

BIOGRAPHY AND THE INFLUENCE OF ENVIRONMENT.

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Biography concerns itself with 'the history of the life of a particular person.' This is the primary definition given in the Century Dictionary, a second being 'biographical writing in general, or as a department of literature.' Again as a third definition, 'In natural history, the life-history of an animal or a plant.'

Biology, on the other hand, concerns itself with the science of life and living things; with a knowledge of vital phenomena; in a technical sense, the life-history of an animal.

Environment is another name for surroundings, and environmental influences may be regarded as the influence of surroundings.

In speaking of the evils entailed by the lack of knowledge of surroundings, Ward in his *Dynamic Sociology* says: "Indeed, the greater part of all suffering is the result, direct or remote, of such ignorance. Obviously, therefore, the first great duty of man is to acquaint himself with his environment. This can only be done by study. The phenomena that lie on the surface are of little value. They mislead at every turn. Not only must the deep-lying facts, difficult of access, be sought out with great labor and perseverance, but they must be co-ordinated into laws capable of affording safe and reliable guides to human operations. To do this requires a vast amount of patient study. Only a little has yet been revealed of the more important truths of nature, yet consider the amount of research which it has required! Nevertheless, only a few individuals have contributed any thing at all to the result. It is as yet only the simpler and more obvious relations between man and nature that have been determined. In the domain of physical forces and chemical substances he is able to exercise prevision in many ways to secure advantages and avert evils, but in most of the higher fields of vital, mental, moral, and social phenomena, these relations are either utterly ignored or but dimly suspected, so that his knowledge of them avails him nothing. The great work before him, therefore, still is study." (*Ward, Dynamic Sociology, Vol. II, p. 11.*)

Ward further says: "But what constitutes the environment of the civilized man? The character of the environment of animals and of savage man is easy to perceive. It is the earth, the air, the rocks and waters, the trees, grass, birds and animals, the last to include, in the case of the savage, the men of his own tribe and of other tribes, and also civilized races, in case any such ever come in contact with him. It is by learning to know these things that he is enabled to protect and defend himself.

"But, looking to races somewhat more advanced than the crude savage, we find, as frequently shown before, that their advancement has been due to action on their part in taking advantage of certain deeper laws of nature, in making use of materials that savages fail to make use of, in interpreting phenomena that savages do not correctly interpret, and, through these means, in devising plans and inventing appliances for multiplying the products of nature and increasing the supply of physical, social, and intellectual wants. And, when we have reached the highest forms of social existence, we find that the only effective means by which desire is gratified, progress achieved, and happiness attained, consist in still deeper knowledge of the natural surroundings, in a still wider grasp of laws and principles, in the correct interpretation of still more obscure phenomena, and in the discovery and invention of still better means and methods of securing remote ends. To know one's environment is to possess the most real, the most practical, the most useful of all kinds of knowledge, and, properly viewed, this class of information constitutes the only true knowledge." (Ward, *Dynamic Sociology*, Vol. II, p. 495.)

In discussing the expression 'knowledge of the environment,' Ward comes to the conclusion that it is co-extensive and synonymous with the word science. He says: "Knowledge of man's environment is nothing more nor less than scientific knowledge; and, conversely, all scientific knowledge consists in knowledge of the environment * * *" (Vol. II, p. 497). Farther on he says: "The only useful knowledge is that which furnishes relations. Isolated facts, until employed for this purpose, are not really employed at all. An object known only in itself can scarcely be said to be known. * * * Science is dynamic. Whatever it touches is transformed. The only object in knowing is by means of it to do something * * *." (Vol. II, p. 497).

He refers to the attenuation of knowledge and of getting away from things, and how especially in the Middle Ages men were inclined to neglect facts, and how science brings us back to facts and to nature. We can

readily see how students of environment and environmental influences are not likely to be misled by the present fad of psychotherapy. Ward also refers to much of our literature as being simply a jugglery of words, pleasing to the ears, but of little value in keeping man acquainted with his environment.

