under permanent medical control and to remedy in time defects due to heredity or environment. Health should be a subject of instruction in every grade from elementary school to university, and particular attention must be given to adolescent children in secondary schools at a period when asocial drives begin to manifest themselves. This is the moment when mental hygiene becomes particularly significant. Teachers must be thoroughly trained in health matters. The school medical officer does not know the individual children and sees them only at long intervals, while the teacher has the opportunity of watching them daily. He is the first to notice that something is wrong with a child, and he must bring him to the attention of the medical officer. If the school succeeded in nothing else but in developing healthy young people, it would have achieved a great

deal, and while many of them may later not be able to lead a healthy life under the pressure of social and economic conditions, still if they once have acquired sound health habits they will at least live as well as conditions permit.

The health program of every country can be summarized in a few points. Such a program must provide:

1. Free education to all the people, including health education.
2. The best possible working and living conditions.
3. The best possible means of rest and recreation.
4. A system of health institutions and medical personnel, available to all, responsible for the people's health, ready and able to advise and help them in the maintenance of health and in its restoration when prevention has broken down.
5. Centers of medical research and training.

It is an ambitious program which has not yet been fulfilled anywhere, but every civilized country is moving in that direction, some more rapidly, others more slowly, and they all agree that health is one of the most important factors in human welfare.