APHORISMS, DEFINITIONS, REFLECTIONS, AND PARADOXES

APHORISMS, DEFINITIONS, REFLECTIONS, AND PARADOXES,

Medical, Surgical and Dietetic

BY

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DEDICATION.

I DEDICATE these thoughts, resulting in an attempt to simplify the Theory and Art of Medicine, to my colleagues of the Medical Profession, a profession which, as a body, has always in its long and honourable history preferred the public benefit to its own immediate gain, and which has, as a body, considered the public benefit to be its own gain. And in particular I dedicate them to the Medical Faculty of the ancient University of Edinburgh, where happily, in my student days, philosophy yet survived, and where there is reason to believe it still lives and will continue to do so; where also I was taught, if not to think, at least to make what effort was possible, towards the application of the reasoning faculty to the facts and phenomena revealed by science.

PREFACE.

These observations, being themselves an introduction or preface to the study of the theory and art of medicine, scarcely require any preface. The position of medicine is depressing — the confusion of its nomenclature, its want of definiteness, its cross-divisions discouraging, as also the conflict of opinion, and therefore of practice, among even the most distinguished of its exponents. Although, no doubt, some of this confusion arises from the nature of the subject, it does not all seem to do so by any means. In these aphorisms attention has been directed to a few simple and fundamental facts which occur in the organism. Proper appreciation of these facts would, I think, clear up some of the confusion. We do not, I think, apply our physiological knowledge sufficiently to the practice of the medical art, or to the theory on which such practice must be founded. Medicine and surgery are only applied physiology and anatomy; and physiology and anatomy either are, or are becoming, scientific. I do not think that it is want of knowledge from which, as a profession, we suffer. We

have plenty of facts, but we do not make a good use of them. As physiologists we know about the circulation of the blood and the mode of its formation, but we do not, it appears to me, make sufficient use of our knowledge in dealing with our patients. I doubt, although Harvey and Vesalius and Cæsalpinus have come and gone since his time, whether we have a much better appreciation of the meaning of feeling the pulse than Celsus had, who, though he thought that he was feeling the vein and not the artery, still knew that emotions like fear, hope, and anger, and physical conditions like exposure to the sun, the bath, and exercises, all might affect the pulse-rate, and must be allowed for if a proper appreciation of its condition was to be made. We talk of the necessity of making careful and accurate observations. I fear that perhaps I may not obtain a hearing if I say that in many directions we have made so many careful and accurate observations that it is far more incumbent on us to make a good use of the observations we have already made than to add to them. We want a philosophy rather than a science. In many ways we have scientific facts enough—far more than we know how to use. Take such a question as the increase of cancer, or its alleged increase—it does not for the moment matter whether the increase is real or imaginary. In England, in 1892, 20,353 persons died of cancer; in 1893, 21,135; in 1894, 21,422; in 1895, 22,945; in 1896, 23,521. In the quinquennium 1892-1896 109,376 persons died of cancer in England and Wales alone.

Suppose that these cases lasted on the average two years each, and that they were seen by their medical attendants even twice a week (these will, I think, be admitted to be reasonable estimates by any experienced man), we should then have made $50 \times 4 \times 109{,}376$, or 21,875,200 observations on cancer. Plainly, in the last five years we *have* made this number, and more than this number, of careful and accurate observations on cancer. What has come out of these observations? If I said, 'Nothing!' I should not be far wrong, for there is no agreement either (1) as to whether there is a real increase of cancer or not, or (2) as to what causes are inducing it, or therefore (3) as to what steps we must take to prevent a disease which we cannot cure. If we had a real living actual appreciation of the meaning of the circulation of the blood, I do not believe that this pitiable and helpless condition of a learned profession could endure for another six months. In every direction, it seems to me, the same conclusion must be drawn. After the lapse of 2,300 or 2,400 years since the Greek writers wrote on medicine, the same diseases (practically) are rampant, and claim their victims now as they did then. We seem no nearer conclusions as to their causation now than we were then; and yet causation is of paramount importance in preventive medicine. I might refer to epidemic fevers, *e.g.* It seems incredible that after all our study of them, a study carried out by the labours of the most learned and accomplished ornaments of our laborious profession, there should still be any doubt as to whether their predisposing

causes are mainly wrong feeding or wrong aeration, or as to the question whether food enters into their causation at all. As in the case of cancer, and even more than in the case of cancer, many millions of careful and accurate observations have been made; but the outcome of these observations, how poor it is!

May I say a word about the carefulness and accuracy of observations? Observations must, indeed, be careful, but they cannot be accurate. It is not in the power of mortal man, however delicate are his instruments, or however refined and subtle his powers, to reach accuracy in observations. The planet or star is a fraction of a second out of the time of his calculation, or it is a fraction of a second out of its expected place. The temperature of a patient according to one accurate observer is 103·9° F.; according to the next only 103·8° F. The pulse-rate, according to the one, 131; according to the other, 132. What difference does it make? There or thereabouts will the astronomical observer find the planet or the star, and at about 130 a minute will the pulse-rate be found to be running. The main things to observe are (1) whether the temperature is above normal or below it, and (2, of greater importance) whether it is rising or falling in rate. The same questions are important in regard to the pulse-rate, not whether it is 130, 131, or 132; and if medical observers should dispute as to whether the pulse-rate was 131 or 132, or the temperature 103·8° or 103·9° F., they would justly be accused by the public of disputing about the difference

between trifles. And yet such a dispute, futile and unimportant as it would be, would raise questions as to the accuracy of the observations. It is quite impossible to obtain perfect accuracy. All that we can attain to is an approximation more or less near; but perfect accuracy is not attainable, nor would it be of much value if it were.

I suppose I shall be accused of wishing to re-introduce an archaic philosophy by some who may read these remarks; and may be reminded, perhaps, of the interesting and fruitful disputations of the scholiasts and theologians as to how many archangels could dance upon the point of a needle. Not so. I can only reply: There is no good reason why we should refrain from the use of our reason on approximately correct and useful and practical data, because our predecessors used their reason wisely on widely inaccurate and useless data. But without a philosophy where are we? And what use are we making of the enormous accumulation of our facts? I should be glad and proud indeed if I could think that any remarks or observations of mine had induced my laborious and accomplished colleagues, while not neglecting the accumulation of further facts, to propound working theories by which they might be able to put to good account those facts, numerous and important, beyond all question, and accurate, so far as accuracy is attainable, which they have already accumulated.

It is possible, nay, it is likely, that to a great extent a better philosophy might compel the medical profession to attempt, to some extent, to efface itself. If an ignorant

person were to ask an astronomer whereabouts in the heavens a certain body was to be found, he would be told to direct his telescope to a certain part of the heavens at a certain time, say, *e.g.*, due west at 9 p.m. If, now, a second astronomer, being asked the same question, were to say, 'Point your telescope due east at 10 p.m. and you will see it,' the ignorant person would conclude either that his question had been misapprehended, or if it had been properly understood, then he would conclude that there was no astronomical science. But if both experts gave him the same answer to a fraction of a second in time and a fraction of a second in space or place, he would conclude, even if they differed a little, that there was a science of astronomy; and he would further conclude that if he, the inquirer, could master the principles of astronomy, he might find out for himself where in time and place that heavenly body would be, and would not require to consult the astronomical expert. But if this is so, can we wonder when one doctor gives advice in a sense diametrically opposed to that of his expert colleague—can we wonder that the public should fly to the conclusion that there is no science of medicine? If, on the other hand, there is a science of medicine, as I firmly believe there is, and if the facts pointed at in these aphorisms give the indication of the method by which the science is to be built up, then it might follow that the layman might use for his own purposes the principles laid down by scientific medicine, and might not, therefore, require to consult the medical man at all.

It has been well said that he who is his own legal adviser has, or is apt to have, a fool for his client ; but the law does not pretend to be a science. If it were founded on the nature of human relations and were properly codified, no doubt it might be ; and if that were so, it would not be so unsafe to apply it to one's own case, because the application of certain principles universally admitted would probably lead us to sound conclusions. Until that time, however, the layman must employ the lawyer, even if he has some doubt as to the bias or the want of bias of his adviser ; and if his means were abundant, he would always employ a legal adviser rather than have the trouble of conducting his own case. Medical questions, however, small and great, and medical difficulties arise much oftener in life than do legal ones, and in present circumstances many thousands, or even millions, of our fellow men and women apply their own medical knowledge to the conduct of the business of life. They do not send for the doctor for every 'cold' or for every trifling injury. It is of great importance, therefore, that they should have sound principles to guide them, and if after the statement of these it should be found that the intervention of an expert is not necessary for their application to the business of life, we can only rejoice that general medical education has so far advanced that it should be so. But the effacement of the medical expert is a danger at present very remote, even although, no doubt, the profession is fearfully crowded, and some of us have a difficulty in making an honourable

living. We have, at least, always as a body striven for the public interest in all the long history of our laborious and often thankless art, and no doubt we shall be true to our traditions in the future as we have been in the past. That a true science of medicine and surgery founded on a sound philosophy is possible, I have no doubt, and that it is to be created through the knowledge of the circulation of the blood and fluids of the body, and that this, again, depends on the relations of the body to food, air and exercises, and in this order food first, then air, and then exercises, I have equally little doubt. No doubt in the end it is not on us, but on our patients, that the application of these principles is to depend. It is for us to interpret the law and to state it faithfully; it is for them to obey it or otherwise, as they think fit. The law will take care of itself; its results are inevitable. Let us see to it that our part in the statement and interpretation of it is well and faithfully done, and then every man and every woman will have the opportunity of attempting to obey it or otherwise, as they think proper; for truly

> 'They only who obey have freedom found;
> Then free the most when seeming strongest bound.'

A. RABAGLIATI.

BRADFORD, *March*, 1901.

APHORISMS, DEFINITIONS, REFLECTIONS AND PARADOXES,

MEDICAL, SURGICAL, AND DIETETIC.

I.

GENERAL APHORISMS.

1. In studying a round or circle of organic processes, all mutually connected with one another, it is immaterial at what process or point in the circle we commence our study: we shall return to that point or process again.

2. A circle has neither beginning nor end; or it is all beginning and all end.

3. Every fact or process in the organic mechanism of the body may be considered as the beginning or the ending of the mechanism. It is, therefore, immaterial at what point we commence our study of it.

4. Nevertheless, there are some ways in which more

instruction will be obtained from the study of the mechanism than if it is approached in other ways.

5. In the case of a steam-engine driving looms or combing machines, it is immaterial whether we commence our study of its action at the shaft, which, by its attachment to the crank, turns gearing which turns leather bands, causing the back and forward movement of the looms and the to-and-fro movement of the shuttles. Through bands and driving-wheel and eccentric, through piston and cylinder and boiler and the fire, which is the source of the motion of the machine and of the mill, we come back to the point from which we started. But it is more illuminating and instructive to begin with the fire, and proceed to examine boiler, cylinder, piston, etc., than in other ways; or even to commence with the pump which sends the water into the boiler.

6. In the case of the organic processes of the body, with a view to their medical management, the most illuminating method of study is to commence with the ingestion of food into the mouth; to follow the food after it has been acted on by the teeth and saliva; to study its course along the gullet to the stomach, and its chymification there; to pursue it in its course along the intestines, till, after having been mixed with the pancreatic and hepatic secretions, it becomes chylified; to follow it then by the gastric, intestinal, and splenic veins along the portal system to the liver, and

thence till it joins the general blood-current in the inferior vena cava.

7. By no means should the entrance of more solid particles into the blood through the intestinal villi be overlooked; nor yet the course of the lymphatic vessels arising from the muscles of the limbs, and, indeed, from all the tissues of the body. Attention should also be directed to the elaboration of the lymph in the lymphatic glands, and the entrance of the chyle and lymph into the blood by the thoracic duct, as it is chiefly in this way that materials are carried into the blood. Excess, sufficiency, or deficiency of these materials plays the most important part in the mechanism or working of the body.

8. The quantity of lymph in the body is unknown; but if the quantity of blood in the body of a man weighing 12 or 13 stones is about 14 pints, the quantity of lymph is said to be not less, probably, than 30 or 40 pints.

9. For the maintenance of health a due proportion ought to be maintained between the quantities of blood and lymph respectively in the body. When the proportion of lymph to blood is more than two to one—when, that is, there are more than 28 or 30 pints of lymph to about 14 pints of blood, it is probable that the limits of physiological health have been passed, and that a pathological state has been reached. An excess of lymph in the body is apt to lead to

many abnormal conditions, and particularly to œdema, or a watery infiltration of the cellular tissues of the body, or to the effusion of serum from the blood into some of the hollow cavities of the body, as, *e.g.*, into bursal or synovial cavities, or into ligamentous tissues in and about joints; into the layers of periosteal and perimysitic membranes; or into pleural or pericardial or peritoneal or meningeal sacs, causing effusions. These collections of serum form dropsies.

10. The science of physiology, or the healthy action or working of the body, is separated by no strict line of demarcation from pathology, or the science of its diseased working. The processes of pathology differ from the processes of physiology rather in degree than in kind. Pathology is in many respects applied physiology, and the connecting-links between the two are particularly evident when the consequences of food ingestion are considered.

11. The science of physiology, like other sciences, has progressed by the making of observations and experiments on the one hand, and by attempting to explain the same by the formulation of mental concepts or laws on the other. For a real advance, observations, it is generally said, must be full and accurate, and generalizations proportionate to and consonant with the facts. And the test of the truth of a law is the power which we obtain through it to predict the future, and the discovery that it covers the movement of new facts belonging to its own order not within our

knowledge when the law was formulated. If the facts are not carefully and accurately observed, or if they are not sufficiently numerous, the law founded on them will not be consonant with the facts of Nature, and will not satisfy us in attempting to predict or explain new facts.

12. If our predecessors, in formulating mental conceptions or laws, had brought their conceptions to the test of facts, their conceptions would have been more in accordance with the constitution and course of Nature.

13. But it is no good reason that we should refrain from the use of our reason from full and accurate premises, because our predecessors used their reason wisely from unsound and incomplete premises. Although it may have been fanciful to describe diseases as hot and cold, and to argue that we must oppose hot by cold and cold by hot, it is just to say that in some diseased conditions the body shows a supernormal temperature, and in some a subnormal one; and even that at different stages a disease shows now a too high temperature and then a too low one. And we most certainly ought to try to discover what will reduce the one and increase the other. It may also have been fanciful to say that some diseases were dry and some moist, and that we should oppose dry by moist and moist by dry. But undoubtedly in some diseases the skin is too dry and the secretions deficient, and in others the skin is too moist and the secretions in excess. And unquestionably we ought to

inquire what will increase the deficiency or reduce the excess. It is even true, also, that in many diseases the skin is too dry at one stage and too moist at another, so that a disease is often both hot and cold and also dry and moist, or may be so.

14. A sound physician, however, will rather try to discover what made the skin too dry or too moist, and the body too hot or too cold, and will try to remove the causes which produced these states, than attempt to oppose hot to cold or moist to dry, although he frequently does the latter also as a detail and temporary measure in treatment, applying, for instance, an evaporating lotion to a hot, feverish head, or ordering a sudorific for a hot, too dry skin. (Under aphorisms 82 to 110 the best means of fulfilling these indications are mentioned.)

15. Physiology has assumed that function depends on structure, and has made her advances by this assumption. But science does not determine whether function depends on structure, or whether structure depends on function. What science does say is, that function and structure are co-ordinated and correlated. And she would have advanced had she assumed that function determines structure equally as well as by assuming that structure determines function. In point of fact, it is for philosophy and not for science to determine either the one or the other. Structure and function may both be effects of a common cause.

16. Although it is impossible to say which was first, structure or function, it is probably more instructive to think of function before structure than of structure before function. Animals may alter their structure by unconscious wishing, for an animal may wish for something without knowing that it does so. The desire may be before the organ through which the object of the desire was accomplished.

17. We think, for instance, of the muscles of the ham and calf as flexing the knee-joint. But the muscles may have arisen because of the necessity laid upon the knee-joint to be flexed in the conduct of the business of life. It may have been the need for flexure which created the muscles and commanded their insertion; not the existence of the muscles which gave or created the power, still less the desire for flexure.

18. Induction is, no doubt, founded on the observation and comparison of numbers of instances, but it is from *one* that the inspiration or flash of suggestion of the law generally comes. When the law has been suggested to the mind, it is found to fit the other cases, and so becomes established after having been used, let us say, for prediction; or it is discarded because not found to govern other future cases, or to allow us to make predictions. The other past cases were, no doubt, in the background of the mind, so to say; they were in the memory, but not in consciousness, as it has been expressed. But it was one

that gave the inspiration; it was from one case that the vision of the law came.

19. While it is well to know a large number of facts and to make a large number of observations, it is more important to have in one's mind a good working theory or good working theories of the facts and observations already known and made. Although some observers despise or think that they despise theories, even they use them in some form or other. Even he who thinks that each case must be dealt with on its merits subscribes (if without knowing it) to the theory that by thinking about the facts, and examining them closely, some way of managing them will most likely become evident; or he subscribes to some other like theory. All observers, whether they know it or not, subscribe at least to the theory that the future will resemble the past, or that what has been found useful before will prove so again. But even this theory will not show us how to manage a first case of illness; since, so far as it is concerned, we have no past experience to draw upon.

20. The validity of a law of nature depends almost wholly on the number of instances which, after its discovery, it is found to govern or explain, and very little indeed on the number of instances on which its formulation was founded. One instance may have given the suggestion. To say that one instance followed the law of the rest of its order

is to be guilty of circular reasoning. Nevertheless, it is probably in this way that the human mind moves and can only move. A large number of instances are seen to occur and are seemingly forgotten. A fresh instance causes the suggestion or inspiration of the law; the law is verified by being applied to new instances and being found to govern them. Lastly, it is applied to prediction, and the law is then allowed to be established. A law once thus established will be valid for always, although subsequent inquiry may show that it can be simplified or reduced to a simpler expression. The ultimate law of matter, so far as at present formulated or understood, appears to contain two factors which vary with one another, viz., that it acts in proportion to its mass, and inversely as the square of its distance. Gravitation, heat, light, electricity, etc., obey this law.

21. Suggestions of some analogy to the action of this law seem to appear when physiological and pharmaceutical actions are considered. The ratio of the increase of a sensation to its stimulus, for instance, has been said to be that of a logarithm to its number. That is, a sensation has been thought to be intense, not in proportion to the quantity of stimulation acting, but, while the quantity of the stimulation has varied in geometrical ratio, the intensity of the sensation has varied in arithmetical ratio. Similarly when drug action is considered. Drugs seem to affect the economy, not in proportion to the quantities

administered, but the law seems to be something like the following: Drugs affect the economy in proportion to the quantity of them in action (not by any means in proportion to the quantities administered) in such a way that while the quantities acting vary in arithmetical ratio, the effects on the economy vary in geometrical ratio. The resistance of the organism seems in some cases to be so low that no direct ratio can be made out between the quantities of drugs acting on it and the effects produced. Hippocrates spoke of the body suffering ἄνευ προφάσιος. And we speak to-day of conditions supervening without adequate cause; or vulgarly it is said that they came of themselves. If we had a measure of resistance introduced for the human body, it might be found that while the quantity of the drug administered varied in arithmetical ratio, that of the physiological effect produced varied in geometrical ratio.

22. Careful and accurate observations in medicine are not an end in themselves. They are means to the foundation of good reasoning on them. They are the foundation on which reasoning is to raise the superstructure of good treatment and of the prevention of disease.

23. If it can scarcely be said that in any direction careful and accurate observations have been carried far enough, it may fairly be said that in many directions they have been carried so far that it is far more important to found

generalizations on them than to add new observations, to make good use of those already made than to obtain new ones. A control experiment or a differential experiment may from time to time enable us to settle a question in a way that no further collection of observations could.

APHORISMS ON FOOD.

24. The function of food or the purpose of its digestion is to make blood; the function of blood is to nourish the body. It is only by ellipsis that the function of the food can be said to be 'to nourish the body, to supply the waste of the tissues, and to maintain the normal composition of the body.' It does these things through the manufacture and medium of the blood and lymph, the latter of which removes waste products from the tissues and carries them back into the blood for further use or for elimination from the body.

25. Under the term 'food' is included drink also. That bad water has often been the vehicle by which disease has been conveyed into the body is quite certain; and nothing said about the evils of kako-siteism, of poly-siteism, and of pollaki-siteism, must be understood as contradicting this view. These aphorisms propose to draw attention only to some ideas not generally recognised in medicine, and to combat others; but are not intended as a complete theory of medicine. It does not appear, however, that poly-potism has proved a great cause of the conveyance of

disease into the body if the water was good; nor yet that pollaki-potism has been so either. That excess in the use of tea, coffee, cocoa and other drinks has often been a cause of disease is far more than likely. But the effects of kako-siteism are so overwhelmingly greater than those of kako-potism that the mention of the one has been meant to include the other.

26. As to alcohol, while its effects in excess have been notoriously evil, and are so yet, it is more than likely that a good many of the evils attributed to alcoholism have really been due to improper feeding. If the teetotalers, in place of confining their teaching to a-methysm had added to it instructions regarding the proper use of food, they would probably have effected much more improvement in the public health than they have hitherto been able to do. There can be no doubt at all that a large number of teetotalers have died comparatively early in life, not from teetotalism, but from the effects of improper feeding. The teetotalers have proved that alcohol is not necessary to persons in health, and that long and healthy life is attainable without its use; and, in particular, that children and young persons do not need it, and are generally better without it. That they have proved that all the effects which they say are due to alcohol are really due to it is not at all certain, and cannot be admitted. They seem frequently to have failed to distinguish between the effects of kako-siteism and of methysm.

27. The uses to which food is put after its entrance into the blood are mainly two: (1) It is used to generate heat, which is in the animal body, as in mechanical machines, convertible into motion or energy. It is by means of food, immediately or remotely, that the temperature of the body is in cold and temperate climates (and even as a rule in tropical climates, in the shade and at night) greater than that of the surrounding air. And (2) It is used to supply the waste or metabolism of the tissues, as it is called, and to maintain the normal composition of the body.

28. To generate heat, food must, after digestion, enter the blood, but it is a question if it must always enter into the composition of the tissues of the body. It may be, and probably is to a considerable extent, burned or oxidized directly in the body, as coals are burned in a furnace. Most commonly, physiologists assert, food is first built into tissue, and the tissue is used for oxidation or combustion to supply the bodily heat, and the means of motion and locomotion, and the waste of the tissues.

29. But if this latter process occurs to any great extent beyond the requirements of the body, if any more material is stored in the blood than is required for the repair of the various parts of the body, then inflammation and fever (see pp. 53, 56, 66, for definitions of inflammation and fever respectively) are very apt to ensue. The presence of hæmoglobin in the blood affords a source of oxygen beyond

the immediate requirements of the economy, so that some animals can even respire in an atmosphere of nitrogen, and still give out carbonic acid gas, getting the carbon from the body and the oxygen from the blood. It is not very unlikely therefore, reasoning from analogy, that the blood may store up nutriment from the food beyond the requirements of tissue formation and tissue repair, and that the body may draw on this excess of nutriment for the direct production of heat without any necessity that the nutriment should in all cases first be converted into tissue. Further than this, if nutriment is in excess in the blood beyond the needs of the tissues, the repair of the tissues may be overdone, so to say, and a certain amount of hypertrophy or overgrowth of one or more of the tissues may occur. This overgrown or hypertrophied tissue is very 'labile,' and easily breaks down with excessive combustion or oxidation, so being eliminated from the body, and at the same time raising the bodily temperature above the normal—in short, causing inflammation or even fever.

30. The body can convert almost any food into any tissue. Out of a mixed diet the body can make or repair any tissue. Even when food, as starch, contains no nitrogen, such food may contribute to support and repair muscle which does contain nitrogen, because the body contains within itself stores from which nitrogen can be drawn, and these, being added to the purely carboniferous food ingested, can repair

the nitrogenous tissue. These stores were no doubt remotely supplied from nitrogenous food. The carboniferous food may, and no doubt often does, contribute to the repair of the carboniferous parts of the nitrogenous tissues, while the nitrogenous elements may be drawn from proteid food or from stores accumulated in the blood or viscera from previous food consumption.

31. The following facts seem to justify the inference that the products of digestion stored in the blood may be directly converted into heat and motion without having entered into the composition of the tissues, so as to become part and parcel of them. A man who was in the habit of having for his last meal, at 7 p.m., 2 or 3 ounces of brown bread-and-butter, with two-thirds of a pint of weak tea, two teaspoonfuls of cream, and two ordinary-sized pieces of white lump sugar, habitually abstained from solid food till 1.30 p.m. the following day. In the morning at seven he had a glass of hot water; at 8 a.m. he had two cups of hot coffee or hot cocoa, each with a piece of sugar and two teaspoonfuls of cream; in the forenoon he walked about doing his business. About 10 a.m. he passed about a pint of clear urine looking very like water (specific gravity 1005). By 1 p.m. he passed 8 ounces of urine with a specific gravity of 1012, and containing urea to the extent of 1·4 per cent. At 1.30 p.m. he took 4 ounces of Hovis bread, ½ pint of white soup with cauliflower boiled in it, and ½ ounce each of cheese and butter. At 4 p.m. he

passed 6 ounces of urine (specific gravity 1022) deeply coloured with urea and urates, which, however, did not deposit or precipitate from the urine. Urea = 3·56 per cent. It is probable that the urea came from the food. It is not likely that the bread, etc.,were first built up into muscular tissue and then used in that form to make urea. There seems hardly to have been time for the double transformation, although there was plenty of time for some of the bread to be digested, and for urea and urates to be separated from the blood.

32. Further, the man had more muscular exertion in the forenoon before his meal than he had in the afternoon after it; so that if muscular exertion represented tissue waste, there ought to have been more urea passed in the forenoon than in the afternoon; but the reverse was the case, showing that the urea was caused by the food rather than by muscular exercise.

33. The urine passed in the morning before ten was no doubt like what it seemed, water nearly pure and containing very little urea. On waking in the morning the bodily temperature was 97·5° F. (97·5° in mouth, 98·7° in rectum). After taking the glass of hot water the temperature rose to 98·4°. Plainly the ½ pint of hot water taken did not supply the material by the oxidation of which the bodily temperature was raised by that amount. Neither, as a question of physics, could ½ pound of water at 110° F.

possibly raise 120 pounds of bodily tissue through 0·9° F. It must have acted as a stimulant to induce the body to use up the material already in it. A cup of hot coffee taken alone will sometimes raise the bodily temperature from 96° to 99°, the temperature remaining up for an hour or two. Neither the hot water nor the hot coffee supply the material whose combustion raises the bodily temperature, and they certainly could not have been built up into tissue. But whether they caused the blood to draw on its own supplies, or whether they caused oxidation and combustion of muscular or other bodily tissue, is not settled by this experiment.