Perhaps few of us realize fully the importance of environmental influences, of how our life and our very thoughts and actions are dependent thereon. No doubt many of us have at times wondered what our own life and the life of others would be under different surroundings.

The field is a large one, and by way of delimitation I may say that my original observations and studies are confined largely to one phase of the subject, that of air conditions. The problem is this: To what extent do the effects of air conditions crop out in biography? To answer this requires, first a study of men who are today living under good and bad air conditions; it means to contrast lives of men, those who live under good air conditions with those living under bad air conditions; it requires, moreover, observation of individuals who alternately live under good and bad air conditions. Secondly, it requires the 'fossil remains,' so to speak, which can be studied, just as the paleontologist studies fossil remains which enable him to reconstruct and explain past animal life—the material in the present instance being biographical remains, books that are often known under the name of *Life and Letters*, as those of Huxley and of Darwin.

We all like to read about great men and emulate them; their lives are held up as examples to follow, yet the number of great men living at any one time is small, and where one becomes great, there will be thousands and thousands who are mediocre. A biographer scarcely deems it worth while to pick out the life of one of this latter class.

It may be entertaining to the average man to read the biography of a literary man, of a poet, or of a musician, but he may get comparatively little instruction from it. On the other hand, he may read the life of a common fellow citizen and get many ideas that will be of value to him in the conduct of his own life. This is a fact that seems to be little realized by biographers, but it has been appreciated by certain novelists who write about the common people, and such books are therefore very popular. Formerly novelists were concerned chiefly with the life of the 'upper classes,' but since they have begun to write of the 'common man,' to depict his life, we now know that such 'lives' can be made of general interest.

Likewise, in former days, the physician was concerned chiefly with the well-to-do; the diseases and affections of slaves and agricultural laborers and artisans were given little attention. Today distinctions are of course still made between the literate and the illiterate, but there is a very large class between these extremes—the common people, and writers have this class of readers in mind rather than the small cultured class.

Some one has said that under each grave lies a world's history, and in this light the life of the most common-place man would likely reveal many incidents that are worth recording, both on account of their general interest and the lesson they may teach.

In the course of years I have accumulated many notes and 'case reports,' that is, histories of individuals in chronic illhealth. Some of these histories cover the individual's whole life, from beginning to end, and if published would be biography, but since they relate to illhealth and give a minimum of facts in regard to other affairs of life, such a biography would be of interest primarily to physicians, to biologists, and individuals in chronic illhealth who might profit by the experiences of others. A wise man has been defined as one who profits by the experiences of others; a fool as one who scarcely learns from his own.

My paper is to be considered as a continuation of papers given in former years before this Academy, but to fully understand the subject, this series of papers should be considered in connection with another series given before the State Medical Society.

I have prepared a number of case histories, more or less briefly, in the form of long charts which I shall show with a few remarks on each. (Charts on rolls and diagrams were shown, the following notes being abstracts.)

BIOGRAPHY A. The environmental influences crop out very strongly in the family history, as shown in the genealogical table. The ancestry goes back into early colonial days, and until now the members have always lived under rural conditions. The great-grandfather's generation was a long-lived one, likewise the grandfather's and the father's and his own also, that is, his brothers and sisters: ten to twelve usually constituted a family. The individual himself until recently had always lived on a farm and led an active life. He had good health, but when he

came to the city his health began to fail, ascribable to 'change of air.' To stand on a street corner in a 'spitter's town,' with clouds of dust blowing about, is a rather risky occupation. His children show an entirely different history from that of the ancestry, a long life history being displaced by a short one. The children die of the 'diseases of civilization,' and that means chiefly a bad sanitary environment. The offspring, instead of living to the age of sixty, seventy, or eighty years, die prematurely, eight out of twelve dying in childhood.

Judging by or from the ancestral history, one can predict what the final termination in this case will be. One can predict—as well as that can be done in complex biological predictions. Recently the man had a cerebral apoplexy which disabled him for a time, but he gradually recovered; a continued high blood pressure means that before long there will be another apoplexy, in fact there may be several, until one is sufficiently severe to carry him off.

Some of my case histories cover a period of only a few years, but where much attention has been given, the thoroughness of study may offset the length of time. One can readily see that if an observer were to devote his attention, say for only a year, to the study of the life of an individual in chronic illhealth, much might be learned, more than where one attempts to cover an individual's whole life in a superficial manner, and we can readily understand how a physician with many patients to look after can so scatter his attention with so little time for each that he simply cannot do his patients, or the subject, justice.

People in health scarcely know what illhealth means to one who has 'chronic illhealth,' where the subject necessarily is more or less constantly in mind, and that certain symptoms—symptoms of illhealth, indicative of a reaction to a certain cause or to an abnormal environment—are present all the time, every hour of the day, and from one day to another.

The individual in chronic illhealth naturally seeks relief; he applies to the physicians, and if the physicians do not understand the case and if no good results follow their treatment, the individual naturally applies elsewhere. Some chronics are constantly drifting from one physician to another and from one form of treatment to another, even the most outlandish. In the last month one of these 'chronics' came to me. On critically studying the case, I found that she reacted to her environment, that is, in this case, to dust influences. The patient was intelligent; she promptly acted on my suggestions and many symptoms gradually vanished;

others were greatly modified, both in severity and number. One day, after the patient had been with me for some time, she told me that I was the eighteenth physician she had consulted. This individual could write a book on her experiences among doctors, and it might make painful yet beneficial reading to many who prescribe purely on a statement of symptoms.

BIOGRAPHY B. Next in order would come a history, a biography, in the making, of a bright boy of fourteen years, but for certain reasons it was thought best not to put this case in the form of a chart. This boy reacts to his environment, but the chronic illhealth under certain conditions promptly subsides under other conditions. At the International Congress on Tuberculosis, at Washington, two months ago, Dr. Koch made a statement which I have repeatedly verified. He said it was very important to teach school children the important facts connected with tuberculosis, that they will learn readily and remember, whereas the old learn with difficulty and forget readily. I have frequently met elderly people whom I attempted to instruct, but after a time I would ask myself, What is the use? One is apt, on the other hand, to take unusual pains in instructing the young and intelligent, who are both willing and capable, and it will be interesting to read the biography of an individual who keeps a daily record of what he does and where he is, and of the conditions relating to health and illhealth.

The question at times arises: Should an individual in chronic illhealth be asked to keep a daily record of events and of symptoms? I have had persons tell me they had so many symptoms that it would be impossible to keep track of them—yet in a short time there would be only a few to record, if they heeded rational advice. When the sick begin to realize that there is a relationship between symptom and cause, they no longer lie awake at night 'wondering what it all means.'

One can readily understand why the individual brought up in the country under good air conditions should suffer on removing to the crowded city, and why the individual who is chronically ill in the crowded city may quickly regain health on going to the country, or by merely exchanging a dirty city for a clean one. We can also see how a study of biography in the light of air influences, of coniotics, so to speak, may be both interesting and profitable.

BIOGRAPHY C. The influence of environment crops out in several ways in this case, a man of 57. His father and mother were Irish; he was picked up as a waif in New York City when a small child, and, with

a number of others, was sent West; he reached Indianapolis and was adopted by a German Protestant. To see the man now and to speak with him, one would never suspect that he is Irish, for he seems to be a thorough-going German, with all the German characteristics. As one might expect, he adopted the religion of his foster parents. Some one has said that our very thoughts and actions are determined by our environment, and this man is an exemplification of it. In a general way, it may be said that the Irish in their own country live mainly under a rural environment; when they come to our crowded cities many fail. This man seems to have gotten along fairly well in his earlier days, but there has gradually developed a greater and greater susceptibility to city environmental influences.