34. When a man fasts for a long period of time—four, five, or six weeks, for example—abstaining from every food but water, he loses weight during the process. But he does not lose it equally or equably during the whole time of the fast. Sometimes, for as much as three days at a time, he may lose no weight at all, or none discoverable by the weighing-machine. After that, on the fourth day, perhaps (the days in question might be in the second or third week of the fast), he loses, say, a pound avoirdupois. Now, it is difficult to conceive from what source he obtained his supplies for the maintenance of the animal heat and the production of urea and CO_2 during the days when he lost no appreciable weight, unless he got them from the blood. The blood parting with some of its reserves, the body kept up its weight by the ingestion of water, which was supplied

freely during the continuance of the fast. Had the solid bodily tissues been used to supply the urea and CO_2, and the animal heat and motion, probably some loss of weight would have ensued. Of course loss of weight did occur, as said, on the fourth day, but on the previous three days none, or an inappreciable quantity. It looks as if the body alternately uses up materials in the blood and then portions of the solid tissues, and therefore that the production of urea, CO_2, and of motion and heat, may be effected for short periods of time, as well from metabolism of food as from metabolism of tissue; that is, as if, in some circumstances, food may be burned directly in the body as coals are burned in a grate, and without becoming part and parcel of the body first.

35. While the presence of urea and of urates in the urine probably bears some relation to work done, it seems to bear a much more noticeable or marked relation to food consumed.

36. There is a great tendency to an over-accumulation of reserve material in the blood; and from the blood that reserve material is very apt to be built up into tissue which therefore is liable to undergo hypertrophy or overgrowth. In other words, it is easy, in enriching the blood by food, to over-enrich it; to cause, through over-supply of food-material, too much chyle and other material to enter the blood.

37. Much has been said and written of late years regarding uric acid present in the blood and tissues and excretions of the body. If uric acid be taken as the index of the presence of waste unassimilated matters in the blood and tissues, a uric-acid-free diet will be much oftener found to be a diet properly quantitified and chronised or timed than a diet free from the materials which most readily form uric acid. Any ordinary mixed diet, if taken in excess, will form an excess of uric acid, even if the materials of which it is composed consist largely of bread and rice pudding, which do not contain a great deal of nitrogen. And the important thing to do, is rather to take a moderate quantity of meat and flesh or fish with tea or coffee also in moderation, if a person wishes to take those articles of diet, than to abstain from them in order to avoid the formation of uric acid. What a properly quantitified and chronised diet is will appear from subsequent aphorisms.

38. The blood requires for the nutrition of the body only a very limited quantity of chyle. The blood of a man of average size living in a town and doing the active but not laborious work of an average townsman, in an office, on the exchange, in a mill or factory or shop, or acting as a commercial traveller, etc., requires only as much chyle as is supplied by from 12 to 24 ounces of ordinary unmixed food daily, taken in two portions or meals, eight hours distant from one another. The body of an average-sized house-keeping or society woman, or of a domestic servant,

requires as much chyle as is supplied by from 12 to 20 ounces of ordinary mixed food daily, taken at similar intervals. And the quantities required are probably nearer to the former and lower limits than they are to the higher and latter ones.

39. Moderation in eating and drinking, as indeed in all other things, is the only safe rule; and moderation in food-consumption is expressed in the terms of the previous proposition.

40. Although enrichment of the blood is the end or purpose of digestion, digestion is itself a long and laborious process, the performance of which taxes the body or economy very much indeed. Neither the benefits of digestion nor of any other good thing are obtained in the body without labour.

41. From this it follows that the more delicate persons are, the less ought they to load their digestive organs with food; otherwise the less and the seldomer ought they to eat, as in this way they avoid unnecessary digestive labour.

42. Among the persons of my acquaintance, those have lived the longest and have been least often or seldomest ill who have eaten the least; not those who have eaten the most and the oftenest. There are exceptions to this statement; but it embodies the rule.

43. Delicate persons are persons with a low resistance to labour, physical and physiological. As a low resistance to digestive physiological labour is a very common condition, delicate persons ought to refrain from distressing themselves more than is necessary by this physiological digestive labour; that is, they ought to take little food and seldom, rather than little and often, and *a fortiori* should they take little food and seldom rather than much and often. As is said elsewhere, it is far safer for delicate persons (and for all persons) to try to discover how little food they can live upon without sustaining loss, than to try to discover how much they can continue to take without sustaining positive damage. As the lowest profit which the merchant can continue to take without loss or failure is just the largest profit which he can continue to get without damaging his business, so the least amount of food which a person can continue to live on without loss is just the most which he can continue to assimilate without sustaining positive damage.

44. The resistance of the body to digestive labour, as to all other kinds of labour, differs very considerably in different persons, and in the same person in different circumstances. In some human organisms digestion is quickly performed; there is tachytrophia—in some it is slowly performed; there is bradytrophia, and the same organism performs this function more quickly or more slowly, according to the circumstances or environment in which it is placed.

Digestion of even a light meal, weighing, say, 3 ounces of bread-and-butter, with a cup or two of tea, is not performed in the average man or woman under five or six hours. It is very unwise to eat a second meal, however small, before the first one has been completely digested. The ordinary plan of eating thrice daily is probably for the average townsman and townswoman and townschild once too often. But to eat four, five, six, seven or more times a day, as some persons do, is both morbiferous and mortiferous. The resistance of the same and of different bodies to digestive labour varies according to constitution and environment.

45. With a body weighing 74 kilogrammes, or about 164 pounds, Ranke found himself sufficiently nourished with—

Proteids - - - -	100 grammes.
Fats - - - -	100 ,,
Carbohydrates - - -	240 ,,

This he could have got from—

	Proteids. Grams.	Fat. Grams.	Carbohydrates. Grams.
Lean meat, 9 ounces, or 250 grammes, containing - - - - -	55	8·5	0
Bread, 18 ounces, or 500 grammes, containing	40	7·5	245
Butter, 2 ounces, or 55 grammes, ,,	0	55·0	0
Fat, 1 ounce, or 28 grammes, ,,	0	28	0
Total - - -	95	99	245

This is the allowance for a large man. Most men weigh a good deal less than this; but even so it is about 30 ounces of mixed diet daily. At the same rate, a man weighing 120 pounds (we are not told if Ranke's weight

included his clothes), $\frac{120}{160}$, or $\frac{3}{4}$, of this weight would require $\frac{3}{4}$ of this allowance of food daily. That is, $6\frac{3}{4}$ ounces lean meat, about 13 ounces of bread, $1\frac{1}{2}$ ounces butter, and $\frac{3}{4}$ ounce of fat—*i.e.*, about 22 ounces of food as it comes to the table.

46. But we are not told for how long Ranke persisted in taking this diet, and whether, for instance, he had any 'colds,' rheumatism, bronchitis, headaches, or other ailments. Most men of my acquaintance would suffer from dyspepsia, constipation, herpes labiorum, bronchitis, rheumatism, pruritus ani—one or more of these affections —if they took anything like so large a quantity of bread as 18 ounces daily. Nine ounces of meat is also a large quantity to take daily.

47. The demands of Moleschott are higher than those of Ranke, viz.: Proteids 120 grammes, fat 90 grammes, and carbohydrates 333 grammes. But most men habitually take much more food than these allowances. A patient of mine, on the other hand, kept himself for years on an allowance daily of the following, on the average:

			Proteids. Grams.	Fat. Grams.	Carbohydrates Grams.
Lean meat,	3 ounces, containing	-	18	3	0
Fish,	3 ,, ,,	-	18	3	0
Bread,	8 ,, ,,	-	18	3·5	109
Rice,	4 ,, ,,	-	5·8	1·1	92
Butter,	2 ,, ,,	-	0	54	0
Cheese,	2 ,, ,,	-	20	20	0
One egg,	2 ,, ,,	-	4·5	5	0
Total	24 ounces		84·3	89·6	201

Taking his weight as three-quarters of Ranke's, he would require, in Ranke's estimate, 75 grammes proteids, 75 grammes fat, and 180 grammes carbohydrates. My patient got rid of his dyspepsia, his colds, his herpes, his bronchitis, and rheumatism on this diet, and, indeed, came to the conclusion that he did not require so much as these quantities, finding that he was capable of prolonged exertion without fatigue or suffering, better on smaller quantities of food than those mentioned. Nor did he lose weight, but actually gained weight, during the process. A considerable period of time is required during which such an experiment must be conducted before we can be certified of the result. A period of not less than six months at least is required before we can say what the result of the experiment will be.

48. Cornaro, it is well known, lived from the age of thirty-eight years, when he suffered greatly from dyspepsia and many ailments, till the age of ninety-seven, or for a period of fifty-nine years, on a diet of 12 ounces of mixed food daily and 14 ounces of red wine. His age at death is variously given, but was not less than ninety-seven, and he himself believed it might have been much more if he had not abused his constitution in his youth.

49. As digestion is a labour, and often a severe labour, its primary effect is depression or lowering of the strength, not increase or elevation of the strength, as is commonly

supposed. If well managed, no doubt the secondary effect is elevating or strengthening or strength-maintaining. And in many cases the increase of strength from digestion comes so early (fluid food is often, for instance, absorbed immediately on being taken) that the primary lowering effect is not noticed. Sometimes, also, a hot drink seems to be strengthening even primarily, because it stimulates the circulation; and increased oxidation of material already stored up in the body is a very early effect. This increased oxidation, of course, increases vital heat, energy, and activity generally, and if there is a momentary lowering effect produced (contraction of vessels, for instance, before dilatation sets in), it passes off so speedily as to be unnoticed, and even unnoticeable. As material in excess of the requirements of the body is nearly always stored in the blood, and as such material often blocks the circulation in the tissues, and particularly in the muscular tissues, causing what may be termed a constipation of the tissues, a hot drink is often of great use in setting up oxidation of the same. The fact that taking ½ pint of hot coffee has again and again been seen to raise the body of a man weighing 140 pounds through two or three degrees Fahrenheit in temperature—from 96·3° to 99·5°, for instance—enables us to understand how fasting can be made to increase the strength and raise the bodily temperature, although at first sight it might have seemed impossible that such should be the case. A subnormal temperature, which is often, in the

body, caused by over-feeding or compelling the body to undergo too much digestive labour, may be elevated by fasting, although it is well known that a subnormal temperature may also be caused by under-feeding, and may be elevated by better feeding. The subnormal temperature due to over-feeding (poly-siteism and pollaki-siteism) may be called indirect, while that due to under-feeding (oligo-siteism or a-siteism) may be called direct. The former may be removed or elevated by oligo-siteism or a-siteism for a time, while the latter must be treated by agatho-siteism (or better feeding) or poly-siteism. We are here introduced for the first time to the paradox which meets us so often in the practice of medicine, viz., that opposite causes may induce the same state; and we are also made to recognise that opposite modes of treatment may be required to remove it (see pp. 46-52).

50. There is the most unmistakable evidence obtainable from time to time, and while persons are performing the ordinary labours or business of life, that food has not left the stomach four, five, six, seven, eight, and even ten hours after it has been taken. Indeed, food is occasionally, or even not infrequently, still in the stomach twenty-four, thirty-six, and even forty-eight hours after it has been taken. Such a material as cocoanut, for instance, has often been known to be in the stomach forty-eight hours after it has been eaten. The mushroom is often in the stomach twenty-four hours after it has been eaten, and

both the cocoanut and the mushroom may remain in the stomach for these long periods of time, although all other portions of the food taken at the same time have been subsequently chymified and passed through the pylorus hours before. The stomach seems to exercise what may be called a selective affinity in digestion, and will pass all the other parts of a meal through the pylorus while retaining some. Probably the pylorus sends through it only, or at least preferably, those parts of the food which are properly chymified, while it retains undigested materials for further action on them by the gastric juice. The mode in which this selective affinity is exercised is probably that the pylorus, unless paralyzed more or less by chronic inflammation, does not open sufficiently wide to allow unbroken lumps of food to pass through it. It would probably, therefore, be better to speak of the pylorus opening more widely or less widely than to talk of its exercising the selective affinity of passing this, that, or the other sort of food through it. It is, for instance, an interesting question whether food like cocoanut, which in many stomachs is almost wholly indigestible, is passed as readily or quickly through the pylorus, however finely it is broken up, as is chymified bread or meat or other samples of ordinary food.

51. There are some sorts of food which are both indigestible and irritant, as, *e.g.*, cocoanut. And there are foods which, though they are indigestible, are also bland, as, *e.g.*, the

mushroom or uncooked lettuce. These last seem often to lie in the stomach for many hours, yet not irritating the tender mucous membrane and not becoming acrid or highly acid, unless prepared, for instance, with vinegar or some other irritating and digestion-delaying adjuvant.

52. As very great delay of the digestion may itself be considered a form of irritation, it might be preferable to say that some sorts of food, like cocoanut, set up irritation with intolerance, manifesting itself, for example, in pain, colic, vomiting, etc., while others, like lettuce, the mushroom, etc., set up irritation with tolerance, there being no pain or other signs of annoyance, and the presence of the undigested stuff being discovered only by accident. These two states, irritation with tolerance causing simple depression or constipation, and irritation with intolerance causing inflammatory or febrile reaction or diarrhœa, appear to play a great part in the mechanism of the body. The primary step in all irritations, inflammations, and fevers, is depression.

53. 'Irritation with intolerance' might, in other words, be called a low resistance, coupled or combined with excessive reaction; and 'irritation with tolerance' might be termed a high resistance without reaction. The former state characterizes what are called the acute or severe diseases; the latter what have been termed the chronic. But a better antithesis would be short and rapid diseases,

and chronic and slow. As will appear later, the opposite of acute is not chronic, but mild.

54. Depression, irritation, and stimulation, though they seem to mean contrary or even contradictory things, mean almost the same thing. They mean different degrees of the same thing. They always correspond with contraction. But contraction, for example, of the longitudinal elements of vessels, while it shortens vessels, at once widens them ; and this widening at once causes an increased flow of blood into the vessels, which in turn stimulates the functional activity of the parts supplied. Longitudinal contraction of vessels, therefore, translates itself into stimulation. What it really is, however, is a very short-lived depression, followed almost at once by stimulation, which coincides with widening in width. This widening in width causes filling of the vessels with blood ; and this afterwards leads to hypertrophy of the transverse fibres or elements with subsequent contraction of the same. Such contraction of the transverse fibres or elements, of course, empties the vessels and lowers functional activity of parts in consequence. There is consequently produced an alternate contraction of longitudinal elements accompanied by dilatation of transverse elements, which produces increased functional activity, and, among other things, in time causes contraction of the transverse elements, so inducing emptying of vessels and decreasing functional activity. But contraction of transverse elements induces dilatation or lengthening of longitudinal elements,

which, again, increases their functional activity; and this, setting them into contraction, causes the round to begin again, and to go on as we saw it do before. But because each contraction, whether of longitudinal or of transverse elements, is an expenditure of energy which, so far as it goes, tends to exhaust the organism, we may call each contraction a depressing influence; while, in so far as it indirectly stimulates activity, we may call it a stimulating action. This ambiguity in the use of words would be avoided if we kept clearly in our minds the anatomical change—the contraction or dilatation, as the case might be—and were not misled by the introduction of functional change, the acceleration or diminution (inhibition, as in certain circumstances it has been called), which so closely accompanies it.

55. It by no means follows, therefore, that those 'keep their strength up' best who eat the oftenest. It would be probably much nearer the truth to say that those best maintain their strength who eat the seldomest, as seldom as twice a day, and in case of very marked brady-trophia even once a day, for example. It is doubtful whether in any circumstances in health eating oftener than thrice a day is necessary or desirable.

56. We shall call those persons who eat once a day only, mono-siteists; those who eat twice a day, di-siteists, or dis-siteists; those who eat thrice a day, tris-siteists; and

those unwise persons who eat oftener than thrice a day, pollaki-siteists. Occasionally we may have to speak of tetra-siteists, penta-siteists, hecta-siteists, hepta-siteists, and octo-siteists, to distinguish persons who eat four, five, six, seven, or eight times a day.

57. On the other hand, we distinguish those persons who eat more than from 12 to 24 ounces of solid food daily as poly-siteists, while we shall call those persons who eat less than these quantities oligo-siteists.

58. Primary digestion in the stomach and intestines is by no means the whole of the digestive process. There is the secondary digestion in the muscles, and, indeed, in all the tissues of the body. If stomachic and intestinal digestion takes five or six hours or longer, muscular and tissue digestion, which is performed greatly through the lymph circulation, requires probably as long again. If, therefore, the primary digestion is performed even in four hours, it may still be wise, and certainly is so, to abstain from taking more food for four hours more in order to allow the secondary digestion to be performed. This is a strong reason for the advice to eat not oftener than twice a day.

59. But if primary digestion takes six or eight hours, and the secondary digestion as many more, as seems to be the case in many people, it may be wiser for these to eat once a day only rather than even twice, giving the digestive

viscera, as well as all other parts, complete rest during night.

60. Well, therefore, might Hippocrates say, as he does in the treatise on the Ancient Medicine : 'It makes no difference whether we eat once a day or twice.' Celsus thought it was better to eat twice daily rather than once. Either of these modes of procedure is suitable for the average town dweller (probably for the country dweller also, though I am not so much in the habit of advising him). Something, of course, depends on the kind of work performed, exposure to open air, etc.

61. When it is suggested now that on the average it is better to eat once a day or twice a day than to eat thrice or four times a day, one is at once reproached with the criticism that one wants to treat all persons alike, while it is well known that various persons have varying and various capacities in respect of food consumption as of other powers and qualities.

62. In *principle* all persons must be treated alike, because all are human. But in *detail* it is perfectly evident that powers, capacities, and resistances differ considerably, and that therefore considerable differences as to quantities and times of taking food are advisable.

63. Nevertheless, it is very doubtful, if it is ever wise, that

adults in health should take fewer than six meals a week or more than twenty-one. And I think that for the average person fourteen meals a week is about the best arrangement, and these small ones, averaging, that is, for the townsman and townswoman ½ to ¾ pound each of mixed solid food as it comes to the table, or perhaps 12 to 16 ounces at one meal, and 4 to 6 ounces at the other. A good arrangement for many persons no doubt might be 4 to 6 ounces of mixed ordinary food three times a day, say at 7 or 8 a.m., and 1 and 8 p.m.

64. If you are in the habit of eating once a day, if you are mono-siteous by habit, and if at that one meal you take more food than you require or can assimilate, you will suffer from indigestion, or you may suffer from indigestion just the same as if at each of two or of three or more meals you took more food than you required or could assimilate.

65. It is better to take less food at your ordinary meal than to suffer from indigestion.

66. It is less dangerous to health, however, to suffer from the effects of indigestion once a day than to suffer from them twice a day; and still less dangerous to suffer once daily than three, four, five, or more times daily.

67. Doctors often say to clients, 'You must be careful,' or 'You must be very careful with your diet,' but what they

mean by that advice is not always clear. If you are excessively careful, you will eat once a day—you will be mono-siteous—say 8 ounces of mixed diet. If you are very careful, you will eat twice daily—you will be dis-siteous—8 ounces at one meal, 4 ounces at the other of ordinary mixed diet. If you are moderately careful, you will eat thrice a day—you will be tris-siteous—8 ounces at one meal, and from 4 to 6 ounces at each of the other two, say at 8 a.m and 1 and 7 or 8 p.m. If you are careless, you will eat four times a day—you will be tetra-siteous—2 to 3 pounds of ordinary food. If you are reckless, you will eat five times daily—you will be penta-siteous—to the amount of 4 or 5 pounds of ordinary mixed diet. I have no adjective to describe those who eat oftener than five times daily; and yet I have met persons who ate eight times daily, and one person who ate ten times.

68. The good effects seen in some cases to follow from the Salisbury diet of beef and hot water are often due no doubt to the stoppage of the starch and sugar which have previously bulked too much in the diet, to the oligo-amylism or an-amylism which that diet involves; but some of the good effects seem also to be due to simple reduction of the food, or to oligo-siteism. A patient of mine whom the Salisbury treatment failed to benefit as regarded the rheumatoid arthritis from which she suffered did well on about 8 ounces of mixed diet taken once a day, and also gained weight on it. Another patient, on

the other hand, who, after fasting for some weeks, and afterwards eating twice a day a diet of about 12 ounces of mixed food, for the cure of rheumatism, and who did not benefit so much as had been expected, seemed for a short time to become quite cured on 4 ounces of beef or mutton three times a day, with a glass of hot water an hour before each meal. On 3 pounds of beef in twenty-four hours she would probably have become very ill again; yet some persons take this amount and seem to thrive on it, although it is scarcely possible to resist the conclusion that so much food amounts to poly-siteism, and must in time, if persevered with, produce grave evils. No doubt, however, there are great differences in food-resistance to be noticed in different cases, and in the same cases at different times. The critic, however, who reproaches a doctor with wishing to treat all alike, irrespective of the differences of powers and capacities in patients, because he suggests that on the average it is safer to eat twice a day than thrice, and certainly much safer than to eat four times a day—such a critic is himself inconsistent. For when his practice is examined, it turns out that he is in the habit, on the average, of advising persons to take four meals a day, or perhaps five, while many sound and sensible physicians advise an average of three meals a day. If one man advises two meals a day, on the average, as being best for patients, while another advises three meals a day, a third four meals a day, and a fourth five meals a day, the advice of these different men differs no doubt in detail; but

if one is open to the criticism that he wishes to treat all persons alike, irrespective of their differing powers and capacities, then all the others are equally open to the same criticism. It becomes in reality a question of drawing the line, which is proverbially one of the most difficult things to do, the reason being that it is not a straight line which has to be drawn, but a curve or wavy line, now up above the average, and then down below it, but never varying very much either up or down. We may say that the line separating two modes of practice is not like Euclid's line, devoid of breadth, but is, on the contrary, a line or band having a very considerable width, which varies also at different points in its course; and when it becomes necessary to make great variations in either direction, or when great variations in quantity and frequency of food-consumption occur or seem to be demanded, the state of health has generally been departed from, and disease has set in.

69. In infirmaries, where, if anywhere, persons ought to be properly fed, it is customary to allow about 16 ounces of bread daily, besides other food, to each patient. This is very much too large an amount for health on the average. Anything beyond from 6 to 8 ounces of bread daily is sufficient to cause in men and women doing ordinary town-work a variety of ailments, most of which are usually attributed to 'taking cold.' Common examples of these are herpes labiorum, acne, swellings of mucous membranes, such as tracheitis, bronchitis, conjunctivitis,

rhinitis, asthma, sore throats or tonsillitis, peri-tonsillitis, hypertrophy of outer skin, as corns and warts, enlargement of glands (*e.g.*, in the neck), constipation, diarrhœa, gout, rheumatism, erysipelas, etc.

70. The effects of poly-siteism and pollaki-siteism will be detailed later, but it may now be said that the commonest effects of long-continued poly-siteism and of pollaki-siteism are the presence of a subnormal temperature, especially on waking in the morning, an excess of urea above 1·4 per cent. in the urine and of urates, and the existence of constipation. In young and irritable persons the symptoms not uncommonly are elevation of temperature above normal (the feverish state, in fact), and diarrhœa. If the kidneys become diseased, as they so often do from the same cause, the urea may be very much diminished. Many poly-siteous and pollaki-siteous patients of mine who have been very much constipated have become regular on dis-siteism; and others who had suffered from frequently recurring diarrhœa have become regular under the same treatment.

71. Of all the causes of disease, kako-siteism (not vitiation of air) is by far the most important. Kako-siteism may take the form of oligo-siteism, oligaki-siteism, or a-siteism; or it may take the form of poly-siteism and pollaki-siteism; but it far oftener takes the form of poly-siteism and pollaki-siteism than of oligo-, oligaki- or a-siteism. This

statement applies to the causation of inflammations, specific inflammations and fevers. Even in wounds kako-siteism and agatho-siteism play the most important part. Blood-poisoning and septic action in wounds depend more on the state of the patient than on what is done to him at the time of operation. The best preparation for operation is two or three weeks of low diet. Nevertheless, no surgeon would think of operating with dirty instruments.

ON TAKING COLD.

72. 'Taking a chill,' or 'taking cold,' as it is called, is far more dependent on wrong feeding, on kako-siteism, than on exposure to cold. Otherwise it is far more dependent on food than on climate. It will be apparent later that while the exciting cause of taking cold may be exposure to cold weather, rain, wind, fatigue, etc., the predisposing cause, which is of much greater consequence, lies in wrong feeding, or kako-siteism. Further, the catarrhal and other conditions grouped under the expression 'taking cold' are often worse in hot weather than in cold, yet no one speaks of them as 'taking heat.' The reason of that probably is because taking cold is usually accompanied by a rigor or shivering fit, after which, or coincidently with the occurrence of which, the feverish inflammatory state sets in. In view of the fact, however, that after the rigor, or coincidently with its occurrence, the bodily temperature generally rises, the whole condition might as reasonably be called 'taking heat' as 'taking cold.' People do indeed

talk of 'taking a fever' or of 'catching fever,' or of 'taking inflammation,' both fever (*ferveo*) and inflammation (*flamma*) bearing reference to the heat of body which generally or nearly always supervenes in these states.

73. From this it follows that the best way to 'avoid chills,' which patients are so frequently counselled to do, is not to wrap themselves well up merely (though they should be well covered), and to keep themselves warm with good clothing, as they are often advised; but to eat properly, that is, certainly not oftener than thrice daily, but rather twice, and then not more than from 12 to 24 ounces of ordinary food, according to their differences in size and in the occupations which they follow. Persons who are in the habit of eating four times or oftener in the day should therefore at once become tris-siteous. If in six months or so they still find themselves taking cold too easily and too often, they should become dis-siteous, eating, say, at 8 or 8.30 a.m. and at 5 or 6 p.m., or at 12 noon and 7 p.m. If after six months' trial of this plan a person still takes cold too easily, he should reduce the quantities of his food to 8 ounces at one meal and 4 ounces at the other. But if after six months' trial of that regime he still takes cold too easily, he ought to become mono-siteous, taking 12 or 16 ounces of food at his one meal.

74. No one can alter the climate of the place in which he lives, and few people can have a change of climate. But

it is in the power of all to alter their own habits so as to make themselves less susceptible or even insusceptible to taking cold. It is in the power of few to alter their climate; it is in the power of all to alter their constitution by altering circumstances in their environment, and particularly by altering their food. Although no man can add an inch to his height or alter the colour of his eyes, he can greatly alter his resistance to disease; or otherwise he can greatly alter his constitution by altering his food habits.

THE AMOUNT OF THE SECRETIONS.

75. The quantities of material which pass between the blood and the viscera in the human body are very large indeed. The liver, for instance, secretes about 1 pint of bile daily; the pancreas about 10 ounces of fluid; the stomach an unknown quantity, perhaps from 5 to 10 quarts of gastric fluid; while the lymph vessels and the lymphatic glands elaborate a very considerable quantity of fluid daily. A man who had a fistula in his thoracic duct parted with the enormous amount of about a gallon of lymph and chyle from it daily. When the legs are incised on account of dropsy, as is sometimes done, there come from the openings very large quantities of fluid, amounting in some cases to 2 or 3 gallons daily, and this for days together, and sometimes even for weeks. The presence of dropsy must be taken as evidence of excess of lymph in the body; therefore of excess of chyle, and therefore of excess of food.