When this man first came to me five years ago, he thought his sand of life had run down, and on superficial examination I was inclined to agree with him, but when I studied his environment and past history, I came to a different conclusion. I saw no reason why he should not continue to live for a number of years. In explaining the condition to him, I referred to Huxley and how he reacted to his environment and yet lived to the age of 75, and might perhaps have lived still longer had he known more about the influence of environment. I mentioned the English saying, that in order to live long one should acquire an incurable disease, explaining what is meant by 'disease'—that it is really no disease at all, simply a reaction to environmental influences: that the pains and aches, the warnings of nature, could be prevented by avoiding the cause, and that means to observe and to seek to avoid them. In proportion as causes are avoided, one may live on and on. It took some time to fully explain matters to him and to induce him to give up his occupation, an indoor one with dusty air. There was a constant tendency to high blood pressure, and I explained the danger of 'bursting the boiler,' but he continued until he 'burst a pipe,' that is, there was a break of a small blood-vessel in the brain, resulting in slight apoplexy. The break occurred in the speech center and temporarily rendered him speechless; fortunately the effects passed off in a day or two. This was a warning which he heeded; shortly after he abandoned his occupation and lived out of doors. But he could not live indefinitely without work, and in a 'spitter's town' the number of occupations attended by good air conditions are limited. He finally obtained employment in a hospital, as attendant. Here the air conditions are good and now he is getting along very well—as I had predicted.

One can of course see that when an individual has spent years and

years under an unfavorable environment, structural changes may have been produced—we need only think of inflammatory processes followed by the formation of scar tissue—and that the outlook for a long life is not as favorable as in the case of a young person who gets out in time and before many organic changes have occurred or much scar tissue formed. In this case, it is not so much a matter of living a long life as it is of the subsidence of chronic illhealth and the ability to do a 'fair day's work,' to make a living instead of being dependent on charity.

It will be noticed that this biography is in several sections:

1. An outline of his life, by years, in the form of a chart.
2. A detailed statement up to the time he came to me, in loose sheets.
3. A statement of his observations since he has been with me. It will be observed that all are autobiographic—that is, written by the individual; they were given me in the belief that his experience might be of benefit to others.¹

4. My own observations briefly summarized and charted, with sphygmograms here and there showing circulatory conditions. In the light of other cases, one can predict that this individual will, in all probability, ultimately die from heart and renal trouble. In a general way, one can divide men into two groups, high pressure and low pressure; each group has certain symptoms.

BIOGRAPHY D. It is only occasionally that one is able to get a complete life-history, that is, from beginning to end. I shall show one of this kind. The long sheet gives an outline of incidents, arranged by years (of factors which the individual, more or less conversant with the subject of dust infection, considered of sufficient importance to be noted). The details that I asked for concerning certain factors, incidences and occurrences, are given in these notes (shown). This individual was with me for only a short time, barely long enough to study her history and condition. She died some time later after having been under observation of two non-resident physicians. The influence of environment crops out all through this history, or strictly speaking, biography. The influence of life in the large city or in the country can be clearly traced. One environmental influence may be especially mentioned: This individual went to Korea as a medical missionary and there contracted a tropical disease from which she ultimately perished. One can readily see that had

¹The number of individuals who will allow the history of their lives to be used, as here presented, is rather limited—it takes the "missionary spirit" to do that.

she not gone into the environment under which foreign diseases flourish, she would not have contracted such a disease. Missionaries are a self-sacrificing class of individuals; popularly it is often believed that they break down on account of overwork, but one can look at it from the standpoint of a change of environment—and this may lead us to critically study a case of overwork in our midst; perhaps after all it is simply the influence of environment. It may not be so much a question of the amount of work done as where the work is done. One may seriously question whether our school children break down from 'overwork'—perhaps the defenses of the body in fighting off infection, bad air, are overworked.

To study the life-history of any one case is a task of magnitude. There are many details, and the more factors one considers, the greater the number of details that have to be studied. An individual in chronic ill-health may complain constantly; all his symptoms and all his complaints have a cause; they must have a cause. To what extent can or does the student physician take up such details?

There are few physicians who have many patients whose lives they can study from beginning to end—and to study a long life is wholly beyond a single man's opportunity, because the physician, the student, is already well advanced in years before he has the requisite knowledge to make such a study. He must begin with the individual at birth, and if the latter has a long span of life, the physician will be dead long before his patient. To properly study the subject requires co-operation of many men.