76. As to the quantity of bile secreted, a lady aged sixty-two, operated on for a distended gall-bladder, which turned out to be secondary to cancerous deposit in the liver blocking the common duct, parted, through the inserted tube, with 60 ounces of bile during the first thirty hours after the operation, and with 1 pint, or 20 ounces, more during the next twelve hours, *i.e.*, at the rate of 2 pints of bile a day or so. There was reason to think that in this case *all* the bile secreted came through the tube, the pressure from the cancerous growth being, it was thought, sufficient to block entirely the common bile-duct, and to prevent any bile from entering the intestine. At the operation 10 ounces of dark-coloured bile were removed from the gall-bladder, which is much above its ordinary capacity. It is quite likely that, owing to the removal of the pressure by the operation, the liver was in this case induced to secrete for a time an amount of bile larger than is usual. But still, this experiment of Nature, or natural experiment, so to call it, goes to show how large an amount of fluid may pass between the blood and the viscera in certain circumstances. Such passages of fluid must play a great part in the production of health and of disease.

77. The distribution of the blood in the body is peculiar, and worth study. Of the total quantity, not less than 29·2 per cent. of the blood is said to be contained in the liver; the skeletal muscles contain 29·3 per cent. of it; while the heart, great vessels, and lungs, all put together, contain

only 22·7 per cent. Yet we are in the habit of thinking, and of talking, of the heart and vessels alone as the organs of the circulation. The part played by the liver and the muscles as organs of the circulation ought to be carefully studied, since between them they contain nearly three-fifths of the total quantity of the blood, or, say, about 8·2 pints out of the 14 pints of blood in the body; while the heart, vessels, and lungs contain only 3·17 pints among them. This leaves less than three pints of blood for the whole of the rest of the body. Only about 1½ per cent. of the blood is contained in the brain and spinal cord—that is, only about one-fifth of a pint—at any given moment. Such is the statement of the physiologists, and it appears sufficiently astonishing. If, however, the weight of the liver is about 4 pounds, it is difficult to see how it can contain 4 pints of blood in it. If it does, its gross weight during life will be nearer 8 than 4 pounds—at least, at some stages of digestion. Probably the weight of the liver does vary very greatly at different times and at different stages of digestion.

THE QUANTITY OF BLOOD IN THE MUSCLES.

78. The passage of so large a proportion as nearly one-third of the total quantity of the blood contained in the body through the muscles at any given moment is very important. It is connected with the oxidation or combustion which takes place in them, a process in which carbonic acid gas is freely produced, and taken up by the venous

blood, to be carried to the right side of the heart, and thence to the lungs, there to be given off in the expired air, and to be replaced by oxygen obtained through inspiration of air. The same or a quite similar process takes place in all the tissues of the body, and by this means, no doubt, the animal heat is for the most part maintained. But if the blood in the muscles and in the other tissues contains too much oxidizable material, then it is easy to see that oxidation may go on so freely that its product, carbonic acid gas, and other products of combustion, cannot be taken up quickly enough by the venous blood. Consequently a certain amount of blockage may take place, and vital activity may be seriously diminished in consequence. Two things frequently occur when this condition sets in. First, the blood, being loaded with an excess of material beyond its requirements, proceeds to deposit some of its excess material, especially during periods of rest, in the tissues, as the skin, cellular tissue, epi- and peri-mysium, perineurium, periosteum, and joints. In fact, gout and rheumatism begin to appear. And, secondly, the whole body, having its circulation blocked, sustains a lowering of vitality, shown, among other things, by a fall of temperature below the natural, down, for example, to 97°, 96°, 95° F., or even less. The toes or fingers at the same time are hot, congested, and inflamed, while the upper or lower limb as a whole may be cold. In this manner starvation of tissue may take place from over-repletion, and attenuation may arise from excess. And when this is so, the

proper treatment required to raise the temperature and to increase vital activity will be, not increased feeding, as might at first sight be thought necessary, since, though there are local swellings, the vitality of the limb and of the body as a whole is lowered; but, on the contrary, the proper treatment is restriction of the diet.

79. Not only do the toes and fingers, or even larger portions of the extremities of the body, become hot, swollen, and congested as the effects of poly-siteism and pollaki-siteism: they may become too cold and contracted, blue or purple, and lowered in vitality from the same causes. Sometimes, indeed, this may be carried so far that limited death of the parts, or gangrene, may occur. These changes are known under the name of the various stages of Raynaud's disease, some forms of which might be called juvenile gangrene. As hypertrophy of the coats of the arteries is a common feature in these conditions, their connection with poly-siteism and pollaki-siteism becomes apparent, for how can hypertrophy occur unless an amount of material larger than is required for repair is contained in the blood, and from what source can the blood get it except from the food-supply?

80. The relation between rheumatism and gout on the one hand, and Raynaud's disease on the other, appears to be this: While both sets of diseases are due to the same causes, in the former irritation occurs with intolerance,

while in the latter irritation occurs with tolerance. Or we may say rheumatism and gout are reactionary (or secondary) effects of poly-siteism and pollaki-siteism, while the various forms of Raynaud's disease are actionary (or primary) effects. As, however, action and reaction, shrinking and swelling, are continually going on in the body in alternation, no state can consist of action or shrinking only, nor yet of dilatation or reaction or swelling only. And yet one state may be rather characterized by shrinking and coldness, or action or tolerance (as Raynaud's disease), while another (as rheumatism and gout) may rather be characterized by the presence of swelling or reaction or intolerance and local heat; while the general temperature may be low or high.

81. In rheumatism and gout, in Raynaud's disease or juvenile gangrene, in the stage of disease which precedes senile gangrene of the toes or fingers, and in many other conditions, as, for example, the low, depressed state that often succeeds an attack of influenza, as also in the precancerous stage of cancer, the general temperature and general vitality are often lowered in this way (even although there may sometimes be present local heat and swelling). It sounds very strange, and almost incredible, but it is nevertheless true, that the proper way to improve this condition, to elevate the temperature and to increase the vitality, to lower the local heat and swelling in gout and rheumatism; to remove the contraction and blueness and to increase the

heat, and to prevent the juvenile gangrene which occurs in Raynaud's disease; as well as to postpone or obviate the onset of senile gangrene, and to postpone or obviate the onset of cancer, is to restrict the diet, not to increase it.

82. A man of forty-seven years of age, who had suffered from chronic gastritis for over seven years, and whose temperature was as low as 96° or 95° F., had his temperature raised and his general vital powers elevated by a fast which lasted thirty-five days. At about the twenty-eighth day of the fast the temperature rose to normal, and, since the man has never again submitted himself to the lowering effects of poly-siteism and pollaki-siteism, his temperature has since remained normal.

SOME OF THE PARADOXES OF MEDICINE.

83. The commonest cause of a persistently low temperature is poly-siteism and pollaki-siteism. But by reaction poly-siteism and pollaki-siteism induce a high temperature also. From which considerations it follows that

84. We elevate a low or subnormal temperature by the same means by which we depress a high or supernormal one, viz., by restricting the diet.

85. The commonest predisposing cause of a too slow pulse (brady-cardia) is poly-siteism and pollaki-siteism. But by

reaction poly-siteism and pollaki-siteism induce a too quick pulse (tachy-cardia). From which it follows that

86. We quicken a slow pulse by the same means by which we slow a quick pulse, viz., by restricting the diet.

87. The commonest predisposing cause of brady-pnœa—Cheyne-Stokes respiration, as it is called—is poly-siteism and pollaki-siteism. But by reaction poly-siteism and pollaki-siteism induce tachy-pnœa, or too rapid breathing. Hence it follows that

88. We can sometimes quicken the respiration in brady-pnœa by the same means by which we slow it in tachy-pnœa and in dyspnœa, viz., by restricting the diet.

89. The commonest predisposing cause of mental torpor, depression of spirits, and melancholia is poly-siteism and pollaki-siteism. But by reaction poly-siteism and pollaki-siteism induce a state of delirium, mania, and mental excitement. If we were to term torpor, melancholia, and depression brady-psychia, and mania, delirium, and excitement tachy-psychia, it would follow from these facts that

90. We can often quicken brady-psychia by the same means by which we slow, or calm, or quiet, or allay tachy-psychia, viz., by restricting the diet.

91. As regards insomnia or an-hypnia, poly-siteism and pollaki-siteism are apt to cause one or other or all in succession of the three following effects. Either (1) the person cannot sleep till, say, 3, 4, or 5 a.m.; or (2) he falls asleep immediately or soon after going to bed, wakes in a couple of hours or so, and cannot sleep again (if he is asthmatic, he has a paroxysm of coughing then; if he is melancholic, he is apt to have a severe fit of depression at that time) for, say, two or three hours, perhaps not at all; or (3) he sleeps very heavily.

92. This statement may be generalized, when the following general statement will be found nearly correct, or correct, on the whole. The poly-siteous and pollaki-siteous person is apt to suffer (1) from deficiency or delay of function; (2) from intermission or irregularity of function; or (3) from excess of function of parts or organs.

93. The indication therefore when any of these three sets of conditions exists is to restrict the diet (unless, of course, the cause has been oligo-siteism or a-siteism, when the indication is to increase the diet. This last condition is, however, extremely rare).

94. A still further generalization may be made, viz., that any constant (or frequently repeated) excessive irritation, acting on the economy, manifests itself (1) in deficiency

or delay of function; (2) in irregularity of function; or (3) in excess of function. From which it follows that

95. Deficiency or delay of function, irregularity of function, and excess of function, can all be rectified and regulated and restored to normal by diminution of the irritation.

96. The commonest predisposing cause of oliguria or an-uria is poly-siteism and pollaki-siteism. But by reaction poly-siteism and pollaki-siteism also cause poly-uria and pollaki-uria. From which it follows that

97. We can often increase oliguria and re-establish the urinary function in an-uria by the same means by which we reduce poly-uria and pollaki-uria, viz., by restricting the diet.

98. The commonest predisposing cause of oligo-menorrhœa, amenorrhœa, and dys-menorrhœa is poly-siteism and pollaki-siteism. But by reaction poly-siteism and pollaki-siteism also cause poly-menorrhœa, pollaki-menorrhœa, and menorrhagia, as it is called. Hence it follows that

99. We can increase the function in oligo-menorrhœa and amenorrhœa by the same means by which we diminish or control it in menorrhagia, or poly-menorrhœa and pollaki-menorrhœa, viz., by restricting the diet.

100. The commonest cause of long-continued constipation is poly-siteism and pollaki-siteism. When the reaction of fermentation sets in, diarrhœa is apt to be induced. From which it follows that

101. We can frequently relieve constipation by the same means which check diarrhœa, viz., by restricting the diet.

102. The commonest predisposing cause of insomnia, or oligo-hypnia or an-hypnia, as it may be called, is poly-siteism and pollaki-siteism. But by reaction poly-siteism and pollaki-siteism also cause torpor, too heavy sleep, too frequent sleep, or poly-hypnia and pollaki-hypnia. From which it follows that

103. We can induce sleep in insomnia by the same means by which we can reduce it in poly-hypnia, viz., by restricting the diet.

104. The commonest predisposing cause of Raynaud's disease is poly-siteism and pollaki-siteism. But by reaction poly-siteism and pollaki-siteism also cause the swelling of extremities and of the joints known under the names 'gout' and 'rheumatism.' From which it follows that

105. We can relieve Raynaud's disease, and prevent the onset of juvenile gangrene, by the same means by which we can control the inflammation of gout and rheumatism,

and prevent the onset of senile gangrene, viz., by restricting the diet.

106. A very common cause—perhaps the commonest predisposing cause—of thinness, wasting, and attenuation of body, is poly-siteism and pollaki-siteism; and by reaction poly-siteism and pollaki-siteism also cause obesity. From which it follows that

107. We can frequently fatten thin, wasted, attenuated persons by the same means by which we can reduce obese persons, viz., by restricting the diet.

108. The commonest cause of a high specific gravity of the urine above 1,016, say, is poly-siteism and pollaki-siteism. In this case the kidneys attempt to do their work well, but have too much work to do. On the other hand, poly-siteism and pollaki-siteism often cause a low specific gravity of urine as low as 1,008—*e.g.*, the materials being retained in the body and not eliminated by the kidneys, which are unable, from overloading, to do their work. From which it follows that

109. We can frequently elevate too low a specific gravity of the urine by the same means generally used to lower a too high specific gravity thereof, viz., by restricting the diet.

110. And, speaking generally, as the commonest predis-

posing cause of indirect diminution of functional activity is poly-siteism and pollaki-siteism, the best means to increase functional activity is to restrict the diet (not to increase it), just as the same treatment is suitable (and generally recognised to be so) for the relief of excess of functional activity of whatever sort.

111. On the other hand, when, as is sometimes, though not often, the case in civilized life, lowering or diminution of functional activity or of vitality is due to direct starvation, or to oligo-siteism or to a-siteism, its proper treatment must be by increase of the diet, by siteism, poly-siteism and pollaki-siteism properly quantified and chronized or timed, not by oligo-siteism, or by a-siteism, or reduction of the diet.

DEFINITION OF HEALTH.

112. It is almost impossible to give a theoretically good definition of health, but a practically useful description is not so difficult to formulate. Health may be said to be the state in which the functions of all the parts of the body are harmoniously and normally and painlessly balanced; and although such a statement is little more than a truism, it will have to serve. Disease, on the other hand, is any and every state of the body and of its parts which departs from the state of health. Practically, disease is any condition of health for which a patient betakes himself to a doctor for help. Doctors have often, of course, to give

opinions regarding the health of persons for insurance and other purposes, as, for example, for entrance into the army or navy or civil service; but in such cases persons can scarcely be said to betake themselves to medical men for help or assistance. But when, because the body is not harmoniously and normally and painlessly balanced in all its parts, a person betakes himself to the doctor for assistance, then such a person admits that he has for the moment lost health, or may be said to be suffering from disease.

113. Speaking generally, disease may be said to be the reaction of the economy (or it may be the failure of the economy to react) against the primary depression caused by irritants. These irritants are of three or four main sorts, and they are what have been termed the exciting causes of disease: (1) organic micro-organisms or organic particles; (2) inorganic causes, like cold, heat, wetness, dryness, etc.; and (3) violence of various kinds. The first set of irritants causes the fevers, of which a subdivision may be made of the specific inflammations, as they have been termed; the second set causes simple inflammations; and the third injuries, wounds, etc. The tendency of medical investigation seems to be towards the inclusion of the fevers and specific inflammations in the same group, while even in the simple inflammations it is not improbable that various micro-organisms may gradually be discovered to be associated with their course. The first two or three groups form the bulk of the field of cases treated by the physician, and are

best managed by alterations of the diet, whatever other means are adopted for dealing with them. The last fill the field of surgery. As, even in these, wounds heal better, and injuries are better recovered from under a proper than an improper diet, it follows that the surgeon must, to be effective, be also a physician, while the physician need hardly be a surgeon.

114. It is a question whether another group of diseases should not be recognised, those, viz., due to various mental states, particularly worry and anxiety. No doubt even in diseases so caused, regulation of the diet is of the utmost consequence, but still, even under proper feeding, persons may be worried and harassed into disease and death. At the same time, there is no doubt that many persons suffering even from insanity may fast themselves into health, and would do so oftener than is now the case, were it not for the persistent efforts of doctors and nurses to keep up part of the cause of mental irritation, viz., polysiteism.

THE CAUSES OF DISEASE: PRELIMINARY.

115. 'Causation is of paramount importance in medicine.'

116. The causes of disease are dealt with in later aphorisms. Meantime, it may be mentioned that the proximate causes of disease so-called are not so much

causes as states. They are two, and two only, viz., shrinking and swelling, constriction and dilatation. The exciting causes of disease are the various forms of irritation mentioned in Aphorism 113. And the predisposing causes of disease are always due to improper relations between the organism and air food or exercises; but they are almost always due to various forms of kako-siteism (including the effects of potism and methysm) either in the direction of excess—poly-siteism and pollaki-siteism—or of deficiency—oligo-siteism and a-siteism—or of irregularity of diet.

117. Disease and health differ from one another, not in kind but in degree only, for the most part. No doubt, in some diseases extraneous bodies or materials are introduced into the economy which are not present in health, or if present, are so in very much smaller quantities than they are found in disease; or they arise in the body, or find a lodgment in it, because of the presence of disease.

118. In the whole group of diseases caused by parasites, however, living organisms are introduced into the body, many of which are not found there in health.

THE MICRO-ORGANISMS ASSOCIATED WITH DIFFERENT FEVERS.

119. The micro-organisms associated with the fevers are of different kinds; and according to the nature of the

different kinds of micro-organisms, different fevers arise. Diphtheria, for instance, is associated with the presence of one sort of micro-organism; typhoid fever with another; influenza with another; cholera with another, and so on. It is, perhaps, not going beyond the evidence to say that these different micro-organisms are the immediate exciting causes of different fevers. Fevers may be defined as the states of the body when it reacts against the effects of the introduction of micro-organisms into it, or of their presence in it.

120. It is possible, however, that the essential cause of fevers is increased oxidation or combustion of tissue, and that the presence of micro-organisms is accidental. The cause in turn of the increased oxidation or combustion of tissue is probably the presence in the body of an excess of ill-formed material, which, having a low vitality, cannot maintain its equilibrium, and breaks up with excess of combustion or oxidation, the micro-organisms associated with different forms of fever tending to grow or flourish in such tissue as in a soil suitable to them. But as excess of ill-formed material in the body is over-feeding of the body —poly-siteism and pollaki-siteism—we seem driven to conclude or to admit that poly-siteism and pollaki-siteism are the main or may be the main predisposing causes of what are called the specific fevers.

121. To account for the existence of micro-organisms is

a part of the problem of the origin or creation of things, and has puzzled the human intellect through all known history, as it will no doubt continue to do as long as the human intellect shall last. But to account for the presence of micro-organisms in any given case is not at all difficult, for they probably enter the organism from the outside, and no doubt are often swallowed with the food. When the body is over-nourished, when its tissues are blocked by the growth of ill-formed material, and by the accumulation of waste products, these micro-organisms then find a suitable soil for their growth and development; and the states known under the names of various fevers result.

122. The tubercle bacillus tends to be found and to flourish wherever a very long-continued irritation occurs in the body, as, *e.g.*, alongside of necrosing bone, or necrosing cellular tissue, or inflamed cervical gland tissue. It is not suggested that it is produced by the tissues in their inflamed or necrosing state, but only that it tends to find its way to them. For the moment the irritated or inflamed or necrosing part is the weakest part of the body, as it is also the place of greatest activity—it is, in fact, weakened by its excess of activity—and the micro-organism finds its way there, having probably been swallowed long before with the food, having survived the destructive processes of digestion, and lying dormant in the tissues or the blood until the inflammatory process calls it into activity. How long micro-organisms can live in the body is not

known, and the length of time they can live in their own proper cultivation media may or may not be an indication of the length of their life inside the body.

123. These considerations may, perhaps, furnish the answer to the question often so difficult to answer: Whence came the source of infection in many cases of fever, as typhoid fever, or diphtheria? If the organisms associated with these disorders may lie dormant in the body for a longer or a shorter time, only becoming active when the bodily conditions are suitable, we may well fail to be able to say how a given fever has arisen, or to be able to trace it to any infecting cause. The introduction of the micro-organisms into the body may have occurred long before the appearance of the febrile symptoms, and we may know nothing about the time of their introduction.

124. But if these suggestions are just, a great revolution may follow in our minds as to the advice we ought to offer to patients regarding the steps they should take to keep themselves clear of infection. We might think it incumbent on us rather to advise them to see to the healthy or clean state of their bodies than to dwell, so much as we have been in the habit of late of doing, on the state of the drainage, sewage, etc., of the outsides of the houses in which they dwell. When Sydenham suggested that epidemics came *e visceribus terrarum* he might have been reminded that they might possibly have arisen *e visceribus hominum;*

and we in our turn, advising our fellows on the same subjects, might perhaps with advantage direct their attention and our own to the states of our bodies as regards nutrition, while we do not neglect the possible sources of infection from bad drainage or defective ventilation of sewers. How often in cases of fatal and calamitous infectious illness are we driven to subtle and doubtful theories of causation from the outside, while the state of the body itself has been too much overlooked or ignored. From this point of view poly-siteism and pollaki-siteism may be the most powerful predisposing cause of the infectious illnesses.

125. The conditions favourable for the growth of any one sort of these micro-organisms are probably very similar to those suitable to the development of all the rest. These conditions are, generally speaking, overcrowded conditions as regards air outside, and unhealthy conditions of the body inside, due to kako-siteism. But while this is so the conditions favourable to the growth of some sorts of micro-organisms are probably more particularly like those suitable to some others than they are to the rest. There seems to be a close relationship, for instance, between scarlatina and diphtheria, and perhaps the conditions suitable to the growth of the micro-organisms causing the one of these diseases are similar to those required to favour the growth of the other. The close association of scarlatina with diphtheria, the prevalence of the one affection during

the prevalence of the other, seems to be explicable on such a hypothesis. And the conditions favourable to the growth of the micro-organism causing relapsing fever (I do not think it necessary to keep repeating the phrase, 'associated in its growth with any given fever,' though it must be implied in every case) have evidently some close relationships to the conditions suitable to the growth of the micro-organism causing typhus fever, because epidemics of relapsing fever generally end with epidemics, or at least with cases, of typhus fever.

126. It is even possible that some sorts of micro-organisms may be alterable by changes in environment into other sorts. Some of the changes caused among the higher species of plants and animals by alteration of environment have become familiar to us during the last and the present generation. But if changes so considerable as those known to occur among organisms comparatively high in the scale do take place, how much more may we not expect changes to occur among lowly forms of organization like micro-organisms?

127. This being so, it can readily be seen how a micro-organism which is the recognised exciting cause of one sort of fever may perhaps become modified into the cause of another, and how therefore fundamentally the exciting cause of each may become the exciting cause of all. Or perhaps it may be nearer the truth to say that, given two or three

or a few different forms of micro-organisms, all the rest may be modifiable from them. Translated into medical language, this might mean that, given two or three or a few forms of 'fever,' all the other fevers may be generable from them. Fevers evidently manifest a set of characteristics which are common to them all. They tend to begin with a period of depression or malaise; this period usually ends with the rigor or shivering; after that follows the fever proper, with dilatation of capillary vessels, congestion of internal organs, elevated temperature, and quickened pulse; after this the rash or exanthem; and lastly a period of depression, often below normal, before convalescence becomes established.

128. Μὴ ὁ πυρετὸς, said Asclepiades of Bithynia, ἀλλὰ τὸ πυρετεῖν; *non febris sed febricitare: non morbus hic aut iste aut ille, sed ægrum esse.* In view of what has been said, it is possible that we might be able to generalize this observation, and to say: It is not that you have diphtheria or scarlatina, or measles, or small-pox, or plague, or typhus, or relapsing fever, or typhoid, or cholera, or influenza, that is the important and serious thing for you; it is that you have a fever at all.

129. It is evident that the acceptance of these ideas might give rise to important differences in our conduct towards fevers and in the management of epidemics. For example, if these ideas are correct, it may be better for us

to attempt to so feed our children that they may be rendered little susceptible to the incidence of infectious disease in general, rather than to try to protect them from the influence of this, that, or the other infectious disease. Or our aim may be to make the children (and ourselves) so healthy that, if they do get infectious diseases, they will not be much affected by them, rather than the strenuous effort to keep them away from infection. In this case we should bestow much more attention on the general management of our children when in health, and on the effort to keep them healthy, than we should, as now, be eager to close day-schools and Sunday-schools after epidemics have broken out, or to close infirmaries against visitors, and then sit down and helplessly wait for the onset of another epidemic, to be called by a different name.

130. It may also be true, probably is true, that if our children are not filled with fermenting and badly-assimilated food they will be all the less likely to take infectious diseases. The same, no doubt, will be true for adults in respect of the infectious diseases such as influenza, cholera, typhus, typhoid, small-pox, relapsing fever, and the other epidemic diseases to which they are liable.

131. It is doubtful if it is possible for human beings to be made insusceptible to the incidence of infectious fevers, although susceptibility will be greater or less according to the ways in which we live. Perfect physical health, like

perfect spiritual health, or sanctification, is very difficult, or even impossible, of attainment, although an approximation to both is sometimes attained. But it is more than likely that complications supervening on fevers, as, for instance, pneumonia in influenza, or the long-continued depression which not infrequently follows it, are proofs that before we got it we were improperly fed. And improper feeding means in the vast majority of cases over-feeding. So that we may take it that in the vast majority of cases the presence of epidemics means that the community has been over-fed; and that when complications characterize such epidemics their presence almost certainly does so. An epidemic-stricken community is therefore generally an improperly-fed or over-fed community. I should consider it disgraceful to be attacked under sixty-five years of age by influenza and pneumonia, or by influenza and the long, slow, cardiac depression which is so often associated with it. I do not say I should think it disgraceful to have influenza simply, although even of that I should be somewhat ashamed; but I should think it a disgrace to have influenza with complications. I should know that I had been for a long time over-fed—that I had been suffering from the effects of poly-siteism and pollaki-siteism.

132. From the annual return for 1899 of a sickness insurance society insuring only medical men, it appears that of 1,945 medical men insured 547 were sick or incapacitated in

the course of the year. Of these 55 were cases of accident, and 164 were cases of influenza. If influenza is a preventable affection, a large amount of sickness—about one-third of the whole—might have been obviated, mainly by agatho-siteism. In 1898 the same society had 1,876 medical men insured in it, of whom 405 claimed on account of sickness, and of these 120 were cases of influenza.

133. If these proportions hold for the population of England in general, we may reckon that about one-fourth of the males in the prime of life, and doing the active work of the community, suffer from sickness or disability of some kind annually, and that one in fifteen or so has influenza. If this is a preventable disease, the question of taking steps to prevent it becomes a very urgent one.

134. Influenza is a specific fever—that is, it has been shown to be associated with (I do not say caused by, for I do not know that so much has been proved) the growth of a micro-organism in the blood. But the fevers and consumption are the only great classes of disease whose incidence and mortality have been diminished during the last forty or fifty years. The diminution in both these directions is generally attributed to the improved sanitation which has prevailed during that period. Why has influenza not shown the decline shown by the other specific fevers? Why, in fact, has it not only appeared

during the time when all these sanitary improvements have been effected, but, on the contrary, appears to have come to stay?

135. If influenza goes on increasing as it has done during the last nine or ten years, does it not threaten to undo the benefits obtained from sanitation during the last generation?

136. Does it not appear likely from these considerations that there is some cause at work producing influenza besides the influence of sanitation, good or bad, and besides infection? And if this is so, what cause so likely as kako-siteism? Poly-siteism? Pollaki-siteism?

137. We and our children will have less unassimilated stuff in us, and we will therefore be less likely to suffer from epidemic and infectious diseases, if we eat twice a day rather than three times—if we are dis-siteous rather than tris-siteous.

138. An excellent plan to prevent epidemic diseases, therefore, among children, or to render epidemics harmless if they did attack them, would be to give them their breakfast at 10 a.m. and their dinner at 4 p.m., and no other food, and to supply them with an ounce of mixed food daily for each 8 or 10 pounds of body-weight. There can be little doubt that in twelve months a very marked

diminution would in this way be caused in the incidence and in the mortality of infectious disease. The children could have two hours of teaching from 8 to 10 a.m.; could play about under supervision from 11 a.m. till, say, 2 p.m.; from 2 to 4 p.m. they might have two more hours of teaching; and could go to bed at 7, 8 or 9 p.m., according to age.

139. The sole cause of the infectious fevers, or at least the main predisposing cause of them, has been believed to be vitiation of air. I deal later (Aphorisms 258-260) with the reasons which appear to make it impossible to accept this opinion, and which seem to compel us to look for another great cause of these disorders. Meantime I pass to inflammations.

140. Inflammations, on the other hand, are the states of the body which result when it reacts against inorganic irritants like cold, heat, wetness, dryness, fatigue, anxiety, and the like. Unless the growth of micro-organisms can be shown to be associated with these reactions, inflammations, and not fevers, result.

141. Although both the temperature and the pulse-rate are generally elevated in both fevers and inflammations, they are not necessarily so, and sometimes, indeed, both the pulse and the temperature are below the normal in both. Sometimes the temperature is low and the pulse small and quick.

142. In both fevers and inflammations there is a primary stage of depression before the feverish state sets in. The depression generally passes off so quickly that it is unnoticed.

143. As has been already said, the germs of many micro-organisms are probably in the body always, being carried in mainly by the food, perhaps less often by the air. When the body is improperly nourished, these micro-organisms increase and multiply. If a body containing a considerable number of such micro-organisms, or otherwise improperly nourished, is exposed to cold, wet, fatigue, etc.—that is, if it is exposed to the exciting causes of inflammation—the inflammation being set up in this way, may be accompanied by a considerable growth or multiplication of micro-organisms, so much so as that a fever may be produced. The same amount of wet, cold, heat, dryness, fatigue, etc., acting on a body more properly nourished might produce only an inflammation, that is a reactionary state not known to be accompanied by the growth of micro-organisms. We thus see how what would cause only inflammation in A might cause fever in B. The state of the nutrition of A and B respectively determines the predisposition to fever or to inflammation; and the state of the nutrition is mainly determined by food, although it is partly determined also by the relations of the body to air and to work or exercises; partly also by heredity, but very little.

144. While A might thus take on inflammation only from the same exciting causes as gave B fever, B's fever might be conveyed by infection to C, who was predisposed as B was, and from C might spread to D, E, F, etc.; and so an epidemic of infectious disease might arise from the causes of simple inflammation. If this theory is not proved, neither is the dogma that every infectious case must be derived from a previous one. The former theory appears quite probable, while the latter can by no means account for a first case of scarlatina, diphtheria, measles, or other so-called specific fever.

145. Lastly, while A might get inflammation and B fever from the same exciting causes, C might escape altogether if his nutrition was so good that he was able to resist an amount of exposure to the exciting causes of illness sufficient to make A and B ill. The general nutrition of C altered his predisposition, or otherwise increased his resistance, so as to enable him to throw off what harmed his neighbours, with their greater predisposition or inferior resistance.

146. A healthy state of nutrition, a low predisposition to illness, and a high resistance to the causes of illness, proximate, exciting and predisposing, are all expressions nearly synonymous with one another, and may be used more or less interchangeably. In the conditions referred to under all these expressions the essential or most important

feature is that the body of the person under discussion contains just sufficient food-stuff products in it, not too much and not too little.

147. Different bodies show different states of nutrition, of predisposition and illness, and of resistance to it; and the same body differs in its own state at different times.

148. Disease is generally slow in its onset, even when it appears to be sudden. That is, the previous steps in it are a gradual and insidious departure from the state of health. If these previous steps had been attended to, the subsequent and graver consequences might in many cases have been avoided. Apoplexy is generally sudden in its onset, but if the patient had read the signs aright, or if he had asked advice, he might have been told that the previous dyspepsia, colds, giddiness, fatigue, etc., from which he was suffering were likely to lead on to it. When a person is seized with sudden pneumonia, or when, for example, he succumbs to a short and severe attack of influenza and pneumonia, symptoms have generally been appearing beforehand, attention to which would either have prevented the attack or would have rendered it much less severe, or attended by much fewer complications when it appeared. Such warnings might have been found in the fatigue without sufficient cause, in waking tired, in feeling of anorexia, or in dyspepsia or other symptoms of a like character from which he suffered from time to time before

the attack. Hæmorrhage from a gastric ulcer is usually very sudden in its onset, but the previous dyspepsia, epigastric pain, fermentation or acidity might have warned the sufferer to so alter her ways as to cure the dyspepsia, and so to prevent the occurrence of the ulcer which immediately caused the hæmorrhage. A young woman who was seized with sudden hæmorrhage from a gastric ulcer, and who had repeated and severe attacks of bleeding, died on the fourth day from toxæmia. Six months before that time she had long-continued indigestion. But nothing could have shown more plainly that she had been slowly accumulating waste unassimilated or ill-assimilated material in the body than the death from blood-poisoning. No doubt the slow accumulation of such waste products in the blood blocked the circulation, starved and caused to die the portion of the mucous membrane where the ulcer formed, so causing the hæmorrhage. Food being necessarily stopped, the accumulated waste materials went into oxidation, causing feverishness, blood-poisoning, and death. Had the patient altered her food habits six months before, taking, say, a glass of milk three times a day, and nothing else for six weeks, almost certainly the train of symptoms leading to the death could have been prevented.

149. It might have been expected that a certain amount of hæmorrhage or loss of blood in the case of a person whose blood was in a bad state from the accumulation of waste matter in it would have been a benefit to such a

person, since by the hæmorrhage she was getting rid of some of the waste matters contained in the blood. And to some extent this must have been the case. But the hæmorrhage, being a depressing influence, was followed by reaction or fever. The waste stuff in the blood and tissues went into excessive oxidation; fever was set up; in fact, a certain amount of inflammation of the blood itself, or *hæmatitis*, as it might be called, really occurred, and the patient died of blood-poisoning. The loss of blood was a salutary provision of Nature to relieve the patient, but the good intentions (so to call them) of Nature were thwarted by the great accumulation in the blood of waste matters, oxidation was set up in them, and the patient succumbed.

WHY LEECHING IS NOW LITTLE PRACTISED.

150. A study of these considerations enables us to understand the effects of leeching, and why, on the whole, it has been given up by the medical profession. Removal of blood by leeching or bleeding does not alter the character of the blood remaining in the body. Leeching may relieve a local congestion; or bleeding from a less important organ like the nose may prevent bleeding into a more important one like the brain. But as leeching is a depressing influence, it is apt to be followed by congestion, which may conceivably aggravate the condition for which the leeching was practised. Especially will this be so when the blood, being loaded with undigested material, goes into a putrescible reaction, or inflammation, or hæmatitis, as the effects may be not only serious, but fatal.

151. To restore the body to health, therefore, it is necessary to slowly combat the steps of disease in a direction opposite to that in which they appeared, 'to perform an evolution in reverse.'

152. It is well, therefore, though not necessary, that the steps by which disease advances should be known before restoration to health is attempted. As, however, the body is a self-regulating mechanism, it will recover health by its own powers (ἐκ τοῦ αυτομάτου, as Hippocrates said), or automatically, if placed in conditions favourable for their exercise; and during the course of this process, as the observer has the opportunity of watching the steps of recovery in the reverse order of the onset of the symptoms, he is often reminded of forgotten facts in the course of these symptoms by watching the mode in which they are passing off. If we are successful in combating diseased conditions, we shall generally find that those symptoms which appeared last disappear first, while those which appeared first disappear last. This succession, or sequence, is more apparent when we deal with chronic and recurring diseased states than when we deal with single attacks of short illness.

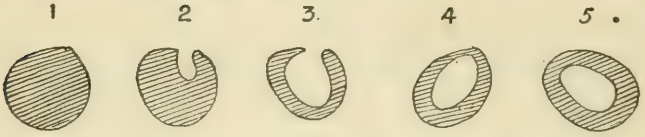
153. The saying of Asclepiades previously quoted was probably not intended by him to apply to the infectious or epidemic diseases; indeed, he probably was not aware of the distinction between inflammations and fevers. And it

might probably be well paraphrased thus: 'It is not that you suffer from this, that, or the other illness that is the important or serious thing for you, but it is that you are ill at all. It is not that you have pneumonia or pleurisy, or phrenitis or nephritis' (these affections Asclepiades did know), 'but the serious thing for you is that you are ill at all.'

154. Diseases are parenchymatous and eilemmatous: they are affections of the interior of organs, of their proper tissue; or they are diseases of the coverings of organs. As many organs have both an inner and an outer covering, and as either of these may be affected, the eilemmatous diseases divide themselves naturally into the end-eilemmatous and the ex-eilemmatous forms. For instance, pneumonia is a parenchymatous disease; bronchitis is an end-eilemmatous affection, and pleurisy an ex-eilemmatous affection. In the brain we have cerebritis, representing the parenchymatous diseases; inflammation of the dura, pia, and arachnoid, representing the ex-eilemmatous diseases; and inflammation of the endothelium of the ventricles, representing the end-eilemmatous diseases. In the liver we have hepatitis, peri-hepatitis, and catarrh of interior surface, usually accompanied by jaundice.

155. Some organs are inverted in the course of their development, so that what seem to be ex-eilemmatous affections are really end-eilemmatous, and what seem to

be end-eilemmatous are ex-eilemmatous. The following diagrams show how such changes may occur. A cell whose outer surface was circular may have a depression form on it, which may gradually deepen and become the



1. Ordinary cell-wall. 2. Commencing inversion of cell-wall. 3. More inversion of cell-wall. 4. Inverted part forming an inner lining, still attached *at one point*. 5. Inside lining forming an inner cell, really from inversion of portion of outer wall.

inner surface in course of time and development. When the inturned part becomes inflamed, we can see how an ex-eilemmatous affection in one organ may really correspond, not with the ex-eilemmatous, but with the end-eilemmatous affection of another. Pleurisy, for instance, is an ex-eilemmatous affection, but it may correspond with endothelial inflammation of the ventricular lining of the brain, which, though it appears to be an end-eilemmatous affection, is perhaps really an ex-eilemmatous affection. And bronchitis may really correspond with pachymeningitis, and not with endothelial inflammation, as at first sight it seems to. These considerations show that it may be unimportant to distinguish philosophically between the inner and outer coverings of organs, although it is convenient to do so in practice. It will, however, be better to speak practically rather than developmentally, and to use the term end-eilemmatous of an affection of what is practically the interior lining of an organ, although we may know that developmentally it is really the outer covering.

OF BLOOD DISEASES.

156. When a disease is said to be in the blood, the question is, How did it get there? A better form of the question is, How did the blood become diseased?

157. There appear to be four ways in which disease gets into the blood, or in which the blood may be diseased or disordered.

158. The blood may be diseased or disordered through the ancestors. Although this is perhaps the commonest sense in which the expression is used, and although, no doubt, it is a means by which the blood may be diseased or disordered, it is a far less common way than is usually supposed. Organization is inherited rather than disease. The tendency of the organism towards health or towards the mean or average is so great that it does not at all follow that the children of diseased parents—that is, the children of rheumatic, bronchitic, pneumonic, tuberculous, gouty, syphilitic, diabetic, or cancerous parents—shall be born rheumatic, bronchitic, pneumonic, tuberculous, gouty, syphilitic, diabetic, or cancerous. They may or may not be so born. In general, they are not so, but are born healthy.

159. Material causing disease may get into the blood through wound or accident, as by a wound from a dirty

pin, or nail, or knife; from the bite of a rabid dog or venomous snake, or the sting of an insect, as mosquito, gnat, etc.; through handling infected wool, and so on; spores or germs of disease-producing organisms, or particles of organic matter, getting into the blood through a crack in the skin or mucous membrane. (Cracks, however, being instances of slight ulceration, are mainly caused by kako-siteism, as will be described in the remarks on ulceration.)

160. Material causing disease may be breathed in, or inhaled through the lungs, through poisonous vapour from pest or plague or other form of infectious disease, or through dust from infected material, as wool, silk, etc. In this case also very often some crack or slight ulceration exists in the mucous membrane, through which the spore or germ of disease had entered.

161. Material causing disease may get into the system through the mouth. It may be swallowed with the food; or it may be taken in in the form of too much or too little, or too frequent or too infrequent feeding, or of unsuitable food. Such affections as indigestion, sore throats, colds, bronchitis, pneumonia, rheumatism, Raynaud's disease, gout, diabetes, or cancer, get into the system so much more commonly through the mouth and the digestive tract than by any other way, that other ways become much less important, in our view, in comparison

with this way. Spores of disease-producing germs, as of tubercle, may be swallowed in meat or drunk in milk, but even then the question how much harm they will do, while it is largely determined by the quantity taken, is also greatly determined by the state of the digestion of the person affected. If for a long time previously the person's digestion has been in a sound, healthy, normal condition from proper management as to times, quantity, and quality of food taken, he will be able to oxidize without sustaining damage a much larger quantity of disease-causing material than if his digestion has for long been in an unhealthy state through mismanagement of it, and his tissues in a weak, flabby, swollen state, with low resistance in consequence. In fact, healthy digestion, by forming healthy tissue, greatly increases resistance to disease, and diminishes predisposition to it. Predisposition to disease is more diminished by good digestion, and this is better attained by agatho-siteism, than by any other means.

DISEASE ALWAYS SALUTARY.

162. Disease is always salutary. It is always an effort of Nature to get rid of, or to eliminate, effete or ill-assimilated material from the body. This is true even of fatal diseases like cancer, diabetes, Bright's disease, etc., in many of which, however, the causes have been so long in action, and have caused accumulation of results to such an extent, that it is impossible to eliminate them.

163. So incurable is cancer that we may practically say of it, 'once cancerous, always cancerous.' This is not absolutely and without exception true, but it is almost so, or is practically true.

164. Talking of the times 100 to 200 years after Hippocrates, Celsus said: '*Iisdemque temporibus medicina in tres partes diducta est; ut una esset quæ victu; altera quæ medicamentis; tertia quæ manu mederetur.*' With the exception of a few conditions which *must* be treated by surgery (and these are fewer than is commonly believed), he might have added: '*Morbi ii qui non victu mederi possunt vix vel maxima cum difficultate medendi sunt.*' This would be true of the chronic and recurring diseases where the advice of the doctor is of great importance. It would not be so true of the acute and short diseases from which patients generally get well of themselves, although when we come to inquire into the *modus medendi*, we find that Nature's chief remedy in them also is restriction or even compulsory cessation of food.

TOO MUCH SURGERY.

165. There is far too much surgery adopted for the cure of diseases. In a very large number of cases diseases which are treated by surgery would be found amenable to medical management, and chiefly to dietetic management. For instance, effusions into bursæ, as, for example, that in front of the knee-joint, might often be cured without

excision, especially in certain stages and before extreme thickening of the sacs has occurred. No one dreams of excising the pleural sac, or the peritoneum, in inflammation of those structures with effusion into them. Still less, if possible, would excision be suggested in arachnitis or pachymeningitis cerebri. Incision, or puncture, or aspiration without excision might no doubt hasten removal of fluid in such situations, but that treatment would be greatly aided in its efficacy by oligo-siteism or a-siteism. Hæmorrhoids are often excised or removed surgically when they could be cured by medical and particularly by dietetic management in the direction of oligo-siteism; and the same statement is true of many other conditions, as, for instance, dysmenorrhœa, etc., now treated too much by surgery.

166. It is much better to attempt to deal by medical management with the causes of occipital or other neuralgia and peri-neuritis or neuritis, than to divide the strands of nerves or to remove ganglia surgically for the relief of pain. The latter method only deals with effects, the former attempts to deal with causes, and if attempts are made early they can almost always be successfully made.

167. It is much better to treat myalgia and ovaralgia by diet and exercises than by oöphorectomy, and although such ailments are very slow and difficult to remedy, much

may be done for them, and many surgical operations may be prevented by such means.

168. Surgery has become (as a rule, though there are every now and then serious disasters) so safe that it is apt to be too freely resorted to for the cure of ailments which might often be otherwise and more efficiently relieved and cured.

169. A most striking instance of a proposal for exaggerated surgical interference is that gravely made (but one is tempted to ask if the author of it really can be in earnest), that every infant born into the world should be operated upon, and have the appendix vermiformis removed, in case it should in later life suffer from appendicitis. As if even the performance of so barbarous an operation could possibly prevent the effects of kako-siteism, of poly-siteism, and pollaki-siteism, if indulged in in later life! Or as if these causes, failing to produce appendicitis because of the absence of the structure, would not cause enteritis, or gastritis, or some other result! As well might one hope to prevent the recurrence of 'colds' by performing tonsillectomy, and curetting out the nasal cavity and pharynx, which indeed some surgeons seem to think they can do. No doubt if every structure were removed from the body, no part could become diseased. And no doubt amputation of the head would be a perfect cure for neuralgia of the face.

PREVENTION OF THE DISEASES GENERALLY TREATED BY SURGERY.

170. Not only may many medical diseases be prevented by proper diet and regimen; many surgical diseases and many formations for which surgery may alone be demanded for their cure after they have occurred, may be prevented by the same means. If gall-stones are apt to form in the gall-bladder or bile-ducts from inspissation of bile, it is better to manage the diet and regimen so as to prevent the thickening and the stone-formation, than to excise them after they have been formed, even although that may be the only course then left. And, speaking generally, it is better to prevent the entrance into the blood, through the digestion, of materials which form tumours, exudations, and growths than to deal with these after they have been formed, although no doubt after this has occurred, surgical removal may be the only proper course to pursue (coupled with advice to live differently in future).

171. In these respects, also, prevention is better than cure, but too little attention is paid to means for the prevention of surgical ailments. No doubt persons suffering from certain diseases are often temporarily benefited by change of air and scene, even when the food habits are not altered, or are not recommended to be altered, at the same time; but the way to attain most lasting benefit is to alter the diet. The food habits of foreigners are often very

different from British ones, and many of the good hygienic effects of foreign travel are due to temporary alteration of food habits. But when, without moving so far as to go abroad, change of air and scene without alteration of the food habits appears to do good, very often some other disease or affection sets in. How often do people fall ill on their return home in some other way, or relapse again into their old illness, who have gone from home to escape illness or to be cured of some illness from which they suffered!

CONSIDERATIONS REGARDING THE HEREDITY OF DISEASE, CONSTITUTION, DIATHESIS, PREDISPOSITION, ETC.

172. The chief law of heredity in disease is this: Like causes acting on like organisms in succeeding generations induce like effects.

173. There is no doubt such a thing as hereditary disease, but its frequency is greatly exaggerated. Disease, belonging generally to the class of acquired characteristics, is, as a rule, not transmitted.

174. Acquired characteristics must, however, be sometimes transmitted, or the doctrine of evolution cannot be true. (See Aphorisms 214, 215.)

175. Organization is, as a rule, transmitted; disease

seldom. It is not, however, always possible to distinguish between organization and disease. If a malformation of the heart, being a fact of organization, might be transmitted, as from time to time it is, whenever that heart begins to act, evil consequences will begin to arise from the action of its imperfect mechanism ; and it will be very difficult indeed to distinguish between the regurgitation and other inconveniences arising from the imperfect mechanism, and the imperfect mechanism itself which led to them. It will be very difficult to separate the ending of organization from the commencement of disease.

176. The difficulty of distinguishing organization from disease, however, is one of a kind which is often met with. No child, for example, would confuse a dog with a gooseberry bush, and yet to give a definition which should absolutely separate all plants from all animals might tax the wit of the keenest and best informed intellect.

177. Some understanding of the problem of the heredity of disease might be obtained from the attempt to answer the question, Why does every baby born come into the world with the soles of its feet much thicker than the dorsa, and yet scarcely a single baby or, at any rate, very few, come into the world with corns on or between the toes? If the long succession of walking ancestors determines the former condition, why not the latter also?

178. When disease is hereditary it will probably appear early in life.

179. If disease appears late in life it is most probably acquired.

180. There is a strong tendency in the organism to return to the natural or normal when disturbed; and there is a strong tendency towards the natural or average in succeeding generations.

181. By the former of these tendencies persons generally recover from illness. By the latter, children, even of delicate and diseased persons, are generally born healthy.

182. Children may be born healthy, but with a low resistance, or a high resistance to disturbing causes.

183. A child with a low resistance, otherwise a delicate child or person, may live as long as a child born with a high resistance or as a strong person, provided each is kept at the occupation and treated in the way proper to him. A piece of delicate china in an elegant household may last as long, or longer than, heavy crockery banged down by the waiters in a cheap restaurant, and it may do more work, besides ministering to the wants of nobler persons (or to less noble persons, as the case may be, for the quality of the service is an accident).

184. For these reasons it is much wiser and much more practically useful to attempt to combat weaknesses in one's constitution, and in the constitution of one's children, than to refrain from having children for fear of transmitting weakness.

185. It is very wrong to blame our ancestors for what is our own fault, or to suppose that our ancestors have transmitted to us weaknesses which are really due to our environment and to our own behaviour in reference thereto.

186. In the sense in which I use the word, *constitution* is the present state of the organism in question, its power, resistance to deleterious influences, etc. It is the resultant of the forces acting on the organism, or it is the state of the organism resulting from the interaction between the organism and its environment from birth till the present moment.

187. The environment is the sum of the circumstances affecting the organism from birth till the moment in question. The most important and most influential factors in the environment are air, food (and drink), and exercises, or work, or occupation.

188. A complete account of the environment would be a complete history of the relations between an organism and its surroundings from birth till the moment under con-

sideration. While it is evident that an account or history so complete as that is unattainable, the general effect of the surroundings upon an organism can be observed well enough.

189. Constitution is always changing, flowing, mobile, as the circumstances of the environment change, flow, and alter.

190. Each action or experience in the body must have its influence on the constitution which is always changing; and as any given body is capable only of a certain number of changes before it ends or dies, each action must have its effect in hastening that termination. But it is not possible to estimate the effect of one action, and still less to measure it. All we know is that its influence must be incorporated into the constitution.

191. But the effects of long-continued mal-assimilation are plain enough, not only theoretically but practically, and their influence in hastening the termination of life is often quite clear. Ailments, small and great, make their appearance, and very few constitutions come to an end from simple old age.

192. The law, whatever it is, whether of the heredity of disease or of anything else, will take care of itself; its effects are inevitable. Man's function in respect of it is to

discover it, to see that he interprets it faithfully, and to attempt to obey it.

193. Perhaps the commonest fallacy in medicine is caused by circular reasoning, or reasoning in a vicious circle; and it meets us in the domain of the hereditary transmission of disease as elsewhere. For instance, we say: He has rheumatism; his father had rheumatism; and his grandfather had rheumatism; therefore it is in the family, or is hereditary. And we also say: Rheumatism is in the family, or is hereditary, and therefore he has it, and his father and grandfather (and perhaps also his great-grandfather) had it also.

194. If your father had bronchitis, if you have bronchitis, and if your son has bronchitis, it is more likely that one after another of the members of your family have lived wrongly than that your father has transmitted bronchitis to you, and that you in turn have transmitted it to your child. The probabilities are very great indeed that you have each in succession eaten more food (and this probably of a particular kind, carboniferous, *e.g.*) than you have assimilated. If the young members of your family cease doing this, their bronchitis will probably cease, while your bronchitis will be affected favourably or otherwise by your own habits. If the whole family, or, at least, those members of the family who are young enough, do this, the family will cease to be bronchitic, while if some branches

of the family live properly, while others live improperly, some branches of the family will cease to be bronchitic, while others will remain or become so.

195. If a soldier had his left leg shot off and wears a wooden one; if his father, being a soldier, had his left leg shot off and wore a wooden one; and if his grandfather, having been a soldier, had his left leg shot off and wore a wooden one, why should we not say that wooden legs, and still more that left wooden legs, were hereditary in that family? Plainly heredity is not the cause, but environment, otherwise the circumstances of life; so that if the last soldier's son became a grocer, the chances of his requiring to wear a wooden leg would be very small indeed.

196. A man whose death I had to investigate fell from some machinery as he was cleaning it, and was killed. His father met his death in a very similar way; and, more curiously still, it appeared that his grandfather had also met his death from accident during the course of his duties among machinery. The man who told me of these things asked me if I believed in fate. It was a curious set of coincidences; but whoever from these facts should infer that accidental death was hereditary in that family would not be considered very wise.

197. Yet if a woman has psoriasis at forty years of age, and if her mother had psoriasis also at forty years of age,

we are apt to think that the disease is hereditary in the family. But where is the proof? Is it not more likely that the causes of the disease in both women depended on the way in which they lived, and that the fact that they were related was an accident? Two successive patients might appear in the same consulting-room suffering from similar ailments or the same. In such a case we should look for the causes of the ailment in the history or environment past and present of the patients, and should never dream of assuming that the one had infected or affected the other. Yet if they were father and son we might do so. But why?

198. In the sense in which I use the word, *diathesis* is the state or condition of the organism which results from the interaction between the organism and its intra-uterine environment from conception till birth. Otherwise, *diathesis* is the state of the organism as determined by the intra-uterine environment or circumstances.

199. If these definitions are more or less arbitrary, it must be remembered that there are three sets of facts to be considered in the life-history of an organism: (1) The history of its ancestry, to which I have confined the name *heredity* or *atavism*; (2) the history of its intra-uterine life, to which the name *diathesis* has been appropriated; and (3) its life-history on its own account, to which the term or name *constitution* is restricted. These three natural states

require restrictive names, and whoever objects to the suggestions made ought to propose better and more appropriate ones.

200. After birth, therefore, the diathesis is fixed and determined.

201. Diathesis is a state intermediate between constitution and heredity.

202. Heredity is the state of the organism as determined by ancestors.

203. Heredity is fixed and determined; what it was and is, that it remains.

204. The heredity of a human being determines humanity. That of an ox bovinity. That of a dog caninity. That of a fox vulpinity, etc. A human being, an ox, a dog, a fox, etc., will live healthily or otherwise rather in accordance with the circumstances of their respective environments than in regard of the state of their ancestors; rather in regard of their own changing constitution than of their heredity.

205. To revert to the case of the man who was killed by falling from a height while attending to machinery, and whose father and grandfather met their deaths in a similar way. Although no sensible person would contend that

accidental death was hereditary in that family, still the organization which led to carelessness in the presence of danger might have been hereditary, and might have led to the successive occurrences of the fatal accidents. The organization which led to the fatal results might have been inherited and hereditary, while the successive deaths, or the fatal injuries which were the effect of the organization, were no doubt acquired.