Biography is valuable chiefly in that it teaches us how to conduct our own life, that is, we can profit by the experience of others. Moralists like Samuel Smiles will take a biography and from it teach certain lessons (Prudence; Self-help; Industry; Forethought; Self-reliance; etc.), but the idea that the illhealth or sickness of a man may teach us how to avoid similar experiences has scarcely been considered and to the best of my knowledge not at all in the light of good and bad air conditions.

Many biographies contain so few references to health and illhealth and disease that one might come to the conclusion that these were things not worth mentioning; very few are satisfactory to the student. Personally I have never met one that gave all the details I wanted.

The individual who is influenced by his environment manifests certain symptoms. Some of these symptoms can be grouped, and one can speak of types. Some part of the body or some organ may show the reaction in

a marked manner, and in this way determine the type. Thus, one can speak of a respiratory type of dust infection, of a gastric type, of a nervous type, etc. In some there is no localization; the body as a whole reacts. There may be a large number of symptoms and yet there is nothing definite that would enable one to speak of disease. It would appear that the body is really 'healthy' but is simply reacting to the abnormal environment, and the moment the environment is changed, the symptoms disappear.

I have made a search through biographies relating to Indiana people for a good example of the influences of environment. I found only one biography that is sufficiently full to enable one to trace such influences, but as I am in search of further data, I shall not take this up at present. Instead I will take up the *Life and Letters of Huxley*.

Thomas H. Huxley. The life of a man like Huxley or Darwin can be written from many different standpoints. If the biographer is a naturalist, he can bring in the development of Natural History that has taken place throughout the long life of such a man and the prominent part he took in it. If an evolutionist were to write the life, he would likely treat it from the standpoint of the development of the theory of evolution in which Huxley took such an aggressive part. The geologist, the paleontologist, the ichthyologist, etc., each would find material enough to write a work that would be of interest to the specialist. The physician likewise finds material enough to write what may be called a medical biography, of special interest to physicians, and more especially because Huxley began life as a physician and throughout his long life was associated with medical schools and with the best medical men of England. An individual in chronic illhealth can learn much by carefully studying Huxley's *Life and Letters*, on account of the many references to chronic illhealth. Such a study may enable him to avoid many of the common symptoms of illhealth, or at least to reduce them to a minimum.

Huxley reacted strongly to his environment, and to understand this one must study the lives of people living today who react in a similar manner. Analogy enables us to bring together cases of the same type. In studying the life of a man no longer living, one is in the position of the paleontologist who studies the fossil remains and thereby is enabled to more or less accurately reconstruct for us a picture of the thing that once was living, as already mentioned. According as a biography contains many references to illhealth conditions, one is enabled to more or less fully

understand the nature of the illhealth—which may not have been thoroughly understood during the life of the individual.

Huxley was a voluminous writer along many lines, chiefly, as most of you know, on biological subjects. Beginning with papers on certain groups of animals, he gradually branched out to include man, not only from a biological and anthropological standpoint, but also from that of biography; to understand his many-sided mind, one has to read his various volumes.

To the student of dust influences there is likewise much of interest, not so much in his technical writings as in his biography. Although Huxley realized the general influence of environment, he seemed not to have realized the influence of dust conditions, of conotics. One can readily see how such a gifted man might have avoided much illhealth, and perhaps have lived many years longer, by having such a knowledge.

Huxley was eminently sane in his views regarding man's position in the universe; unfortunately for medical science, he did not follow medicine closely. He distributed his mind among many fields of inquiry, some of which have only remote relationship to medicine.

At the time when he was actively engaged in the practice of medicine, there was little science compared to what is found today; it was before the days of cellular pathology and bacteriology. Conditions were such as to create disgust in a scientific mind like that of Huxley, and so it is very natural that he should have drifted away from the practice of medicine and become a teacher of some of the sciences on which medicine rests, notably anatomy and physiology.