206. When the causes of a diseased condition have been in action for a very long time, the change of structure consequent may be so great and extensive that removal of the action of the cause or causes may be insufficient to restore the body or part chiefly affected to its normal condition. The proverb *Causâ sublatâ, tollitur et effectus* is true in medicine only when the cause has been but a short time in action. Philosophically or theoretically considered, indeed, it is plain that, even when removal of a cause which has been only a very short time in action is followed apparently by the removal of the effect, the latter cannot have entirely ceased. In the element of time at least the effect is irremediable, for an organism cannot go on indefinitely, even in the performance of quite healthy actions; and, still more, every morbid action, however slight, must play its part in hastening death. But practically we may speak of the effects ceasing on the removal of the cause, since we can no longer see the effects; and the patient may appear to make a perfect recovery.

207. But when the causes have been for a very long time in action, we can see plainly enough that their removal is by no means always followed by removal of the effects. If bronchitis, for instance, with emphysema and a weak, flabby, dilated heart are due to the prolonged over-consumption of carboniferous food, correcting the diet and diminishing that class of food may, or may not, remove the resulting conditions. It depends on how long, and how severely, or to what extent the causes have been at work, and on how much damage has been done.

208. A knowledge of causes is necessary to the prevention of disease; but it may or may not enable one to cure it. A weak spot in the bank of a reservoir may be the cause of rupture of the bank and of the flood which tore down a cottage and drowned two old people who were asleep in their beds. Strengthening the weak place may prevent a recurrence of the rupture, but it cannot recall to life the drowned human beings nor restore the cottage.

209. Prevention is not only better than cure: prevention might have been possible before cure had become impossible. As causes are always multiple, the following rule will be found helpful in the treatment of disease. If, having found an adequate reason for a patient's illness, we have been able to combat or to remove the cause, and if the patient does not then recover, it will follow (1) either that there is another important cause in action which we have

overlooked, or (2) that the action of the first cause has been for so long a time in operation that its effects cannot be undone. What is too commonly the practice of the doctor in such circumstances is to order one pharmaceutical remedy after another in the hope that one may relieve.

210. The application of a large number of pharmaceutical remedies one after another, or in combination, is generally a mark either that the medical attendant is in the dark as to the causation of the malady which he is attempting to treat, or that he is afraid to say what he really thinks.

211. Predisposition is inverse resistance; it is weakness. Different organisms have very different initial capacities and resistances; but, assuming this, it depends on how an organism is managed whether it can resist disease and the causes of disease or not, rather than on what diseases the ancestry suffered from. All human organisms are predisposed more or less to all human ailments; they are potentially attackable by them, and may actually contract them.

212. To the statement, 'This disease has never been known in my family,' the answer is: 'You are human, and both you and all your family may suffer from any human ailment.'

213. All human beings are predisposed to all human

ailments; but they are not equally predisposed. Resistance is greater and less in different persons, and also in the same persons at different times.

214. Disease is undoubtedly sometimes transmitted. The greatest proof of the hereditary transmission of disease is that the disease in question appears in the children before the causes generally producing it have had time to act. Another proof would be the appearance of disease in the child in the absence of the exciting causes. An example of the former is furnished by a case I saw in which a child of eight years of age, the son of a drunkard, was found after death to have a hobnail liver. Examples of the second are cases of syphilis appearing in the children of syphilitics where no possibility of self-infection could exist.

215. These instances show that acquired characteristics are sometimes transmitted. In fact, if they were not, it is difficult to see how evolution could be possible, or how the theory of evolution could be a true theory of organization. On the other hand, if the characteristics of acquired disease were transmitted to any great extent, how could the race escape being swept away in a very few generations? For have we not all—we and our fathers—broken, and that repeatedly, the laws of life and health?

216. Notwithstanding the facts mentioned, it still re-

mains true that the majority of the children, even of drunkards, are born with their livers and their other organs healthy; that syphilis is, on the whole, comparatively rarely inherited; and that the vast majority of the children of each generation are born healthy. I have known a father who before marriage had primary, secondary, and tertiary syphilis, and who afterwards died of phthisis and of brain degeneration, apparently syphilitic in character; and yet his daughter is exceptionally brilliant and charming, and his wife never suffered from syphilis at all. Perhaps that is why the daughter escaped. Yet if ever a disease was in the blood, syphilis was in the blood of that father and husband; also the mode in which it entered the blood is quite obvious. The very phrase, however, 'disease entered the blood,' is a survival of the mental state which looked upon disease as an entity, and ought to be discarded in favour of the expression, 'the blood became diseased.' Health is the positive or normal state, and disease is any departure therefrom.

217. The tendency of organization is towards the normal or natural from generation to generation; consequently the children of diseased parents tend to be born healthy.

218. We must, however, beware of the fallacy of circular reasoning here also. Thus, it is not open to us to reason: The tendency of humanity is towards the normal, there-

fore most children are born healthy. And also to argue: Most children are born healthy, therefore the tendency of humanity is towards the normal. Nevertheless, observation seems to show that most children *are* born healthy.

219. If in the absence of any disease sufficient to account for it, a father had gray hair at twenty-six years of age, and his father had gray hair at twenty-six years of age, it must be supposed that some quality has been transmitted in the organism through which early graying of the hair has been brought about. The gray hair has not been transmitted, for the child was not born with it. But the organization, having such a predisposition, has been transmitted. Predisposition in this case, again, resolves itself into diminished resistance, since the meaning of it is that while the hair of most human beings does not become gray till, say, forty-five or fifty years of age, the hair of the family in question becomes so at twenty-six. It has less resisting power than the average against the causes in the environment which lead to the production of gray hair; and the organization possessing this lessened resistance appears to be transmitted.

220. In the case, again, of a mother becoming cataractous at eighty years of age, her mother and uncle having been known to suffer from cataract at eighty years of age also, very little seems to be proved as to inheritance, either of predisposition or organization. In point of fact the

lenses of most eyes are apt to become cataractous at eighty years of age, and many at much earlier ages; and those which do not, either have greater resisting power than usual, or they have been better managed by their owners. Of course, humanity has been transmitted, but this is a truism.

221. Whatever characteristics of organization, however, are transmitted must be through direct descent from parents or ancestors in the direct line. An uncle, *e.g.*, can transmit no characteristics to a nephew or niece, although a common ancestor may have transmitted to both.

222. Why one person is subject to recurring sore throat, another to recurring bronchitis, another to recurring endometritis, another to recurring endo-hepatitis, and another to some other ailment, depends on this, that in the first the tonsil is the line or direction of least resistance to irritation, in the second the bronchia, in the third the uterus, in the fourth the liver, and so on.

223. This explanation, however, often itself requires explanation, and is often enough a sign of circular reasoning, as, for instance, he took bronchitis rather than endo-hepatitis, because the bronchia were his least-resistance-direction; and we infer that they were his least-resistance-direction because he took bronchitis; in fact, scientific

explanations so called often fail to explain facts, and themselves require further explanation.

224. To say, however, that the reason why a man has bronchitis, or the reason why he wakes tired, is because he has been under the influence of kako-siteism, is to imply that, had he not been subjected to the influence of kako-siteism, he would not have had bronchitis, or that he would not have awoke stiff. It may also imply that, if in future he subjects himself to agatho-siteism, he will, after a time, neither again suffer from bronchitis, nor will he wake stiff and tired after, say, six or eight hours' sleep. Whether he will be able to re-attain health or not will depend on how long the kako-siteism has gone on, and the amount of pathological change it has set up.

225. But in any case, this is the practical advice which the patient was in search of, or which he ought to have been in search of; for, strange to say, he is not always satisfied when such a theoretical opinion is offered to him, and when it is followed by the practical advice that he should, if in future he wishes to be clear of bronchitis, eat, say, 16 ounces of mixed food daily, 10 ounces at one meal and 6 ounces at the other, with an interval of seven or eight hours between the meals, so as to allow thorough digestion of the one to be accomplished before he takes the next.

226. Aphorisms 6 and 7 deal with the means by which

the body converts materials of the food into its own proper substance and tissues, whether healthy or diseased. But the body can create nothing. It can convert, but it cannot create.

227. The tissues exert a selective affinity for the products of digestion, whether perfectly or imperfectly performed, and when it is imperfectly performed, they convert each tissue into a low form of its own stuff or tissue. Thus, out of the same chyle is made blood which may cause corns; enlarged joints; hypertrophy of the epi- and peri-mysium; the exudation which causes Ménière's disease; hypertrophy of the heart, with the subsequent changes which lead to irregularity and palpitation; hypertrophy of the transverse elements of vessels which are associated with all the facts of increased blood pressure, including the narrowing and emptying of vessels due to that hypertrophy; bronchitis or pneumonia; or hepatitis and jaundice; or cancer, diabetes, or nephritis; or, in fact, any and every ailment and disease.

228. From this it follows, it may here be said in parenthesis, that the essence of a disease is the state of the blood which leads to it, and not the site or place in the body at which the disease is specially manifested.

229. When therefore there is found in the body material

which ought not to be in it, that material must come from somewhere.

230. The immediate source of all the materials of the body is the blood.

231. The immediate source of the blood is the chyle, which in turn comes from the food.

232. In converting food into tissue, the body every day makes the dead alive, and the body may endow tissues with a higher or a lower life—that is, tissues may be natural or healthy, or they may be unhealthy and unnatural, and with a low vitality.

233. Even when disease was in the ancestors or known to be in them, the question arises, How did it get there? Or, rather, the question is, How did they become diseased? No doubt by mismanagement of themselves as to diet, air, and exercises. And their successors, if they similarly mismanage themselves, will be likely to suffer similarly, since organization is inherited, and since like causes acting on like organisms in succeeding generations will be likely to induce like effects.

234. As the organism can create nothing, all hypertrophy, or overgrowth, must be made out of something. What it is made out of is the food. All hypertrophy, therefore, or overgrowth, implies that the organism has been overfed,

has suffered from poly-siteism or pollaki-siteism, from too much food or from too frequent feeding, or from both.

235. Delicate persons often strain a weak and delicate digestion, and so eat themselves more delicate and old and diseased before their time.

236. Delicate persons may often recover health and become stronger by reducing the quantity of their food to, say, three-quarters of a pound of food daily, and the number of their meals to two, with a sufficient interval of time between them.

237. The poor eat poor food too often and too much; and the rich eat richer food too often and too much (both the poor and the rich are poly-siteous and pollaki-siteous), and they are both ill. (See Aphorism 239.)

238. The charwoman who eats at 8.30 and 10.30 a.m., at 1, 4.30, and 8 or 9 p.m., is apt to have frequent colds, bronchitis, influenza, and rheumatism, and seldom lives to advanced life, suffering, or being apt to suffer, as age advances, from weak, flabby, dilated heart, Bright's disease, pneumonia, bronchitis, and emphysema of the lungs, or from chronic rheumatism and cancer. Her ailments, nevertheless, she attributes to the hardness of her work, and not to her food habits, though the latter explain the

reason why her ailments appear much earlier in life than her mere hard work would account for.

239. The beggar's baby which has bread and tea at eight in the morning before being taken out to beg, which gets from the hand of charity a piece of bread-and-butter at 10.30 in the morning, which is taken home at 12.30 or so to dinner of bread and tea, and which is again fed with the same food at four and at seven before being put to bed, suffers also from a succession of 'colds,' and often from one or more of the 'fevers,' such as measles, scarlatina, diphtheria, infantile remittent fever, or the like. These ailments are attributed to cold, exposure, infection, etc., and it seems to occur to but few that the chief predisposing cause of them is improper feeding. Nevertheless, the sickly history of the rich woman's child, in whose case cold is avoided and exposure and infection are carefully guarded against, shows that there is a common cause of the illnesses both of the children of the poor and of the rich, viz., improper feeding—kako-siteism, poly-siteism, and pollaki-siteism. Of course, there is also occasionally oligo-siteism, or insufficient feeding, but that is a far less frequent cause of illness than the other.

240. The mortality among the infants of the poor is frightful. How frightful may be judged when we reflect that among the whole population of England and Wales about half of the children born die before they are five

years of age. As very many careful and well-advised mothers rear all their children, at how great a rate must the others die to render the general mortality so high! 'Frightful' is not too strong a word to describe it.

241. The smallest quantity of food on which one can continue to subsist without sustaining loss of strength is the same as the largest quantity which one can continue to take without sustaining damage. Nevertheless, it is much safer to ask on how little one can subsist without loss (and to take that much) than it is to inquire how much one can continue to take without damage. The answer to both questions is about 12 to 24 ounces of ordinary mixed food daily for the average man and woman living in towns.

242. A bullet through the head, or a stab in the heart, and many other causes of death are instantaneously fatal; but too frequent and too abundant feeding is as certainly, though not so quickly, mortiferous as many of these, and is morbiferous besides, which they are not.

243. Recurring ailments, whether at regular or irregular intervals, imply that a constant, or at least a frequently acting, cause is at work on the organism, economy, body.

244. If, therefore, we have recurring attacks of illness of any kind, we should search for a constant cause, or, what

amounts to much the same thing, a cause acting frequently or at short intervals of time. This cause will most often be found in poly-siteism or pollaki-siteism, or both; in eating too much or too often, perhaps in eating too much *and* too often.

245. Recurring ailments, or attacks of illness occurring and recurring in the same person time after time, ought to be treated in the interval rather than during the attacks. In fact, during the attacks we can do little or nothing for them. If we are successful in improving the state of the patient, the improvement will show itself in lengthening of the intervals between the attacks or in diminution of their severity, or in both of these ways.

246. As in healthy commerce prices of commodities are always rising and falling a little, so in the body the temperature, pulse-rate, and other measures of life and health do the same.

247. If the elevations and depressions of prices are excessive, business is in an unhealthy state; it is diseased. Just so when the pulse, temperature, etc., show great or excessive elevations and depressions, the body is in an unhealthy state, or is diseased.

248. Along with the action of other exciting causes, as, for example, supply, demand, etc., the elevations and

depressions of prices of commodities are greatly determined by the attempt to gratify the desire for gain on the part of the merchant; and so, along with the action of other exciting causes (as, for instance, exposure to cold, heat, wind, storm, fatigue, microbes, anxiety, etc.), the elevations and depressions of the signs of life are greatly caused by over-gratification of appetite for food and drink, tending usually to poly-siteism and pollaki-siteism.

249. The gratification of an ill-regulated desire for gain is the chief predisposing cause both of booms and slumps or panics in business; and the gratification of an ill-regulated desire for food (and drink) is the chief predisposing cause both of feverishness and depression in the body.

250. As in business the same predisposing cause produces the opposite states of boom and slump or panic, so in the body the same predisposing cause induces fever and depression; quick pulse, or tachy-cardia, and slow pulse, or brady-cardia; high temperature and subnormal temperature; diarrhœa and constipation; menorrhagia and oligo-menorrhœa, or a-menorrhœa; mania and melancholia; sleeplessness and too heavy sleep, or torpor, or too great readiness to fall asleep at wrong times; polyuria or diabetes, either insipidus or glycosuric, and oliguria or anuria; over-acidity or under-acidity, or alkalinity of urine; excess of urea and urates, or deficiency of the same; rapid breathing, or poly-pnœa or tachy-pnœa,

and slow or intermittent breathing, or oligo-pnœa, apnœa, and dyspnœa, or Cheyne-Stokes' respiration; hyper-æsthesia and olig-æsthesia, or anæsthesia, etc. (See Aphorisms 83 to 111.)

251. If the desire of gain on the part of the merchant or business man is moderate, healthy, natural, right, the course of business will show neither boom nor slump, although it will show moderate elevations and depressions in the volume and value of business, and in the prices of commodities. And similarly, if the appetite for food and drink is controlled so that it is moderate, healthy, natural, right, the body will show neither fever nor undue depression, although it also will be characterized by gentle elevation and moderate depression of the signs of vitality or life.

252. As the course of prices, so the signs of life are represented not by a level line, but by a wave. There is no line of prices, nor is there any line of healthy life. Both are waves; and so also are most, if not all, other organic characteristics, did time allow of their statement; and many inorganic ones likewise.

253. Even in mathematics there is no such thing as length without breadth, but the breadth of a mathematical line is so narrow that it may be left out of account in our reasonings without material disturbance of our conclusions. It is easy, therefore, to draw in mathematics a

line which shall separate two portions of matter from one another. But in organic affections it is quite different: the width of the line bears an appreciable proportion to its length. We must state our proposition as being true only within certain limits, the limits being often pretty wide. A healthy pulse rate, for instance, may vary between 60 and 90, or even more, a healthy temperature between 97·5° F. and 99·5° F., and the quantity of food required by the townsman may vary between 12 and 24 ounces daily, and so on. Health, therefore, is separated from disease not by a narrow line, but by a wide one or by a set of waves. Moderation in all things is the only safe and the only unfailing rule. Hippocrates says: 'Neither repletion, nor fasting, nor anything else is good when more than natural.' *Ne quid nimis.* (Hippocrates: Aphorisms ii. 4; see also ii. 3; i. 4, etc.)

254. As in the course of business, so in the life-history of the body, attempts to obviate booms and panics on the one hand, and attempts to obviate attacks of alternating fever and depression on the other, ought to be made in the intervals rather than during the attacks. And there are many other analogies between the two sets of facts—which, however, as each may pursue them for himself, need not be further referred to here.

255. But as the occurrence of booms and panics in business raises a suggestion that the desire for gain on the

part of the merchant has not been properly controlled, so the occurrence of feverish attacks alternating with states of depression raises the suggestion that the appetite for food (and drink) has not been properly controlled either.

EPIDEMIC DISEASES.—CAUSATION OF EPIDEMIC DISEASES.

256. If we find illnesses occurring periodically, we ought to look for a predisposing cause, constant or at least acting frequently at short intervals of time. Intermittent or periodic attacks of illness are the signs of the action on the individual of a constant predisposing cause; or illnesses occurring at longer intervals of time are the signs of predisposing causes acting at shorter intervals of time. Epidemics of infectious disease very noticeably break out periodically. Even if single cases of infectious disease are present always (more or less), still it is very noticeable that epidemics come in outbursts greater or smaller. Small-pox, for instance, attacked England strongly in 1872-73, and has not been so severe since, although there was a smaller outburst in 1888, etc. Scarlatina, measles, diphtheria, and influenza follow the same law; and so did Plague and the Black Death when they formerly attacked the people of this country. This fact raises the suggestion or suspicion, therefore—a suspicion amounting to strong probability—that the predisposing cause of these infectious and epidemic diseases is, and has been, either constant or one which has for long acted frequently or at short

intervals of time. Is not that predisposing cause improper eating and drinking? Poly-siteism or pollaki-siteism? Methysm? Poly-methysm? Pollaki-methysm? But as the large majority of cases of infectious disease occur among children who do not take alcohol at all, methysm may be excluded as a cause in children's epidemics. It therefore appears likely that the prevalence of epidemic diseases among children and young people is due as its chief predisposing cause to improper feeding—either to too much food or to too little; but they are nearly always due to too much rather than to too little.

257. In dealing with infectious diseases, therefore, it is not sufficient to separate the sick from the healthy by all means in our power, and to supply the sick and the healthy with plenty of good air and a free allowance of cubic space, as has been recommended by sanitarians, and carried out hitherto.

258. A great sanitarian has said: 'Statistical inquiries prove beyond a doubt that of the causes of death which are usually in action, impurity of the air is the most important.' This statement shows great blindness to the effects of food, to kako- or agatho-siteism, to oligo-siteism, poly-siteism, and pollaki-siteism, in causing disease.

259. Attention to air and to supplying an abundance of pure air is an excellent measure, and has had a great influence in preventing the incidence of fevers, and in

limiting their spread. In point of fact, it has diminished fevers by from 40 to 50 per cent. in the last forty or fifty years. But if bad air had been the whole of the cause, or the main part of the cause, of fevers, supplying good air would probably have diminished fevers by more than 40 or 50 per cent. When, for instance, the chief cause of bronchitis is known and is eliminated (except, of course, in those cases where organic change has gone so far as to have rendered recovery impossible), not only is the bronchitis cured, but its recurrence is prevented. If we had been acting on the whole of the cause of fevers we ought to have diminished them by 80 or 90 per cent. Besides this, under a free supply of good air, influenza (which is a fever, for the micro-organism associated with it is known and cultivated) has come among the people, and has annually attacked them since 1890 or so. It is plain, therefore, that bad air is not the main cause of influenza, although it may be a contributory cause, and that of an important character. Another reason for thinking that bad air has had too much importance attached to it as a cause of fevers is that during the past ten years no appreciable diminution in the incidence or mortality from fevers has been effected in England and Wales.

260. These three reasons, therefore, make us hesitate to accept the prevailing opinion that of all the causes of fever, bad air is the most important: (1) The reduction of fever has only been from 40 to 50 per cent. in

as many years; (2) during the last ten years there has been no reduction in the mortality from fevers at all; and (3) during the last ten years influenza has come, apparently to stay. No intermission has taken place in our sanitary efforts during that period. On the contrary, our sanitary authorities are carrying out, with the loyal co-operation of the people, and even, it may be said, under instructions from them, vast sanitary works, whose total cost must be so great as to be little, if at all, short of the amount of the National Debt of the country. The results are not satisfactory—certainly not so satisfactory as they ought to be; and my suggestion is, Has not a main part of the cause of these epidemic diseases been overlooked? I suggest that this is so, and that what has been overlooked is the poly-siteism and pollaki-siteism which are so characteristic of our age. In the case of influenza it appears as if pollaki-siteism is more important as a cause even than poly-siteism. For while both sexes fall victims to influenza, women seem to suffer on the whole more than men from repeated attacks, and the chief difference between the habits of women and the habits of men seems to be that while women probably eat less than men, they eat oftener; they are pollaki-siteous rather than poly-siteous. But this, if true, is a minute difference which need not be further insisted on than to emphasize the advice offered to the sex on other grounds, that it would be well if they took not perhaps less food, but that they took it less often than they do.

261. The following facts regarding the incidence of the infectious fevers are of interest in this connection. In the five years, 1876-80, the death-rate from zymotic disease in England and Wales was 3·823 per 1,000; in 1881-85 it was 2·804 per 1,000; in 1886-90 it was 2·502 per 1,000; and in 1891-95 it was 2·747. About the time of the Crimean War the death-rate from these causes was about 5·240 per 1,000 per annum. Since that time the fall has been very marked; but in the last ten years there has been no diminution at all, or none to speak of. It seems as if we had exhausted the benefit in this respect which we are likely to get from improved sanitation, so far, that is, as improved air is concerned. In 1890 influenza caused 4,523 deaths in England and Wales; in 1891, 16,686; and in 1895, 12,800 deaths.

262. Although the immediate exciting causes of the various fevers, therefore, are various sorts of micro-organisms, their predisposing causes seem to be poly-siteism and pollaki-siteism. Micro-organisms do not grow so easily in healthy bodies as in unhealthy ones, in sound soil as in rank soil; and as soil is made rank by over-manuring, so the body is made unsound and unhealthy by kako-siteism, and chiefly by poly-siteism and pollaki-siteism, by over-feeding.

263. An epidemic-stricken community is an improperly-fed community.

264. It is doubtful, however, whether the human organism can be made insusceptible to the action of the micro-organisms which cause fevers. Probably if ingested in sufficient quantities these would make any person ill, however high his resistance might be. A state of resistance to micro-organisms so high as to reach insusceptibility is, like sanctification in the moral state, to be aimed at rather than reached. Nevertheless, resistance can be greatly increased by proper living, and particularly by proper feeding.

265. But if insusceptibility cannot be reached, the avoidance of complications can; and if we cannot become immune to influenza, we most certainly can to, say, influenza and pneumonia, or to influenza and the long-continued depression and slow pulse which often follows it.

266. To the man who knows better, therefore, it is disgraceful to have influenza and pneumonia, or influenza and marked bradycardia.

267. Famines are hardly ever due to mere shortage of food. When crops fail, and when famines are so caused, crops are almost always bad as well as short. Grain is wet, sour, fermenting, etc., and epidemic disease is caused as well by bad quality of food as by deficient supply. There is reason to think that these two causes of epidemic disease have not been sufficiently separated from one another.

Erysipelas, or 'gallic fire,' it is recognised, may be caused by sour and fermenting wheat or grain; and an excess even of sound grain will cause it also.

NERVES MAY BE HYPERÆSTHETIC AND ANÆSTHETIC AT THE SAME TIME.

268. Strange though it may appear that it should be so, a hyperæsthetic part is also olig-æsthetic, or anæsthetic, as it is called. A part which is over-sensitive in one direction is often under-sensitive in another. A part hyperæsthetic, or over-sensitive to pain and pressure, is often olig-æsthetic, or anæsthetic or under-sensitive to fine perceptions of touch, heat, cold, etc.

269. I do not know whether even the same strands of nerves may not thus be at once over-sensitive to pain, and yet under-sensitive to touch, etc. But it is pretty certain that nerve fibres very near to one another may thus suffer, some of them from over-sensitiveness, or hyperæsthesia, and others from under-sensitiveness, or olig-æsthesia or anæsthesia, as it is called, at the same time. It may, however, be the very same fibres through which over-sensibility in some directions and under-sensibility in others is experienced at the same time.

POPULAR DELUSIONS REGARDING FOOD.

270. There are several popular delusions regarding the ingestion of food into the body. Besides the widespread delusion that the more and the oftener we eat, the better shall we maintain our strength, two common delusions are: (1) The delusion of the expectant mother; and (2) the delusion of the growing boy or girl. (1) 'You must eat for two' is continually being said to the expectant mother. Now, as a newly-born baby weighs from 5 to 7 or 9 pounds, and the placenta 2 or 3 pounds, there are, say, about 9 pounds of tissue to be made up in, say, nine months. This comes to about $\frac{1}{2}$ ounce daily; and even if the baby and placenta were of giant size and weighed even 18 pounds, which they do very rarely, there would only require to be made up about 2 pounds a month, or, say, 1 ounce a day during the period of pregnancy. To make up this amount the expectant mother takes perhaps $\frac{1}{2}$ pound or more of extra food three times a day. What wonder if she has a bad labour, fevers, and takes pneumonia, or becomes septic, or has frightful laceration of the perineum at her confinement, the tissues being so loaded with effete material as to become easily lacerable? (2) The growing boy or girl *may* grow 12 pounds in a year, but 6 pounds is much more common. To make up the former weight, he requires $\frac{1}{2}$ ounce of extra food a day; to make up the latter, he requires $\frac{1}{4}$ ounce. To this end he is often supplied with 1 pound extra of food or even $1\frac{1}{2}$ pound daily. What wonder if,

under these circumstances, he should have tonsillitis, tracheitis, bronchitis, broncho-pneumonia, pleurodynia, pleurisy, growing pains, or rheumatic fever, or even that he should be attacked by one of the continued fevers, his tissues being so loaded with effete material that they form a suitable nidus or resting-place for the growth of the micro-organism which is associated with the cause of the disease?

271. Very helpful advice to the barren wife who wishes to become the happy mother of children is that she should become dis-siteous, and that she should take 4 ounces of food at one of her meals, and 8 ounces at the other. If this is not successful in making her an expectant mother in six months, she ought to become mono-siteous, and eat, say, 10 or 12 ounces of food daily.