Although cellular pathology arose during Huxley's lifetime, yet he never took it up. It is an exemplification of the saying, "You can't teach an old dog new tricks," and when a man's eyesight begins to fail on account of age, the days for close microscopic study are past. Unless one studies pathology and bacteriology in the laboratory, makes his own cultures and examines them, one's knowledge is not apt to be thorough and the difficulties of working out certain problems are not realized, and, on the other hand, the brilliant results obtained by some men cannot be fully appreciated. It is only the student who works 'in a practical manner' who gets the best insight, assuming of course that he has the mental capacity also to reason on the 'imaginary or theoretical side,' to form theories and then attempt to verify them.

Huxley did not understand the influence of air conditions. At one

time we hear him exclaim, "I do wish I could sometimes ascertain the exact *juste milieu* of work which will suit, not my head or will, *these* can't have too much; but my absurd stomach." (Life and Letters, Vol. I, p. 131). Herbert Spencer voices the same sentiment when he says, "I want a keeper to be always taking care that I do not overstep the limits on one side or the other * * *."

We need not be surprised that Huxley and men of his type did not understand the influence of air conditions, when we consider that the best medical men, active practitioners of medicine, did not understand it. The two most eminent physicians contemporary with Huxley were undoubtedly Dr. Andrew Clark and Dr. Henry Thompson. These men were constantly sending their patients away from London. Dr. Clark used to say, "What you need is rest, pure air, cheerful companions, simple diet, and no end of out-doors." They got results, patients improved, but they did not press their inquiry and seek the reason why. One can of course readily excuse them for the same reason upon which Huxley must be excused—They began work before the days of cellular pathology and bacteriology and did not take it up in their old days. Perhaps needless to say a knowledge of pathology and etiology is one of the absolute essentials in studying dust infection.

Huxley had a rural ancestry and that means that there had not been an active weeding out through urban influences. When he first came to London as a young man he seems to have gotten along fairly well, but in time there was a greater and greater susceptibility to unsanitary urban conditions and he reacted to his environment. He lived in the West End where air conditions are good, and lectured at Kensington, which, as some of you know, is situated half way into the heart of the city. At first he could lecture several hours a day without difficulty, but after a time he complained that he could only bear one hour and that two hours 'does him up.' Still later he was not able to do even an hour's work under bad air conditions, but when he removed from the city and went to the South Shore, he was again able to do an almost unlimited amount of work.

SYMPTOM NAMES. (Chart with all symptom names grouped was shown.) In looking over this formidable list of names, a few facts stand out.

1. There is only one name that refers to a definite disease, that is, a disease with a specific cause: Influenza.

2. Many of the names are very indefinite, or, one might say, they are just as definite as the conditions to which they refer, and where a thing is indefinite, one naturally cannot expect a definite name.

3. There was no 'organic disease' (until the very end), and some of the names and expressions used were later on found to be erroneous. Take, for instance, the terms relating to the heart, 'dilatation,' and 'enlargement.' The diagnosis was made at a time when Huxley was feeling bad and he was therefore sent to Switzerland. But he began to feel better almost as soon as he got into the good mountain air—and then he began to climb the mountains. Offhand, one would be inclined to say that that was a very foolhardy act, because he might have fallen off the mountain, or dropped into a crevice, and no one would have known what had become of him; but he felt he could climb, and he did climb higher and higher day after day. Then one of the English physicians made him a visit and naturally examined him. Huxley says, "H. Thompson treats the notion that I ever had a dilated heart with scorn!" and then adds, "Oh these doctors; they are worse than theologians." But when he returned to England his old complaint came back. Evidently, however, he had the satisfaction of knowing that he did not have organic heart disease.

With increasing years there was an increasing reaction to an un-sanitary environment, he could spend less and less time in the crowded city, finally he had to leave altogether. One wonders why Huxley did not leave the enervating city life and retire to the good air of the country, as did Darwin.¹

What do we mean by health and illhealth and disease? A man may complain of illhealth and yet not be diseased. As a matter of fact, we constantly meet people who look the picture of health, but on studying them we find that they are always suffering, yet on account of their 'healthy' appearance, they get no sympathy when they do complain, and so many do not complain—only to the physician who critically studies conditions.