272. A lady, thirty-one years of age, who had been nine years married and had suffered greatly from dysmenorrhœa during that time, but was still infertile, had the uterus dilated and curetted and painted with iodized phenol in order to cure these ailments. She suffered also from anæmia. A year after the operation on the uterus she was still sterile. I then advised her to become dis-siteous, and in six months she became an expectant mother, being delivered in due course of a fine, healthy, full-time boy. That the diminution of her food was the cause of the removal of the endo-uterine exudation which induced the sterility I have no doubt.

273. In case it should be said that the operation was the cause of the pregnancy, an exactly parallel case occurred in my practice in which a lady thirty-two years of age and nine years married, without family, became an expectant mother after six months of a dis-siteous régime, although no operation of any kind had been performed on her. A very interesting feature in her case was that the reason why she became dis-siteous was because she saw her mother, aged fifty-four, cured of recurring attacks of laryngo-tracheo-bronchial catarrh, from which she had suffered for twenty-five years, by a dis-siteous régime. What had proved so beneficial to her mother would, she thought (and without being definitely advised to adopt the plan), be useful to her, and the result was as described. Here also no doubt lengthening of the intervals between meals, by allowing of abundant time for the secondary muscular- and tissue-digestion to occur, and so preventing the deposition of exudation in the interior of the uterus, prevented and removed the obstacles to impregnation; and the natural result followed.

274. The same advice was successful in curing dysmenorrhœa. A lady of thirty years of age, whom I attended for anæmia, from which she had suffered for three years, and for chronic rheumatoid arthritis, from which she had suffered for seven years, and who had also suffered for many years from severe dysmenorrhœa, a 'doubling up pain' as she described it, took one meal a day (was mono-

siteous) for about a year. Under this treatment she improved greatly in health, the rheumatoid arthritis ceased to spread, an extensive effusion into the right knee-joint was absorbed, the anæmia was greatly improved and diminished, and the dysmenorrhœal pain wholly and absolutely disappeared. The diet was often weighed, and consisted of 7, 8, or 9 ounces of mixed food once daily. Under this régime she gained 4 pounds in weight in the course of a year, and her headaches almost entirely ceased.

275. If, as very commonly occurs, some endometritis, pelvic cellulitis, or other inflammatory swelling or exudation, is the restrainer of conception, absorption of the inflammatory swelling or exudation will at once begin to set in on a dis-siteous and still more on a mono-siteous régime. This process will very likely be accompanied by a feverish attack. The exudation is absorbed by oxidation or combustion, which usually sets up the feverish state. The eliminative or absorptive stage is the trying stage, and the patient must pursue her course, although feeling ill, or must even go for several days or for a week or two on to a purely liquid diet, as, for example, a cup of tea or coffee in the morning, a basin of soup in the middle of the day, and a glass of milk and water, or milk and barley-water, in the evening, when the fever will generally subside, the inflammatory exudation be more or less completely absorbed, and the obstacle to conception be removed. Dis-siteism can then again be resorted to and maintained with advantage.

276. The facts occurring during such a course of treatment frequently prove afresh the truth of the aphorism: 'If you cannot fast without fever, you are overfed.'

277. A woman would probably become thinner on either the dis-siteous or the mono-siteous régime at first, but in course of time she would regain her normal weight. Many persons are heavier than, for their size and age, they ought to be.

278. If in her confinement a woman suffers from cramp in a limb or limbs, we may be pretty certain that she is suffering from the effects of poly-siteism and pollaki-siteism. She would probably have less cramp at a subsequent confinement if during her pregnancy she were to eat twice a day rather than thrice. Many of the good effects of a fruit diet during pregnancy are due to oligo-siteism, since, as a rule, fruit contains only about 10 per cent. of solid material in its composition—a much smaller proportion than is contained in ordinary food.

279. The same women who suffer from cramp in pregnancy and parturition are apt to suffer from cold limbs and cold extremities, the cause being the same in both cases. In the former uric acid, or some other product of imperfect digestion, irritates the muscles and causes contraction of them or cramp; in the latter overfeeding causes first hypertrophy and then contraction of the

transverse coats of the vessels, and so stops the blood-supply, or acts as an obstruction and blocks it.

280. If we are not very careful to feed up our patients only moderately when the depressed stage of influenza sets in, we shall be very apt to lay the foundation for another attack or attacks either of the same or another disease.

281. The long-continued depression often seen after influenza, and which sometimes kills, and sometimes drifts on into chronic disease like consumption, is a starvation due to previous over-repletion, and is to be met by limiting food-supplies, not by increasing them, sometimes by recommending only liquid food and stimulants for a time.

282. 'Few diseases are not in some sense alimentary.'

283. The same statement is true of the depression following other fevers besides influenza, although it is not so obvious, because most of the other fevers occur only once in life. But it may be said of them that if we are not very careful to feed up only moderately in the convalescent state (which is a depressed state) of those fevers, we shall be very apt to lay the foundation for an attack of some other disease. The same is true of the inflammations.

NOMENCLATURE OF DISEASES.

284. Having said elsewhere some of the things that occur to me regarding the names of diseases, I do not propose to say much here; but will make a few observations which seem required to clear up ideas on the subject. I have already said that diseases are mostly eilemmatous or parenchymatous: they are affections of the coverings (internal or external) of organs, or they are affections of the proper tissue of organs. But

285. There are many parts of the body, inflammation of which has not been described. It is difficult to believe that any part of the body, however, has not at some time or other in human history suffered from inflammation in some of its structures or tissues. When inflammation occurs in parts not formerly known to be inflamed, and whose symptoms are therefore new to the medical attendant, we know that there will be pain, heat, swelling, and probably redness of the affected or specially affected part (if we could see the redness), just as has been described for other parts hundreds of years ago; and that congestion, exudation, and absorption will and must take place in it. Probably there will be heightened function in the earlier stages of the affection, and diminished, or even destroyed or absent, function in the later; and there will certainly be pain in functioning.

286. These signs and symptoms, although due to the affection of the part specially involved, may not be recognised as so caused even by the medical attendant; and their source will certainly not be recognised by the patient himself. All that he will know, *e.g.*, is that he has pain and throbbing, and perhaps heat; but it often is the function of the doctor to say that the pain depends on inflammation of this, that, or the other part, on *periostitis sterni*, to take a commonly occurring yet very imperfectly recognised condition, or on *periostitis costarum*, or on arthritis of costo-sternal articulations. It is difficult to believe that *œsophagitis* has not occurred in human medical history; yet no such condition is named in the official nomenclature of diseases.

287. A system of medicine, complete in detail, or nearly so (for perfection is probably to be striven after rather than attained), would describe each and every affection of each and every tissue; would at least describe inflammation of each and every organ, and there is no good reason why this task should not now be undertaken and accomplished.

288. Generally speaking, doctors treat organs and tissues, not functions, qualities, and powers. Doctors, *e.g.*, do not treat the mind, vision, hearing, smell, taste, or touch; they treat the brain, the eye, the ear, the tongue and palate, the nose, the nerves; and if they are wise they

treat the bodies possessing brain, eyes, ears, tongue, palate, nose, and nerves, rather than the organs themselves. Most diseases of organs are local expressions of general states.

289. Although most local diseases are the local expressions of general states, it is sometimes much more important to discover what part of the body is specially affected than to know the nature of the affection from which it suffers. Simple inflammation of the brain—*cerebritis simplex*—may, for example, be much more serious and important to the patient than the presence of tubercular disease of a small joint—*arthritis tuberculosa*—although tubercular disease is in itself more serious than simple inflammation. Disease is important rather in proportion to the importance of the organ chiefly involved than in proportion to the nature of the affection involving it. A simple disease, as, for example, simple inflammation of a part, may probably become tubercular if through long continuance of local inflammatory action, tubercle bacilli, already latent in the body, are attracted to the part affected. In this way different diseases may run into one another.

290. A very good instance, and not at all an uncommon one, of how much more serious a disease may be when it appears in one part rather than in another is found in the occurrence of muscular cramp. Cramp is spasmodic and long-continued contraction of muscular fibre. When this

occurs in the limbs, say, in the muscles of the calf or front of the leg, it is painful and inconvenient and annoying, but very seldom dangerous, or only so if the action spreads up into the abdomen along the muscles of the thigh. But how very serious is the same action when affecting, as it occasionally does, the heart-muscle itself! Many a person has died from cramp of the heart (generally called angina pectoris), the organ contracting too firmly in systole and never dilating or going into diastole again—or not until after death, when it is too late.

291. Names of persons given to diseases, as, *e.g.*, Ménière's disease, Raynaud's disease, are bad names.

292. Good names of diseases ought to refer to anatomy, and ought to state the kind of physical change which is occurring in the anatomical structure or structures affected. But a name is still bad, even when the anatomy of the affected part is referred to, if only the functional changes in the part or parts are pointed to in the name. For instance, *neuralgia*, although it refers to *νεύρον*, is bad, as it means only pain in the nerve (*νεύρον* and *ἄλγος*), since pain may depend on a variety of physical conditions. *Neuritis*, on the other hand, or *perineuritis*, are good names.

293. A functional name may still be allowable for a time if it means or implies that we have not made up our

minds what the physical changes occurring in the anatomical structure really are. The retention of the term, or name, '*neurosis*' may, *e.g.*, still be allowable if we mean to convey by its use the idea that we do not know, or are not sure, of the nature of the affection beyond this, that, in our opinion, some affection exists, we do not know what, of some nerve, or nerves, or part of the nervous system, we do not know which.

294. The termination 'itis' is that of a Greek feminine adjective, and means 'of,' or 'belonging to.' It agrees with *νόσος* or *νοῦσος* understood. It is generally used to signify inflammation of the part pointed to in the root of the word, because inflammation and congestion are the commonest affections of parts.

295. The term 'nerve' (*νεῦρον*) meant up till the time of Galen (130-200 A.D.) not only 'nerve,' but 'tendon,' or 'sinew,' as nerves were not distinguished from tendons till his time. Hence, the word or name 'nerve' does not occur in the Old Testament or in the New. 'Sinew' ought to be called 'tenon,' *τένων*, from *τείνειν* ('to stretch'), because a tendon stretches from muscle to attachment, serving to give to a muscle its point on which to pull, the tendon in turn being attached to fixed points, or fixable points, like bone; inflammation of a tendon is therefore 'tenonitis.'

296. Even as late as the time of Van Swieten, the com-

mentator of Boerhaave, nerves were confounded with tendons. Thus, Van Swieten says that when a sloughing tendon was grasped in forceps for removal, it set up a spasmodic action in the limb. Plainly only stimulation of a nerve could do this; although, of course, seizing a tendon, which act in turn stimulated a nerve, might have had the same effect. But then it would be the irritation of the nerve, not that of the tendon, which conveyed the irritation to the tissues and caused the convulsive movement.

297. Even yet there is reason to think that affections of nerves, or, at any rate, affections of the coverings of nerves (*perineuritis*), are not always distinguished from those of tendons and other fibrous tissues, many obscure affections of the epi- and peri-mysium, periosteum and ligaments, being considered 'neurotic.' Many so-called 'neurotic' young women, and older ones also, are really suffering from inflammation and congestion of fibrous tissue, from epi- and peri-mysitis, from periostitis as well as perineuritis, or from *pachymeningitis cerebri vel medullæ spinalis*, and the perineuritis which nearly always accompanies it. 'Rheumatism,' so-called, is in very many cases the same affection. According to the place in the body where the inflammation of fibrous tissue occurs do the symptoms vary. 'Gout' is very often used as synonymous with 'rheumatism,' and great confusion results.

298. Judged by the simple principles laid down, such

names of diseases as rheumatism, gout, epilepsy, paralysis, catalepsy, hysteria and many others are very bad names, and ought to be speedily superseded. If we are unable to supersede them with better names, that fact is a proof that medicine is still in a far more backward state than is commonly supposed.

299. Fibrous tissue is a very widely-distributed tissue in the human body, forming the coverings or envelopes of many different organs and structures. The signs of its affection, therefore, must necessarily differ as widely as the functional manifestations vary of the various structures which it covers—bones, nerves, joints, muscles, brain, and spinal cord.

SUGGESTION OF A NEW NAME FOR RHEUMATISM.

300. The Greek medical writers did not recognise or appreciate the existence of fibrous tissue as such, or fibrous tissue in general. They had no name for it; at least, I know of none. Perhaps some better scholar will enlighten me. They knew special forms of it, as, *e.g.*, the thick collection of it at the nape of the neck, which even Homer speaks of under the name *ἰνίον*, and Hippocrates also in the Aphorisms, p. 1248 (Foes). If they had had a name for inflammation of fibrous tissue in general, I think it would have been *νευρῖτις*, because, up to the time of Galen, *νεῦρον* meant tendon and also nerve, and very likely also ligaments

about joints. But they had not differentiated epi-mysium nor peri-mysium, nor periosteum; at least, I am not aware that they had. Information on the subject is desirable. But, of course, the term *neuritis*, having already an accepted meaning, and a very definite one (*perineuritis* is also appropriated), cannot now be used in this sense. Perhaps, therefore, as we are driven to the suggestion or origination of a name, *ἰνῖτις*, hence *ἰνῖτις*, might serve? If we agreed to use this name as meaning inflammation of fibrous tissue, many advantages, I think, might be attained. First of all the term *rheumatism* might perhaps be got rid of. The name *rheumatism*, connected with *ῥέειν*, to flow, has an interesting history, being applied to the pain which follows on the cessation of a running discharge from the head; but it has proved a very confusing term or name in medicine. A *rheum* is even yet used of a watery or semi-purulent discharge from the eyes or eyelids; but this use of the term, although correct etymologically, is gradually ceasing. Is not *rheumatism* an inflammation of fibrous tissue? and this apart altogether from any theory we form as to the cause of it? and whether we think it due to oxy-uri-chæmia, or oxy-lacti-chæmia, or any other cause? Secondly, *initis*, being connected with *ἴς* (Latin *vis*), would be rather descriptive, because it would draw attention to the strength and tenacity of the structures specially affected. Thirdly, being a new name with an accurate definition, we could use it always in the same sense, whereas *rheumatism* is used in a great many senses. On the whole, I venture,

though with some hesitation, to suggest the use of the term or name *initis*. *Periostitis*, *perineuritis*, *perimysitis*, *peritenonitis*, *pachymeningitis*, and inflammation of ligaments (*syndesmitis* [?]) are forms or species of the genus *initis*.

301. Another name for the general condition of inflammation of fibrous tissue might be *pan-eilemmatitis*, this name referring to the fact that there is inflammation of the sheaths or coverings of many organs, and that these sheaths or coverings are, many of them, made of fibrous tissue. But *initis* is much shorter, and may perhaps be preferred. When pan-eilemmatitis, or even poly-eilemmatitis is present, the state of the bodily health is very bad; but if, in addition to this, there is pan-parenchymatitis, or even poly-parenchymatitis, the case is hopeless indeed; since such conditions mean pan-hæmatitis, a state that generally requires a long time to induce it, but which, when induced, is mortal.

302. There is probably no department of human knowledge into which so much labour has been put with so little result as into medicine.

303. If the progress of science is always accompanied by the clearing of our ideas, and their greater definition and precision, the inability as yet to get rid of vague terms, like those referred to and many others, shows us how unscientific in many directions medicine yet is.

304. Any and every part or tissue of the body may and does from time to time suffer from any and every affection, as inflammation, specific inflammation, syphilis, cancer, rheumatism, gout (whatever these affections are), and nomenclature ought to assign to each affection its proper name.

THE CAUSES OF DISEASE.
'CAUSATION IS OF PARAMOUNT IMPORTANCE IN MEDICINE.'

305. A cause of disease is a fact or incident in the history of the organism, without whose existence the disease would not have occurred. From this definition it appears that a complete account of the causes of any disease would be a complete enumeration of all the events which preceded it in the life-history of the person affected, since every one of these effected its own modification on the organism, and might therefore be described as that without which the effect would not have occurred, or at least would not have occurred in the exact or precise manner in which it did occur. Causes are always multiple, never single. But it is impossible to have in our minds all the events which preceded the set of events under consideration which we call the disease. No memory could carry them all, even if we knew them, which we never do. This being so, what we mean by a cause of disease is the most important of the recent events which made for the production of it. It was, *e.g.*, exposure to wind, wet, cold,

heat, or it was fatigue, etc., which caused, let us say, the inflammation in question; or it was infection (that is, it was the effects of the entrance into the economy, and their germination and growth there, of micro-organisms) which caused the fever. These recent and important events are known under the names of the exciting causes of disease, because they appear to be the immediate or exciting causes of the conditions under consideration.

306. When, however, we come to investigate the matter, we find that the same amount of exposure to exciting causes such as we have instanced will not make all persons equally ill. In fact, some persons may escape illness altogether, while others are made very ill by even small amounts of them. The amount of exposure to cold or wet which may kill A may have no effect, or very little, on B. This difference has been known to medical men under the term 'Predisposition.' An explanation of the difference between the effects on A and B has been offered by saying that A was much more predisposed to be affected by the action of the exciting cause than was B. To say that A was more predisposed to the influence of the cause than B is often only another way of stating the fact that A suffered from exposure to the cause, while B did not, and the proposition is often therefore only verbal; but, so far as it means anything more than a mere verbal statement, it evidently means that A's resistance to the exciting causes of disease was less than B's, and that B's resistance was

greater than A's. Predisposition, therefore, comes to mean inverse resistance. The greater the predisposition the less the resistance; and the less the predisposition the greater the resistance.

THE PROXIMATE CAUSES OF DISEASE.

307. Besides these two sets of causes, the ancients described a third set, which they called proximate causes. The proximate causes are only two, viz., swelling and shrinking. Very little has been heard about them in recent times, yet it cannot be denied that they are most important, and, in the minds of some distinguished physicians, have played a most important part in the scheme or system of medicine. To Latin writers they were known as *strictura et solutio*, or, better, by the terms *strictum et laxum*. To Greek writers they seem to have been known under the names of *ἀτονία καὶ ῥῶσις*; *στεγνὸν καὶ ῥοῶδες*; *στέγνωσις καὶ ῥύσις*; *τάσις καὶ χάλασις*; *συναγώγη καὶ χύσις*; *κεκλεισμένον καὶ ἀνεωγμένον*; *πύκνωσις καὶ ἀραίωσις*. Perhaps *izanic* and *œdanic* states would be good names?

308. Some of these terms bring us face to face with one of the fundamental difficulties of medicine. Should, *e.g.*, *ἀτονία* correspond with *strictum*, as I have made it do, or should it correspond with *laxum*? For is there not a slackness, or atony, or sluggishness which is due to relaxation, and also an atony due to simple blocking, or what might

be termed constipation of the tissues, when contraction or shrinking is present and not dilatation or relaxation? The Latin term *solutio*, as the opposite of *strictura*, was a most unfortunate name or term. It introduced to the mind the pathological consequences, the functional changes or concomitants which accompany or may accompany the presence of the state of *laxum*, in place of confining attention to the state of *laxum* itself. In one word, it confounded function with property. (See Aphorism 319.) As it was disease only which the ancients considered, the modern science of physiology or healthy function not having yet been thought of, and as the idea of explaining normal or healthy secretion had not occurred to them, the term *solutio* stood in their mind for the occurrence of expectoration, or of diarrhœa, or generally for some unhealthy discharge from the body, rather than for the physical state of *laxum* which they supposed to accompany it.

309. Even yet physiologists do not seem to be quite clear whether exudation or the throwing out of secretion occurs in the state of *strictum* or of *laxum*, in the state of shrinking or of swelling. What seems to happen is that longitudinal tissue-elements, as is seen particularly in the case of the vessels, being supplied generally by one set (the cerebro-spinal system?) of nerves, are made to contract by stimulation conveyed along those nerves. Contraction of longitudinal elements, however, at once causes relaxation of transverse elements, the immediate effect of which is to

fill the vessels with blood—that is, the presence of *strictum* in the longitudinal elements at once causes *laxum* in the transverse. But the presence in the vessels of a larger quantity of blood than usual causes stimulation of the (sympathetic?) nerves going to the transverse elements, and the effect of this is to contract the transverse elements, and simultaneously to cause to be thrown out a quantity of secretion, normal in the case of the action of healthy glands, abnormal in the case of the action of inflamed mucous or serous surfaces. Fundamentally therefore, or essentially, contraction and dilatation seem to be the changes which occur in the state of the parts, the occurrence of secretion or of exudation being the accident. *Solutio* ought never therefore to have given the name to the state or cause as the ancient mind viewed it. To the terms *strictum et laxum* there could be no objection, since these are names of opposite states, which bring out the antithesis which they are intended to express, and which retain their meaning to-day under such names as vaso-constriction and vaso-dilatation, and all that the use of these terms implies.

310. It is, however, because *strictura* and *solutio* imply a certain ambiguity or looseness of meaning and of antithesis that I have ventured to suggest *izanic* as the synonym for *strictura*, and *œdanic* as the synonym for *solutio*, although if *strictum* and *laxum* are retained there can be no objection to them.

311. Health and disease being different phases of organic action, the one shading off into the other by gradual and sometimes insensible gradations, a study of the one set of actions throws much light on the other. As in health, therefore, contraction of the transverse elements of vessels empties out secretion or excretion, so in disease a similar action empties out exudation or effusion. In the œdanic states, or what correspond with what are called the acute diseases, the natural termination is in an inflammatory exudation. In the izanic states (which correspond with what are called the chronic diseases) the natural termination is in a dropsical effusion into cellular tissue or hollow body cavities. Healthy secretion or excretion, therefore, inflammatory exudation (the eruption of exanthemata also?), and dropsical effusions are all different manifestations of impulses conveyed along certain nerves and accompanying contraction chiefly of the transverse elements of tissue. If we think well of it, we shall find that it is because the blood in all these conditions contains the elements of the material in it which is to be exuded that the exudation is expressed either as secretion or excretion in health, or as inflammatory exudation or dropsical effusion in disease. In the former case the blood has the proper amount of material in it, and under the action of the proper tissue (renal tubules or gland-cells, *e.g.*, gland-ducts, etc.), proceeds to expel its secretion. In the latter, being loaded with excess of material, it throws out its inflammatory or dropsical exudation. And even when no inflammatory or dropsical exuda-

tion is thrown out, the natural secretion or excretion may be perverted if an excess of material is in the blood. Here again, then, we are driven to consider the state of the blood as a condition fundamental to the occurrence both of healthy and diseased exudations. And as the state of the blood chiefly depends on what is put into it through the digestion, one more piece of evidence is impressed on us, pointing to the enormous importance of food-supply, and the necessity of its being natural and proper, and neither in excess nor deficiency, and also of its being of good quality, in order that the body may work healthily.

312. Although, as has been seen, contraction of longitudinal elements—not only contraction of muscular fibre, but also contraction of any tissue element, contractility being a fundamental property both of organic and of inorganic matter—although contraction of longitudinal elements at once causes dilatation of transverse elements owing to the constitution of organic matter, and although therefore to this extent contraction may be said to be the cause of dilatation, it is not so if we confine our attention to either longitudinal or to transverse elements at one time. If we do this we find that contraction and dilatation are the invariable antecedents and successors of one another, though they are not the cause of one another, that is to say, a part or element which is shrunk or contracted in course of time dilates, and an element which is dilated proceeds later to contract. It is the constitution of the elements which causes this.

313. As day and night are the invariable antecedents and successors of one another, yet is not day the cause of night, nor is night the cause of day, but the manner of the rotation of the earth on its axis and its relation to the sun is the cause of both ; so shrinking of an element is not the cause of dilatation of that element, but the constitution of protoplasmic elements and of the organism to which they belong is the cause of both, and of the alternation of one state upon the other.

314. The manner of the rotation of our earth on its axis, and its behaviour to the sun, is, of course, the cause of the continual succession of day on night and of the alternation of night with day. During the active part of day the state of *strictum* predominates in the organism and in all organic things on the earth. During night, on the other hand, the state of *laxum* predominates. This continual succession and alternation of the one state on the other has so imprinted its influence on every organic thing on this planet that each follows the law of alternate shrinking and swelling—even the ultimate element of protoplasm under the microscope alternately shrinking and drawing in its arms, and alternately swelling and throwing them out again. And this fundamental, physical, and physiological alternation is conveyed into all the actions of the human organism, even commerce, politics, and morals showing unmistakable marks of its influence in the alternations of more or less which they continually manifest. This in-

fluence, when exaggerated and abnormal and ill-regulated, translates itself into the alternations of booms with panics in commerce, into violent swings of the political pendulum, and into violent changes of opinion in morals. It is impossible in any case to avoid changes from more to less or from less to more in all these directions as organization is situated and determined on this planet.

315. But it is an interesting speculation, and one not entirely useless, to inquire what might happen were our planet differently circumstanced as respects the sun than it is—if, for instance, our earth behaved to the sun as the moon behaves to the earth, keeping one side always to its primary, and rotating once on its axis for once in its orbit. In this case, on one part of the planet there would be everlasting day, and on the opposite side everlasting night. And, in consequence, life would probably show actions much more continuous than is the case with us, the alternations of shrinking and swelling either not appearing at all, or appearing at very much longer intervals of time than they do here. Life would probably then be represented by a spark, marking its onward course by a line of light gradually widening till it reached its culmination, and then declining and going out in a narrowing or waning stream till it disappeared again into darkness, but waxing and waning, not as here in a series of alternations of shrinking and swelling, but rather with a continuous increase and decrease, as the case might be. It is impossible to follow

such a speculation further, but it is manifest how enormous might be the differences which so slight a modification in the behaviour of our planet to the sun might make in the phenomena of health and disease and in all the relations of organized life on its surface.

316. Contraction of longitudinal elements is the cause of dilatation of transverse elements, and contraction of transverse elements is the cause of dilatation of longitudinal; but contraction of longitudinal elements is not the cause of dilatation of longitudinal elements, nor is contraction of transverse elements the cause of dilatation of transverse, but only its precursor in time.

317. The intermediate state, in which shrinking is passing into swelling, or the state in which, on the other hand, swelling is passing into shrinking, was called by Latin writers *stricturæ et solutionis complexio*, or *solutionis et stricturæ complexio*. It would have been much better if it had been termed *stricturæ et laxationis vel dilatationis alternatio* on the one hand, or *laxationis vel dilatationis et stricturæ alternatio* on the other. *Alternatio* would, in fact, have been a better name than *complexio*, since what happens is rather an alternation of shrinking and swelling than the mixture—at least, if we confine our attention, as it is much better to do, to one tissue element at a time. It was no doubt the mixing up by the ancient mind of the action of longitudinal *strictum* with transverse *laxum*, and *vice*

versâ, which led them to speak of *complexio* instead of *alternatio*.

318. As regards *strictura et solutio*, however, much confusion has been introduced into medicine by considering these two conditions as causes.

319. Much of the confusion has probably arisen from confusing property with function. *Strictura* is a property of tissue dependent on its constitution. *Solutio* was, or is, a manifestation of function, not of property. *Property* in organic tissues depends on constitution; *function* depends on anatomical connection. The muscles of the limbs and the intrinsic muscles of the larynx equally contract. This is their property dependent on their constitution. But contraction of the muscles of the hand and forearm leads, say, to prehension, while contraction of the muscles of the larynx induces, say, coughing or speaking. These actions depend on the anatomical connections of the muscles of the forearm and of the larynx respectively, and are manifestations not of their property, but of their function. The ancients who did not know of this distinction might be excused for opposing the property *strictura* to the function *solutio*, but we should be inexcusable for falling into the same error.

320. To illustrate the difference between property and function, we may take the case of a copper wire. Whatever

be its connections, a copper wire has the properties of conductivity, of heat, or cold, or the electric current, *e.g.* But if it is connected with an electric battery at either end, it manifests (in addition to these properties) the function of an electric wire, along which a telegraph message or a telephonic communication can be made. Its properties depend on its physical constitution; its functions on its connections.

321. Shrinking and swelling may occur in the organism as a whole or in parts thereof; and shrinking and swelling may even be found in the organism at the same time. A vessel which is, for instance, contracted in its length is dilated in its width at the same time, and *vice versâ*. The mode of progression of an earthworm shows shortening in length and widening in width at the same time, as also simultaneous narrowing in width and lengthening (or dilating) in length. Longitudinal contraction of the hinder part of the worm pulls it forward. At the same time widening of the transverse diameter occurs. When contraction of the transverse fibres occurs, as it does immediately, this has the effect of narrowing the worm in width, of lengthening it longitudinally, and so of pushing the head forward. In the higher animals this process is effected in the vessels by the introduction of two systems of nerves, the cerebro-spinal and the sympathetic, and their alternate stimulation, so as to induce now the longitudinal and then the transverse elements of the tissues to

contract. Sometimes, in order to meet various physiological necessities, longitudinal elements become transformed into circular structures, the effect of this being that contraction of these narrow orifices, while contraction of transverse elements dilates them. This can be seen in the iris. If two parallel bands of longitudinal fibres become united at their ends, and altered a little in position to one another, they may become circular and form sphincters. However, it is better to speak of longitudinal and transverse, as they are in fact, than in reference to what they mean developmentally; and generally sphincters are opened by contraction of longitudinal elements, and closed by contraction of circular or transverse.

322. This can be well seen in studying the act of defecation. As a first step in this act, respiration is stopped, the diaphragm and abdominal muscles are fixed, and the longitudinal fibres of the rectum pull up or shorten the rectum so as to pull it beyond the fœcal mass. When this has been effected the circular or transverse fibres go into contraction along with the act of expiration, and the more urgent is the need for the emptying act, the more violent is the expiratory effort. 'Effort' it should perhaps scarcely be called; it is rather a condition of paresis, or loss of control, a state of *solutio*, as the Latins called it. But the point to bear in mind is that contraction of the longitudinal fibres of the rectum is followed in time

by contraction of the transverse or circular fibres. And the same alternation obtains in the case of other sphincters.

323. The organism may be shrunken as a whole, and yet special parts may be swollen, as, *e.g.*, a rheumatic or gouty person is often attenuated, and yet special joints are swollen. In the shrunken stage of cancer, also, there is general attenuation, with swelling of the part specially affected by the cancer.

324. The coincidence of contraction in length with widening in width, and the consequent filling of capillary vessels with blood, so increasing the functional activity of parts, is probably the explanation of the facts known to physiologists under the names of the accelerator and inhibitory (or retarding) functions of nerves.

325. The statement of physiologists that inhibitory nerves to voluntary muscles do not exist may require reconsideration from this point of view.

326. If, for example, the cerebro-spinal nerves supply the longitudinal elements of vessels, stimulation of them will primarily contract these longitudinal elements. This will widen the vessels and fill them with blood, and so by increasing functional activity will make the nerve seem to be an accelerator nerve, while the full statement would be that it was a primary inhibitor of the longitudinal fibres,

while it became an accelerator nerve through its indirect effect on the transverse fibres or elements, which became relaxed or dilated when the longitudinal became contracted or inhibited. A nerve may, therefore, seem to have a function the exact opposite of that which it does exert. Or, in other words, the indirect or secondary influence of nerve-stimulation may result in the very opposite of its primary effect.

327. Considerations of this sort may explain anomalies otherwise inexplicable. In the case of the heart, the accelerator nerves are said to course through the sympathetic, while the heart-inhibitory nerves come from the vagus and spinal accessory. In the case of the vessels it is just the reverse, the accelerator nerves being said to be the cerebro-spinal, and the inhibitory the sympathetic. A possible explanation seems to arise by distinguishing between the effects of contraction of longitudinal and transverse elements and their respective effects, and by inquiring how it is that, to meet certain physiological necessities of the organism, elements developmentally longitudinal may be modified into transverse and *vice versâ*. And also, and perhaps more importantly, it is necessary to distinguish between the primary contraction and secondary dilatation, which are the invariable successors of one another.

328. While both the application of heat and of cold

cause primary shrinking to be followed by subsequent swelling, primary *strictum*, to be followed by subsequent *laxum;* shrinking, caused by application of heat, is much more prolonged than that caused by the application of cold. It is better, therefore, to check hæmorrhage by hot applications than by cold. Why this should be so is not known; but if heat tended rather to contract the transverse elements of tissue, and cold rather to contract the longitudinal elements, this would account for it. It may perhaps be so, or that heat tends rather to affect the sympathetic system of nerves, while cold tends rather to affect the cerebro-spinal.

329. We must, however, here again beware of a fallacy. The contradistinction is not between heat and cold as a cause of stimulation, but between more heat and less heat. This will be evident if we reflect that cold is the negation of heat, and that it is difficult or impossible for the human mind to conceive a negation having a positive effect. Further, we have no experience of entire absence of heat, and do not know whether it can exist or not. What we do know is that agents (water, *e.g.*) of a certain degree of temperature (40° F., *e.g.*) induce a contractile action lasting for a certain length of time, and pretty soon giving way to dilatation; while, on the other hand, water at, say, 110° F. induces a contractile action, which lasts for a much longer time and is not by any means so soon followed by dilatation. It is a possible explanation that

water at a temperature of 40° F. acts specially on the longitudinal elements of blood-vessels, while water at 110° or so acts especially on the transverse elements. Especially in the case of the latter elements being hypertrophied, which they so often are, powerful contraction may be set up in them, the effect being to empty the vessels and to keep them empty, hæmorrhage being in this way checked. Contraction of the longitudinal elements, on the other hand, is at once accompanied by dilatation of the transverse elements, and as the effect must be to fill the vessels with blood, we can easily see how the application of what we call 'cold' may, so far from checking hæmorrhage, increase it. And I may mention in passing that as hypertrophy of the transverse elements of vessels exists in Raynaud's disease, in anæmia and in commencing gouty conditions it is easy to see how increase of food may aggravate this condition, and so increase the Raynaud condition, leading on to juvenile gangrene, to aggravation of the anæmia, and to increase of the gout; while restriction of the diet, by taking off the blood-pressure and reducing the blood-supply, and especially by reducing the quantity of material supplied to the overgrown transverse elements, may improve all three disease conditions.

330. Health is present when shrinking and swelling alternate with one another within very moderate limits. When the limits of these alternations are exceeded, disease sets in.

331. This is one of the reasons why we say that disease and health differ from one another generally in degree rather than in kind. (See Aphorism 117.)

332. Although from the constitution of the organism, swelling, or *laxum*, or χάλασις, succeeds shrinking, or *strictum*, or τάσις, yet in some states of the organism one of these conditions may be predominant rather than the other. In the reactionary states of fevers and inflammations—the state of fever proper or of inflammation proper—the œdanic condition, or the condition of *laxum*, or χάλασις, predominates; while in the subsequent stage both of fevers and inflammations—the stage of convalescence, or the post-febrile or post-inflammatory state—the izanic condition, or the condition of *strictum*, or τάσις, predominates. But as the state of *laxum*, or χάλασις, or of swelling, is brought about by contraction of the longitudinal elements of tissues (particularly of vessels), and as the state of *strictum*, or τάσις, or constriction, or shrinking, is brought about by contraction of the transverse elements of tissues (particularly of vessels), we find this very interesting, and even remarkable, state of things, viz., that the states both of *strictum* and *laxum*, both of τάσις and χάλασις, both of shrinking and swelling, both of izanism and œdanism, are induced by *contraction* either of one set of elements or of the other. Constriction, or *strictum*, or izanism, or τάσις, is the positive or primary state, therefore; and *laxum*, or *dilatation*, or œdanism, or χάλασις, is the negative or

secondary state. In this sense *strictum*, or τάσις, causes *laxum*, or χάλασις; and *laxum*, or χάλασις, causes *strictum*, or τάσις. Wherefore we ought not to be surprised that so much confusion has arisen from the study of these states, and of their relationship to one another.

333. But as the predominance of either of these states is induced by hypertrophy and over-stimulation of the longitudinal or transverse elements of tissues respectively; and as hypertrophy and over-stimulation are the direct effects of poly-siteism and pollaki-siteism, we see how both the febrile and inflammatory states on the one hand, and the post-febrile and post-inflammatory states on the other, are the direct effects of poly-siteism and pollaki-siteism, a conclusion of such importance as that it can scarcely be exaggerated, and one which brings into greater prominence than before the supreme importance of over-feeding as the direct cause both of fever and inflammation in the organism.

334. In anæmia (triphthæmia or catatribæmia) the transverse elements of the vascular coats are tightly shrunk or contracted, so that they prevent the overcharged blood from flowing into the tissues, and so lead to starvation of tissue from excess or over-repletion. In constipation, similarly, the lumen of the gut is narrowed, so that the intestinal contents cannot pass; then, also, we have an *obstipatio* from excess. It was because it contained excess of nutritive material that the blood caused hypertrophy of the trans-

verse elements of the vessels, and the hypertrophied tissue-elements being induced to contract by the over-stimulation of a too rich blood, became narrowed so as almost to empty the vessels and the tissues of blood, so causing the (apparent) anæmia. And it was because the blood contained an excess of nutritive material in it that the transverse fibres of the bowel became hypertrophied, and, being hypertrophied, they contracted so as very much to narrow the lumen of the gut, and to cause the constipation. The anæmia and the constipation are thus both shown to be the direct effect of hypertrophy of transverse elements, which hypertrophy of transverse elements is the direct effect of over-richness or of plethora of the blood; and the over-richness or plethora of blood being the direct effect of poly-siteism and pollaki-siteism, both anæmia and constipation are shown to be directly caused by poly-siteism and pollaki-siteism. The paradox, therefore, that their alleviation and cure are to be obtained, if at all, through oligo-siteism or temporary a-siteism (not through poly-siteism and pollaki-siteism) is abundantly justified and explained.

335. Shrinking and swelling tend to be proportional to one another. The more marked the shrinking which occurs in the organism or in a part or parts thereof, the greater the subsequent swelling; and the greater the swelling, the more marked the subsequent shrinking.

336. It is as difficult or as impossible to say whether shrinking was before swelling or swelling before shrinking, as it is to say whether light was before darkness or darkness was before light; but it is instructive that we should commence our study with the assumption of the existence of one of these states rather than of the other. We shall, therefore, commence with the consideration of shrinking, which, for the sake of arrangement and order, we shall call the primary state.

EXAMPLES OF IZANIC CONDITIONS—THE STATE OF STRICTUM OR ΤΆΣΙΣ.

337. This primary, or shrunken, or izanic, or contractile state may affect the whole organism or any part or parts thereof, and it may be brought about by simple kenosis, or emptiness of vessels, for instance, because there is too little blood in them, or it may arise as the sequence to a previous congestion (the attenuation of excess, or the starvation of over-repletion, *e.g.*). It may, therefore, be direct or indirect. But whether the izanic, or shrunken, or contractile state is direct or indirect, it tends to be accompanied by diminution or even suppression of the functions of the part or parts mainly affected. For instance, an izanic or contracted state of the vessels and tissues of the intestines (mostly, when these parts are affected, indirect) tends to induce constipation, or *obstipatio ventri;* an izanic condition of the kidneys tends to induce

oliguria, oligaki-uria, or anuria (*i.e.*, scanty, or infrequent, or suppressed urination); an izanic condition of heart and vessels with shrinking of all the tissues of the same tends to induce bradycardia and intermittent heart; an izanic or shrunken state of the respiratory organs tends to induce Cheyne-Stokes respiration, as it has been called, in which the intervals between the respirations are very much lengthened, and also may be unequally or intermittently lengthened; the izanic state of the meninges cerebri tends to induce depression or melancholia, or sluggishness and hebetude of intellection and of movement, and insomnia. Other examples may be taken from all the parts of the body, the various functions of these parts being correspondingly affected. Examples commonly occurring in the practice of medicine are the first stage of writer's cramp (truly a cramp or spasm, and not yet a paralysis, in which the muscle fibres tend to go into spasm, and the vessels to be emptied), the first stage of angina pectoris, in which the heart tends to go into cramp or spasm or contraction, and may never dilate again; attenuation of the body as a whole, or attenuation of parts of the body; such contractions of tissue as accompany low bodily temperatures; such attenuation of female genital organs as accompanies oligo-menorrhœa, amenorrhœa, and oligaki-menorrhœa, and sometimes dysmenorrhœa (though this is most commonly an œdanic condition), etc. (See Aphorism 357.)

338. It will be observed of all these conditions—and the

same will be found to be true of any and all similar states of any part or parts of the body—that as they may be induced directly or indirectly, *i.e.*, either from simple emptiness of parts or from emptiness due to previous congestion, this is equivalent to saying that opposite causes may, and often do, induce the same state.

339. This is the great medical paradox. Attenuation, for example, of the body, or of parts of the body, may be due either to kenosis, *i.e.*, emptiness from under-nutrition, or to the starvation which follows excess, *i.e.*, to the starvation which is due to plerosis, or plethora, or over-nutrition.

340. Agents like cold, wetness, wind, etc., induce a primary tonic, shrinking or contracting action on the body or on parts of it, which is followed soon by an opposite dilating or expanding action.

EFFECTS OF DRUG ACTION ON THE BODY.

341. The same succession of actions on the economy occurs on the administration of many drugs or pharmaceutical preparations, it being the rule that the secondary effect of most, if not all, of these is the opposite of the primary. While some agents cause primary contraction and subsequent dilatation, and are therefore contractivo-dilators or shrink-swellers, others act in the reverse direc-

tion and induce a primary swelling followed by a subsequent contraction or shrinking; they cause first the state of *laxum*, which is, however, soon followed by that of *strictum*. Examples of the first set of agents are, as has been instanced, cold, wetness, wind, etc., and also such medicines as arsenic, iron, strychnine, etc., or the class commonly called tonics, or bracing remedies. These are the contractivo-dilators. Examples of the second set of agents are opium, alcohol, ether, chloroform, etc., or what are generally termed stimulants and narcotics. They are dilativo-constrictors.

342. This double and opposite action probably arises through the fact that some agents and some drugs tend to act rather on the longitudinal elements of tissue, and particularly of blood-vessels, while others tend to act rather on the transverse elements. In this case the same succession and alternation of action will appear after the action of drugs as we have seen to appear from the action of other agents, length-shrinking being accompanied by cross-swelling, cross-swelling in turn stimulating cross-shrinking, and cross-shrinking being accompanied by length-swelling. But, however this may be,

343. As the actions or effects of these different agents are double and opposite in both cases, dilatation following contraction and secondary contraction following primary dilatation, it is evident that a proper quantity of any of

them might be so administered as to combat the effect of its own primary action.

344. The presence of micro-organisms in the blood or tissues does not alter the fundamental or basal fact that *strictum* precedes *laxum*, and *laxum* precedes *strictum*. When, therefore, micro-organisms are present, they cause, like other agents, an alternation of *strictum* and *laxum*. The changes occurring in a fever, therefore, are of the same kind as those occurring in an inflammation, the chief difference being that micro-organisms are present in the fevers, while they are not known to be so in the inflammations.

345. Growth, atrophy, and changes in organic structure are effected by changes in swelling and shrinking, which have alternated with one another for a long time previously, often for years. Structure and function, function and structure, alter and alternate with one another in this way concomitantly with alternations in swelling and shrinking.

346. The presence of the blood and its circulation in the tissues is the immediate cause in most cases of the alternation of swelling and shrinking in tissues; but the presence of unassimilated material in the blood aggravates the inequality of these alternations. The presence of unassimilated material in the blood comes almost always from an

excess of food being taken beyond the needs of the body. This unassimilated stuff is very apt to be deposited in the form of an exudation in various organs, causing disease in organs or tissues.

347. The presence of unassimilated material in the blood causes, therefore, a succession of inflammatory or febrile attacks in which swelling predominates, alternating with a succession of states of depression in which shrinking predominates.

348. The primary effect of over-feeding is thus depression, or the onset of the state of *strictum;* the secondary effect is the onset of the state of *laxum.* And the repetition of these processes leads to a series of alternations of the occurrence of the states of *strictum* and *laxum,* of tonic and atonic states, of *izanism* and *œdanism,* which, being in excess, constitute, or translate themselves into, recurring attacks of disease.

349. Illness or disease is nearly always recurrent by the succession of these alternating states before it becomes chronic or long.

350. Even when disease is chronic or long it is not equally present always, but goes through exacerbations and retrocessions alternating with one another at longer or shorter intervals, and with changes in severity.

351. Speaking generally, over-action of a part or tissue or organ is apt to be followed by under-action of the same, and even by inability to act at all.

352. The permutations and combinations of four things taken two and two together appear to have puzzled the medical mind in all known history. The four things are action and reaction (shrinking and swelling or swelling and shrinking), and large amounts, or large doses, of agents, and small amounts, or small doses, of the same.

353. It is in respect of treatment mainly that this puzzle has removed itself from the academic to the practical sphere, and has given rise to such differences of view and practice among different schools of practitioners as have given occasion to the laity to sneer at medicine, as if sound views in it were either not attainable, or, at least, never had been attained.

354. If, however, there is a starvation from over-repletion, if there is an attenuation caused by excess, it may be necessary, as we have already seen more than once, to treat attenuation and wasting by diminution or restriction of the diet, and not by increase of it. And it may also be advisable, as no doubt it often is, to treat such symptoms as might be caused by the secondary or reactionary effects of pharmaceutical agents by such small doses as may be calculated to induce their primary or actionary effects.

355. These statements are the obverse of that which says that moderation in all things is the only safe rule. The effect of moderate contraction is to be followed by a dilatation so moderate as to be scarcely noticeable, and the effect of moderate dilatation is to be followed by a contraction so moderate as to be scarcely perceptible also. The effect of immoderate or excessive contraction, on the other hand, is to be followed by immoderate dilatation, and of immoderate dilatation by excessive or immoderate contraction. We formerly saw how these principles hold as regards food and its administration, and we now see how they govern drug administration also.

356. The action primary and secondary of any agent on the body is proportional to the quantity of the agent in action (not necessarily to the quantity taken, which is often a very different thing), and inversely as the resistance of the organism or perhaps of some function of the resistance. Otherwise we might say the cause may act in arithmetical ratio while the resistance varies in geometrical ratio. We have already seen that predisposition is inverse resistance, and it must not be forgotten that predisposition is greatly determined by the long-continued action of the environment on the organism.

EXAMPLES OF ŒDANIC CONDITIONS—THE STATE OF LAXUM OR ΧΑΛΑΣΙΣ.

357. On the other hand, examples of the secondary state or condition characterized by *laxatio*, or *dilatatio*, or swelling, or of the œdanic state, are diarrhœa; polyuria (as in diabetes, *e.g.*, sometimes); tachycardia, or quick pulse; congestion of the vessels of the meninges cerebri (showing itself often in excitement of the nervous system; delirium is a greater degree of this, and coma its termination); heart-dilatation and heart paralysis; obesity of body or fattiness of parts of body; writers' paralysis; high temperature and the feverish and inflammatory states in general; congestion of veins and of arteries; menorrhagia, etc. The inflammatory and febrile states have their primary state of contraction often overlooked, passing off with the rigor, and then comes on the noticeable state of high temperature, quick pulse, etc. This in course of time is again followed by depression below the normal, after which convalescence or return to natural sets in.

358. The important practical thing to be borne in mind is that these opposite states may be and often are due to the same causes. For example, poly-siteism and pollaki-siteism may and often do cause both constipation and diarrhœa; slow pulse (bradycardia) and quick pulse (tachycardia); subnormal temperature and hypernormal temperature; depression of spirits, or melancholia; and elevation

or excitement of spirits, or mania; oliguria and polyuria; amenorrhœa or oligo-menorrhœa, and menorrhagia or pollaki-menorrhœa; sleeplessness and torpor, or too heavy sleep; attenuation or loss of weight, and obesity or too great gain of weight; writers' cramp and writers' palsy.

359. From which it follows that the same treatment is often or even very generally required for both sets of states. Reduction of the times and quantities of food consumed will generally be required for the relief and cure of all these different and apparently opposite conditions. Dis-siteism or mono-siteism (preceded or not by a-siteism for a time), and quantified so as not to exceed a total quantity of 12 to 24 ounces of food daily for the average town dweller, will usually put an end, after some considerable length of time, to constipation and diarrhœa, to amenorrhœa and menorrhagia, to oliguria and polyuria, to tachycardia and to bradycardia, to sleeplessness and to torpor, to attenuation and to obesity, to feverishness and depression. Some modifications of treatment in detail might be required for the management of these opposite states, *e.g.*, different sorts of food might be required for the management of constipation and of diarrhœa, although the same amounts and the same principles of treatment might be good for both states.

360. It is also a very curious thing (or it is so at first sight, though it becomes explicable on reflection) that the

same states may be due to opposite causes, *e.g.*, the izanic states (constipation, amenorrhœa, oliguria, etc.) may be due to poly-siteism or to oligo-siteism, to too much or to too little food, but in point of fact they are far oftener due to the former than to the latter cause. A man may be shrunk because he is taking too much food or because he is taking too little, but he is so by far oftener because of the former than because of the latter condition.

361. The two medical paradoxes therefore reappear, viz. : (1) That opposite causes may induce the same state ; and (2) that the same causes may and often do induce opposite states.

362. He is, therefore, a very poor physician who shall attempt to cure constipation by purgatives, and diarrhœa by astringents, and who shall omit to direct an alteration of the diet in both these conditions. Equally bad practice is it to attempt to treat sleeplessness by hypnotics, and drowsiness by stimulants ; amenorrhœa by emmenagogues, and poly-menorrhœa or menorrhagia by astringents and tonics ; feverishness by depressants, and depression by stimulants ; bradycardia by stimulants, and tachycardia by cardiac depressants ; too acid urine by alkalies, and too alkaline urine by acids ; or generally any set of symptoms by some drug calculated to induce the opposite set of symptoms. A man suffering from a tachycardia of 140 a minute had his pulse reduced to 80 a minute, and made

soft, steady, and regular, by being put on a diet of a glass of milk and barley-water and nothing else three times a day for a week. And a man who had a pulse of 40 a minute had his pulse raised to 80 by the same treatment continued for three or four weeks. In the former case, there being irritation with intolerance and reaction, the irritation was reduced by reducing the diet. In the latter case, there being irritation with tolerance, the irritation was reduced by the same means, and the organism being induced to live on itself and on the effete matter collected in it, the pulse strengthened and rose as the irritating and depressing material was used up. In the same way restriction of the diet lowers a high temperature and elevates a low one, calms mental excitement, and elevates out of mental depression and melancholia, etc. Whoever practising medicine cannot see these things and put them into operation may have all the medical qualifications obtainable, but is not a good physician.

363. Too large a part of medical treatment consists in the attempt, conscious or unconscious, to counteract effects without interfering with causes, to enable patients to continue to break the laws of Nature without paying the penalty. Such attempts are doomed and fore-doomed to failure. A dose of aperient medicine, followed by the administration of stomachic medicine, cannot possibly cure constipation (although, no doubt, they may relieve it for a time) if the kako-siteism which caused it is persisted in afterwards.

364. Besides depression of temperature and excess of urea in the urine already mentioned, one of the commonest effects of poly-siteism and pollaki-siteism is congestion of the epimysium, perimysium, and endomysium of muscles, the perineurium of nerves, the periosteum of bones, and the ligaments of joints—the state of initis. The circulation both of the blood and the lymph in these parts, but especially the circulation of the lymph, being blocked by excess of material carried into the blood by the food, congestion of these parts occurs, tenderness is felt on pressure on them, even a little œdema may be observed sometimes, or effusion of lymph may occur into a joint-bursa or into a synovial sac. The temperature of the body is often lowered because the oxidation which ought to occur in the muscular and other tissues cannot occur. The secondary digestion is not allowed to occur. In younger persons, irritation with intolerance or reaction occurring, rheumatic fever often sets in, with quick pulse, high temperature, pain, redness, heat, effusion, and swelling. In older persons, irritation with tolerance occurs; and aching on exertion, a feeling of fatigue and inability for exertion, with tenderness on pressure over the affected parts, a slow pulse (often) and a low temperature, are observed, and sometimes œdema of the feet, and not infrequently the exudation of a passive effusion into, for instance, the pleura or pericardium.

365. Now, there can be no doubt that friction, rubbing, exercises, and movements greatly relieve the aching,

fatigue, and tenderness found in older persons, but unless the diet is restricted at the same time the conditions recur, and there is no cure for the patient. It seems paradoxical to recommend decrease, and not increase, of the diet in order to elevate a depressed temperature and to quicken and strengthen a slow and weak pulse. Nevertheless, as these conditions are induced by excess of material finding its way into the blood from the food, this is the proper prescription.

366. It was no doubt because he realized these facts more or less clearly that Erasistratus (B.C. 304) said that exercises were unnecessary for the health of the body. He seems to have thought (for it is not stated that he recommended inactivity) that the movements effected in the prosecution of the ordinary business of life were sufficient for the maintenance of health.

367. This advice is sound on one condition, viz., that the quantity of food taken into the body shall be exactly sufficient for its requirements, and particularly that no excess be indulged in—that is, that the average townsman does not take more than 12 to 24 ounces of mixed food daily, and the average townswoman not more than about 20 ounces. But as most of us take a good deal more than these quantities, and are therefore poly-siteous and pollaki-siteous, methodized exercises are generally required by us.

THE EXCITING CAUSES OF DISEASE.

368. As has been said, the exciting or occasional causes of disease are cold, heat, wind, storm, calm, injury, wound, wetness, dryness, excitement, hope, fear, anxiety, joy, sorrow, the invasion of the organism by micro-organisms, etc.

369. A division of the exciting causes may be made into (*a*) the inorganic exciting causes, such as cold, heat, etc.; and (*b*) the organic exciting causes, such as micro-organisms.

370. We have already seen (Aphorism 119, etc.) that fevers are associated with, if they are not produced by, the growth of micro-organisms in the body. We may now define an inflammation as the reaction of the economy against the depressing effects of inorganic causes, just as we formerly defined a fever as the reaction of the economy against the depressing effects of organic causes.