Many of these individuals are simply out of harmony with their environment. If we take a native of the torrid zone and put him in the frigid zone, we would likely find him complaining constantly of the in-

¹Charles Darwin reacted to his environment, after the manner of Huxley. Some of you may recall my paper before this Academy several years ago in which I aimed to bring out this point. But Darwin lived in isolation and came little in contact with sick people, and his symptoms are even less well defined, although he complains almost constantly and loses much time. Getting a lot of old books from the city and reading them while reclining on a couch are among the important factors in Darwin's ill health.

fluence of cold, of a condition to which he was not accustomed and perhaps wholly unadapted. If, on the other hand, we take an inhabitant of the frigid zone and put him in a warm country, we would in all probability find another series of complaints. In the temperate zone where there is an alteration of heat and cold, one might say six months of tropical life and six months of arctic life, many individuals cannot adapt themselves to this semi-annual change, and as a consequence they suffer.

Again, the individual who has been brought up on plain, substantial food in the country, free from all infectious matter, may complain greatly if confined to the food obtained in the city, which has passed through many hands. The milk which so well agreed with him in the country may be a veritable poison to him in the city; even the drinking-water may disagree.

We see this again illustrated in the matter of air conditions. The man who has always lived under good air conditions, and whose ancestors have lived under such conditions, may complain greatly on removal to a dirty city where the air is loaded with dust derived from different sources, partly from the bodies of those who are diseased. Such an individual may have a sound body and may have sound health under his proper environment, but he may complain in the city simply because his body reacts to the abnormal environment. Thus, if he inhales much dust, there may be cough—nature's way of getting rid of offending material. The dust may set up a profuse flow of mucus, resulting in so-called catarrh—and yet this may be simply a natural reaction of the body in protecting the respiratory organs and in getting rid of the inhaled dust particles, which are brought up with the mucus in the process of coughing and hawking. Various pains may come on, yet they are to be looked upon as warnings from nature—to change the environment. When an individual does change and finds all these symptoms of illhealth (not of real disease) disappear, that ought to clearly indicate to him the conditions under which he should live. If he persists in living under the abnormal environment, we know what will happen: nature is constantly weeding out the unadapted—a process that has been going on for countless ages, and still continues. The doctrine of the Survival of the Fittest is a terrible reality from the standpoint of the biologist and physician.

One may come into a new environment and discover that there is a non-adaptation. The thoughtful man will see two courses open; first,

to modify his environment and make it fit to live in; second, to abandon the environment and go into a better one.

To what extent shall one make efforts to modify his environment, to improve it? How early or how late shall one abandon efforts? These are questions of varying importance in the life of all. There are many factors to be considered. With some it is an easy matter to 'pull up stakes,' as the race did in its pastoral stage. The very evolution of the race, from a wandering life to one anchored, so to speak, to a city environment makes it difficult for the average individual to leave the crowded city and go back to the more primitive country life. We need only read the pathetic letters of Mrs. Carlyle with her chronic illhealth in smoky London, but with good health in her old country home in Scotland. She evidently realized relationships and made many trips to and fro, but after being accustomed to London life and meeting congenial people, it was next to impossible to go back to the monotonous life in the country. We thus see that physically she needed one sort of environment, that of the pure air of the country; mentally she required the contact of kindred minds, to be found in the large city.

What we get out of a book depends largely on the interest with which we take it up and on our previous knowledge. We get out of it what we put in. A book in Greek or in Science will be understood by comparatively few, in contrast to the many who read and understand a popular novel; even 'problem novels' are not always understood. By observing a man turned loose in a large library one can arrive at certain conclusions.

A biography may be so simple that most any reader can understand it. The biography or life of a military man is full of descriptions of battles, best understood by old soldiers; the life of the musician is apt to be full of technical musical matters and best understood by musicians; the scientist best understands the biographies of men of science. The individual in chronic illhealth will likely be the most appreciative reader of the biography of a man who had chronic illhealth—and the physician who studies the subject from a biological standpoint will likely be the one who not only appreciates, but understands such a life and the influence of environment.

If I can induce some of you to read biography in the light of environmental influences, especially of such a man as Huxley, then I shall have accomplished all I had in mind in beginning this paper.