371. The primary effects of both inorganic causes and organic causes are usually izanic or shrinking. The reactionary or secondary effects of both inorganic and organic causes are usually œdanic, or laxative, or dilating.

372. The theoretical, and in most cases also the practical, expression or translation by the economy of the primary

effect of both inorganic and organic causes is depression both of pulse and temperature. This state, however, and especially in young persons who are the chief subjects of these diseases, is usually shortlived, and speedily gives way to the reactive or secondary and opposite state of œdanism, or dilatation, whose most common expression is feverishness—*i.e.*, elevation of pulse and temperature. In course of time the feverish state also passes, and is succeeded by a period of depression of pulse and temperature below the normal, after which the normal is again reached, and convalescence is re-established.

373. The normal state is itself, however, not a line, but a wave, whose elevations and depressions show a gentle up-and-down curve. Generally speaking, the curve is lower in the morning after sleep, and higher in the evening after fatigue. In fact, sleep, which is itself a swollen or œdanic state (so far as the veins are concerned, though the arteries are said to be shrunk), tends to induce the izanic, or shrunken, or tonic state—that is, after sleep the organism tends to awake in that state; while activity, which accompanies the shrunken or tonic state, tends to induce the œdanic, or swollen, or relaxed state of fatigue after it has been in action for some time.

374. In preceding Aphorisms we have seen that disease tends to be represented by higher heights and lower depths of temperature and the signs of life than those manifested

in health; and this is really the chief difference between health and disease.

375. Joy, sorrow, hope, fear, anxiety, and excitement, may form another group intermediate between the inorganic and the organic divisions of the exciting or occasional causes. Their action is also a primary depression or shrinking action, followed in time by a certain amount of reaction, or elevation, or swelling.

376. When excessive amounts of these exciting causes are acting, the primary depression may be so great as even to destroy life directly. Thus, excessive heat or cold may kill outright. So may an excessive amount of joy, sorrow, of fear or anxiety, and so may an excessive quantity of a fever-poison — that is, a very large or a very concentrated quantity of micro-organisms, or the products of their activity, the toxins which they generate. When the body or macro-organism is killed in twenty-four or forty-eight or seventy-two hours by an excessive dose of a fever-poison, the person is said to die of a malignant fever. The state may be expressed by a depression both of pulse and temperature, or by depression of temperature along with great rapidity of pulse, which is, however, weak, thin, thready, or imperceptible; or the temperature may be raised, and the pulse be as just described; or the surface temperature of the body may be low, the skin cold, perspiring, and clammy, while the

temperature of internal parts may be elevated. In these conditions there is some reaction, but not enough to carry the patient through the course of the fever, and he generally succumbs in one, two, or three days.

377. Similarly an injury may be so great as to kill outright with primary depression, the patient not living long enough to have reaction; or the signs of reaction may be poor and weak, just as in the case of the malignant fever.

378. From this it appears that the scheme or plan of the effects of a wound or injury to the body is the same as the scheme or plan of an inflammation, and that both are similar to the scheme, or plan, or course of a fever, the exciting causes alone being different—wound or injury in one case, inorganic causes in the second, and organic causes in the third. The conclusion is, therefore, emphasized that 'causation is of paramount importance in medicine,' since the effects of wound, injury, inflammation, and fever can be differentiated by their causes, but scarcely otherwise.

THE PREDISPOSING CAUSES OF DISEASE.

379. The predisposing causes of disease seem to be mainly the relations between the organism and exercises, or work, air, and food; perhaps also heredity.

380. Except in the case of the newly-born, when heredity

sometimes counts for a great deal, by far the most important of the predisposing causes seems to be food. If food is taken in proper quantity and quality, and at proper intervals (work and air being also natural and proportionate), the highest state of health attainable by that organism or person is reached and for the longest time. If food is improper in quantity, quality, or frequency, disease speedily sets in.

381. It is very difficult, or perhaps impossible, to distinguish logically or philosophically between the predisposing and the exciting causes. Practically, a distinction can often be made. A main difference can be seen between them in the comparative frequency of their respective actions. The predisposing causes act frequently and over long periods of time; the exciting causes seldomer, sometimes only once.

382. As it is plain, however, that exciting causes like heat, cold, injuries, blows, may also act frequently and over long periods of time, too much stress must not be laid on this difference.

383. It is not, however, the constant or frequently-repeated action of excess which impresses itself on us as causing disease, so much as it is this, that, or the other exposure to it; or in the case of food when it is recognised as having caused illness it is rather this, that, or the

other article of diet taken at a given time on which we dwell as the cause of the illness. Although food, or kakositeism, is the main predisposing cause of illness, it may, and often does, act as an exciting cause also when, for instance, some indigestible stuff is taken. Cold, which acts always in cold weather, and which is therefore a predisposing cause, may also be an exciting cause, as when persons are exposed to a particular wind, draught, or wetting. So that it is very doubtful if any real or essential difference can be made out between predisposing and exciting causes, though accidental and practically important differences can often be seen.

384. The frequent and long-continued action of the predisposing causes leads to this: that they not infrequently modify the permanent structure of the organism or of parts thereof. Their action, therefore, is apt to set up long or chronic and generally mild diseases, or long and mild, with intercurrent, subacute, or acute attacks.

385. The exciting causes generally modify only the functions of organs; or, if they modify structure, it is only temporarily. They therefore tend to set up the acute, or short, or febrile diseases, and the inflammatory.

386. These differences, however, also must not be pressed too far.

387. 'Temporary' and 'permanent' are very relative terms. The term 'permanent' is scarcely applicable to an organism enduring for only seventy to one hundred years. 'Permanent' in this connection can only mean lasting all its life; 'temporary' for a part thereof. In fact, 'temporary' frequently means a few days or a few weeks; 'permanent' often means only longer than this.

388. Even the earth on which we live, and the sun on which we depend, are only temporary, having been born, living now, and no doubt in time doomed to die, as we also are and do; but the terms of their duration are enormously greater than ours.

389. 'Chronic' means long-continued, and is applied to any state of organism lasting longer than twenty-eight days. To lengthen its application or definition to three months would be better, since a few cases of what is called acute disease last as long as three months (some even more), *e.g.*, some cases of typhoid fever, which certainly go on occasionally for six, or nine, or twelve weeks, or longer; or cases of rheumatic fever.

390. Chronic is the opposite, not of acute, as Asclepiades of Prusa unfortunately made it, but of short or brief, according to the much better terminology of Hippocrates. A short, or brief, or brachy-chronic disease (*νούσος βραχυχρόνιος*, or *morbus brevis*) is one lasting (I would suggest) not longer

than three months. A rather short disease might be defined as one which lasts, say, fourteen days (*νούσος βραχυχρονιώτερα*, or *morbus brevior*), while a very short disease (*νούσος βραχυχρονιώτατα*, or *morbus brevissimus*) might be defined as one lasting from one or two to seven days.

391. Acute or severe diseases (*νούσοι ὀξεῖς*, or *morbi acuti*), on the other hand, are those in which the pulse-rate reaches, say, 120 or 130 a minute, and the temperature, say, 102·5° to 104° F.

392. Peracute diseases (*νούσοι ὀξυτάται* or *ὑπεροξεῖς*, or *morbi peracuti*) are those in which the pulse reaches 130 a minute or over, and the temperature is over 104° F. (Sometimes the temperature does not rise in these diseases, being kept down by failure or inability of the body to react, or by too great shock.) In mild diseases (*νούσοι πραεῖς*, or *morbi mites* or *lenti*) the pulse is not more rapid than about 100 a minute, and the temperature not above 99·5° or 100° F.

393. Acuteness of disease therefore depends on its severity and not on the length of its duration. Its opposite is mildness, not length of duration. And a subdivision might be made, and often is made, between acute and mild diseases, of the subacute diseases (*νούσοι ὑποξεῖς*, or *morbi subacuti*), in which the pulse-rate will be about 110 to 120, and the temperature between 100° and 102° F., or so.

394. An indication for the treatment of the mild and chronic diseases might perhaps be to convert the mild and chronic, or long, into acute and short. If cancer could be converted into suppuration, or abscess, or erysipelas, it might perhaps be cured? Nature seems occasionally to perform this conversion? Sometimes at least what we feared was going to be cancer passes, after a long, slow course, into suppuration, and then recovery occurs. Sometimes a gouty part suppurates, and, suppuration being a form of necrosis, breaks down, dies, and is eliminated, part of the structure being destroyed. When this happens in a small joint, as the first metatarso-phalangeal, for example, we may remove the digit, and for years afterwards the patient may remain comparatively free from gout, especially if meanwhile he alters his ways as to food and drink. The suppuration acts as an attack of acute rheumatism acts in other states of the body sometimes, and by clearing the body of waste effete material relieves for many years the chronic rheumatism from which the patient formerly for years suffered. And the period of freedom from annoyance may be much extended by the effort on the part of the patient to alter the way in which he lived, and which was the chief predisposing cause of his illness; and particularly by the effort to alter his food habits.

395. Another factor in terms of which disease may be measured, besides severity and length of duration, is pain or painfulness. As botanists discard and pay no attention

to the colours of flowers, so physicians do not attach scientific or classification importance to pain. This is, on the whole, wise, because the effects of pain are very variable, depending largely on the sensibility of the person affected, and being very subjective. Nevertheless, as there are some diseases in which pain is by far the greatest symptom, and which are scarcely accompanied by alteration of pulse and temperature, pain cannot be wholly set aside as a test of the presence of disease. Long-continued and severe pain, however, very often alters either the pulse or the temperature, or both.

396. If neuralgia may exist without *perineuritis*, or *neuritis*, or *kentritis*, I know not, but if it does, I do not think I have ever seen it, certainly not if the neuralgia is severe and long-continued. Local tenderness can always (or almost always) be discovered if it is searched for, but local tenderness means local congestion and local inflammation; and local inflammation is, further, most frequently the local expression of a general condition.

397. Before the chronic and mild state sets in there has always been present in the body a longer or shorter succession of subacute or acute attacks of illness, attention to the causes of which could have enabled the physician and patient to avert or postpone the onset of the chronic condition.

UNITY OF DISEASE.

398. Disease is one; it is one fundamentally with many different phases or manifestations. The essence or property of a disease is that it is present; its accident is the place in the body where it appears. The causes of tonsillitis and posterior rhinitis are the same as of bronchitis, pneumonia, endometritis, etc., and the principles of treatment proper to the one are, with various modifications of detail, dependent mainly on the different functions and structures of the organs or parts specially affected, the same principles as are applicable to all the rest.

399. As regards its predisposing causes, disease is nearly always due to poly-siteism and pollaki-siteism, much more rarely to a-siteism, to oligo-siteism, or to oligaki-siteism. (I exclude from consideration poly-methysm and pollaki-methysm, not because these are not predisposing and exciting causes of illness, but because very much has been said about them, and because they are well known on the whole, and because I wish to draw attention to causes which are far more important and far more frequent.)

400. If, then, a patient has a sore throat, or a cold in the head, or a cold on the chest, or 'a chill on the liver!' or a severe headache, or an attack of indigestion, or, in fact, any of the common ailments—still more, if he has a succession of attacks of these illnesses, he should reduce

the times and quantities of food he is in the habit of taking, in order that he may recover from these ailments or any of them. Nature, in fact, compels this course, because if the patient is very ill, entire loss of appetite is usually one of the chief symptoms of the illness. Of course, if any of these ailments arise from oligo-siteism or a-siteism an opposite line of treatment will be advisable; but this happens so rarely among the wealthy, the comfortable, or even the working classes, that it may practically be set aside as a predisposing cause of illness.

401. The method of treatment by restriction of the diet would best fulfil the indications laid down by Asclepiades of Prusa, when he said disease should be treated *ταχέως ἀσφαλῶς καὶ ἡδέως* or *απόνως*, *celeriter tuto et jucunde*, quickly, safely, and pleasantly. The sufferer's desire for fluid should be gratified in moderation, while his disinclination for food should be respected also.

402. It must not, of course, be forgotten that a fairly long trial of oligo-siteism and oligaki-siteism should be resorted to, for, say, as long as six months, quantified in the way suggested, before the benefits to be expected can be realized. Usually, however, benefit is realized in a much shorter time than this. A few subsequent attacks might even be expected to occur after the treatment had been begun. If, for instance, the ailment was recurring headache or recurring bronchitis, a severe headache or

two, or a severe attack of bronchitis, might be expected to occur before improvement set in.

403. These attacks might be occasioned by the treatment; otherwise, the treatment might be a part of their cause. But their chief cause by far is the state of over-nutrition in which the patient is. But although this is so, and although the illness would no doubt have gone on, attack following attack, if nothing had been done in the way of treatment, still, the severe attack or two which follows on the treatment is apt to be attributed to it alone, and unless patients have patience and knowledge, or else confidence in their adviser, they are apt to blame the medical adviser for the evils from which they suffer. It is well, therefore, for the medical adviser to act cautiously and gradually, trying, say, quantified dis-siteism for two or three days, and then tris-siteism for one, and so on, until the patient overcomes his difficulties. Or a good plan often is to put the patient to bed on a fluid and low diet for a considerable period till his difficulties are gradually overcome.

EFFECTS OF LOW DIET.

404. When a patient is put on a low diet of, say, a glass of milk and barley-water or milk and boiling water, equal parts morning and evening, and a cupful of mutton-soup or chicken-soup in the middle of the day, it is often very interesting to watch what happens. By the elevation of

the temperature for a few days it is often apparent that the economy is consuming or oxidizing away some of the waste effete material with which the system is loaded, and which is the chief cause of the recurring attacks of illness from which he suffers. After some time—perhaps in six or eight weeks or longer—these cease, an indication that it is time now to begin the quantified mono-, dis- or tris-siteism, which he is advised thenceforward to pursue.

405. When patients are said to die from starvation which has gone on for only a few hours, the process referred to in the last paragraph is the explanation. Since we know certainly that human beings supplied with water can go on under starvation as a rule for four, five, six, or seven weeks, it is absurd to say that any adult in full vigour can have died of starvation in a few hours. When, therefore, some men exposed to the heat of the English sun and deprivation of food for seven or eight hours died under the exposure, the cause of death must have been something else. The starvation and exposure were no doubt the occasion of their death, but could not have been the cause. The cause no doubt was that their bodies were charged with waste ill-assimilated material, either from poly-siteism or poly-methysm, or both.

406. But if the patient is incurable, it is perhaps better that the medical man should refrain from recommending a

method of treatment which, while it might not succeed in effecting a cure, would be apt to bring himself and his methods into discredit.

407. As a soldier cannot go into battle without the risk of being shot, and as it is not always possible, however, to say who is curable and who is not, the medical adviser must sometimes incur the grave responsibility of being blamed for his patient's failure to recover, it being his duty to give that advice which he thinks most suitable to the case.

408. The patient's view is too apt to be this, that when he recovers from an illness his recovery is attributable to the soundness of his constitution, and when he does not recover it is attributable to the unskilfulness of the doctor.

DISEASE SALUTARY.

409. Disease is salutary. It is almost always, if not always, the attempt of Nature or the economy to get rid of material from the blood or tissues which was causing irritation or damage. Oxidation, or combustion, is set up in this unused material, either while it is still in the blood, or, more commonly, after some of it has been deposited as an exudation into some local organ or place in the body, and an inflammation occurs. After the inflammation is over, especially as no new supplies have been ingested, the patient's appetite being almost entirely destroyed for the

time, a considerable quantity of the cause of the illness has been removed, and the patient recovers. As the whole of the offending cause, or *materies morbi*, may not be removed or consumed in the course of one inflammatory attack, others are apt to follow, and recurring illness sets in. This periodicity or recurrence is a mark of the continuance of the cause, or some of it; and if only warning is taken, and if supplies of food are not pushed so far as to undo the good efforts of Nature towards relief, by re-supplying again the source of the illnesses, the attacks begin to be less severe and to be separated by longer intervals, till in course of time they cease.

410. Suppose the attacks to be of recurring tonsillitis with suppuration, quinsy, as it is called, it can easily be seen that the recurring suppurative tonsillitis is not only a local disease, but is also (and this is far its most significant characteristic) the local manifestation of a general condition. That general condition is, for the most part, a blood condition, the blood being repaired and made by the food, so that we must always deal with food-supply if we wish to alter any condition of blood, and hence of body. The general state may manifest itself in affection of any organ or part, as, for instance, of the head, when we get recurring attacks of headache, or megrim perhaps; or of the bronchial mucous membrane, when we find recurring attacks of bronchitis; or of the lung tissue, when we get pneumonia; or of the pleura, when we get pleurisy; or of

the kidneys, when we get recurring attacks of albuminuria perhaps; or in the affection of any organ or part of the body whatever.

411. From these considerations it is manifest that the recurrence of a local ailment is important rather from the causes from which it springs than because of the locality affected in the body, and that means proper for its treatment and management must deal, not only nor even chiefly with the local conditions, but must be directed to the general nutrition, if we wish to effect any lasting modification on the disease.

ON SPECIALISM IN MEDICINE.

412. No one can therefore be a specialist without being a generalist also; nor can any doctor who takes a wide view of his art and of his science refrain from entering on the treatment of special organs also. If he knows their anatomy and physiology, he is as well able to treat them as any other practitioner, because he will see the bearing of the general condition on the state of the local organ, and will so be able to avoid errors and interferences to which inexperienced specialists are often too much addicted. The objections to too much specialism are mainly two: (1) Specialism ought to be reasonable, and there is a difficulty in drawing the line. No one would say, for example, that if his finger-nail were inflamed it would

be advisable to consult specialist A, while if the pulp of the finger were inflamed, it would be desirable to consult specialist B. The patient might reasonably think that a general surgeon was quite competent to treat not only the finger, its nail and its pulp and its joints, but even the hand and the whole limb, or the lower extremity also, or, in fact, any part of the body which required surgical treatment. There is therefore specialism which is unreasonable, although some amount of specialism may be reasonable and even necessary. (2) But more important than this is the consideration that local ailments, such as are now again in the history of medicine being entrusted to specialists, are almost always the local expression of general states of the body, and that unless the body is treated the local ailment will probably not get well. This is why in so many cases, when the specialist fails to benefit his patient, the general adviser may succeed. It is with the specialist too often as with him who puts on coloured glasses, to whom everything appears therefore yellow or blue as the case may be. If, for instance, a patient has gouty eczema of the skin, would he be wiser to consult a general physician who understood gout, or a skin specialist who might apply local treatment, saying nothing about the general causes which induced the condition? Or if a woman has cancer of the breast, should she consult a cancer specialist or a breast specialist? And can anyone understand cancer without also understanding gout, rheumatism, heart disease and inflammation?

413. If a patient has painful indigestion, recurring headaches, and varicose veins in the legs and thighs, ought he to consult a digestion specialist about the first ailment, a nerve specialist about the headaches, and a third specialist about the varicose veins? Or would it not be better to hear from one general adviser how the painful indigestion failed to make good sound blood; how the blood, being unsound, failed to nourish properly the nerves of the face, and head, and the periosteum also; and how the blood, being not only unsound, but loaded with unassimilated waste and effete material much in excess of its requirements, deposited some of the excess in the nerve sheath, the periosteum, or even perhaps in the cerebral meninges, while more of the excess material contained by the blood was deposited in the vein coats, leading to their thickening and painful overgrowth? When the true relationship of these threefold ailments is seen, they are seen to depend, all of them, on imperfect assimilation of food, which, getting into the circulation, causes inconveniences so different in character and locality in the body. The general adviser would therefore direct attention to the kako-siteism which was the cause of all the effects, and a succession of specialists could do no more.

414. Bodily conditions, like some alleged infectious disorders, may be concomitant or successive effects of a common cause, as well as cause and effect of one another.

415. As the same blood goes everywhere in the body, it may simultaneously or successively fail to properly nourish any and every organ and tissue in the body. As malnutrition of each organ or tissue will manifest itself by symptoms, and even by signs peculiar to or characteristic of the function of that organ or tissue, the most diverse signs and symptoms may appear from the same imperfections of the blood. For example, the same imperfection in blood may cause bronchitis, pneumonia, or pleurisy, as the lung is imperfectly nourished, end-eilemmatously, parenchymatously, or ex-eilemmatously; or, on the other hand, it may cause catarrhal jaundice, abscess of the liver, or peri-hepatic inflammation, according as an end-eilemmatous, parenchymatous or ex-eilemmatous affection of the liver shows itself. Rapid and distressful breathing, cough, and chest pain may therefore be due to the same cause as jaundice or pain about the liver, and treatment the same in principle, therefore, though varying in detail, may be required for affections both of the lung and of the liver. To say, therefore, 'The doctor treated me for my lung when my liver was at fault,' may be an unfair criticism of the doctor, whose efforts were directed to altering the state of the blood, and so to modifying for the better the actions and functions both of lungs and liver.

416. The same causes which induce the formation of posterior nasal adenoids in children may cause pneumonia

or bronchitis, or pleurisy in their father, and endometritis with leucorrhœa, and frequent colds in their mother.

417. And if surgery is resorted to for the cure of any of these affections, the operator should not be content until he has explained the action of the causes which have induced these various affections or any of them, since unless patients or their friends are warned concerning them, either these affections will be apt to recur, or some other affection may replace them. The best help to the patient therefore is given through a combination of medical management *and* surgical interference.

418. Although the existence of varicose veins may be accounted for by the obstruction to the venous blood-flow caused by the pressure of the enlarging pregnant uterus, it is evident that there must be other causes, else how could men suffer from them, or women who have never been pregnant? The exciting causes may be various, but the chief predisposing cause is overloading of the blood with excess of nutritive material ingested by poly-siteism and pollaki-siteism. As irritation of the floor of the fourth ventricle will not cause glycosuria in a starving animal, but easily causes it in one well fed; so pressure on the veins by the enlarging uterus will fail to cause varicose veins in the absence of poly-siteism or pollaki-siteism.

419. Corns are not due to pressure, but to pressure on

toes nourished by a special sort of blood, viz., by blood containing in it nutritive material in excess. The greater the excess of nutritive material, the greater the likelihood of the occurrence of corns. All blood must contain, or at least does contain, nutritive material in excess, and therefore may lay it down in the form of corns under the stimulus of pressure. But the blood can create nothing; it can convert many things, *e.g.*, nearly all sorts of food into all sorts of tissues. Corns are the indirect or reactionary effect of pressure, not the direct effect. The direct effect of pressure is to thin the skin, just as pressure thins and wears out a boot-sole. The indirect effect of pressure on living tissues is to thicken them.

420. If therefore you suffer from corns, gouty enlargements of the toes, distortion and overgrowth of the nails, ulceration in the web between the toes, or even if you suffer from great coldness and blueness of the toes or fingers (Raynaud's disease), these things are marks of poly-siteism and pollaki-siteism. If you diminish your food these conditions will improve, the enlargement of the toes will become less, and the peeling of the epithelium, by removing the hypertrophied overgrowth and forming a sounder tissue beneath, will actually enable you to wear smaller boots than you have been accustomed to do.

421. Further, the ulceration will heal between the toes, and the formation and re-formation of soft corns will

become less and finally cease, the nails will become more natural, and by this means—that is, by diminishing your food—you will postpone and perhaps even prevent the occurrence of senile gangrene of the toes or fingers, and the onset of chronic rheumatism, gout, diabetes, and cancer.

422. The occurrence of chilblains is for the most part an indication of poly-siteism and pollaki-siteism in much the same way that ulceration of the toes, corns, Raynaud's disease, and senile gangrene are.

ON HÆMATITIS.

423. It has already been said that combustion may occur in the effete material accumulated in the system, while that effete or excessive material is still in the blood. I have seen now several cases in which what may be called *hæmatitis*, or inflammation of the solid particles of the blood itself, was present. In this state anæmic (triphthæmic or catatribæmic ?) women become violently feverish, get a very high temperature, and particularly a very rapid pulse, and after days or weeks of the continuance of these symptoms generally die, with no special local ailment, and often with no particular local lesion after death.

424. The only hope for these cases is in very great restriction of the diet, so as to induce the body to convert the overload it is carrying into the heat and motion of

life; but so great is the previous accumulation and so high the combustion that oligo-siteism and even a-siteism is too apt to be unsuccessful in curing them, or it should rather be said in allowing them to recover.

425. The question raised regarding these cases usually is: Is the disease not typhoid fever, or some other of the continued fevers? The hope for their prevention would have lain in earlier restriction of the diet. At any rate, attempts to feed persons in such conditions are usually followed by prompt and even vehement vomiting.

426. Study of such conditions is well fitted to throw light on the mode of origin of fevers. No doubt the presence in the blood and tissues of waste unassimilated material in excess is the most fitting pabulum or nidus for the growth of micro-organisms which are associated with the occurrence of these diseases.

SERIOUS DISEASE GRAVER IN YOUTH THAN IN AGE.

427. Serious and generally fatal diseases, like cancer, diabetes, and Bright's disease, are graver in the young than in the old; they seem to be grave inversely as the age of the patients: the younger the patient, the graver and less manageable is the disease, and the older the patient, the more tractable. There are exceptions to this statement, but the statement embodies the rule. The

reason for the fact is that in young persons the causes leading up to these grave conditions (for the most part poly-siteism and pollaki-siteism) act quickly and excessively, leading to the somewhat rapid formation of a large amount of ill-formed labile tissue, which having a low vitality, easily breaks down, dies, and is eliminated. But the elimination, being required to be on a great scale on account of the rapid growth and development of the newly-formed material in a developing and growing organism, disorders the organism excessively, bringing it frequently into such peril as to cause death. In older persons, maturity having already been reached some time ago, there is a slower growth, and the tissue being less labile, breaks down more slowly. In the former case, therefore, there is set up irritation with intolerance, while in the latter the effects are irritation with tolerance, these differences accounting for the acute and rapid disorders which characterize youth on the one hand, and for the milder and longer diseases which characterize more advanced life on the other. When young persons recover from grave diseases which generally affect persons of more advanced life, it is, therefore, rather more a reason for wonder than when older persons recover.

428. Consumption is generally a disorder of early life, while cancer, diabetes, and Bright's disease are generally diseases of later life. But consumption is like the others in this, that if it appears in later life, say, over fifty years of age, it is generally slower in its progress, and somewhat

more tractable than when it appears, as it usually does, in adolescence.

429. The occurrence of grave states of illness in young persons may be likened to the rapid rise of a mountain torrent, whose drainage area, although absolutely small, is large in proportion to the size of its bed, whose banks are steep and close together, and whose rainfall or supplies are sudden and heavy. Plainly when such a bed is suddenly filled, there is nothing to be done but to wait till the raging torrent whirls past, the engineer being thankful, or the physician, if meanwhile his client's house is not swept away by the rushing and resistless turbid waters, or the life by the rapid and severe character of the disease.

430. The occurrence of these grave conditions, on the other hand, in older persons is like the slow and gradual increase of a great river, which from rivulet and mountain torrent, from stream and tributary, slowly accumulates, at the same time that it calms and equalizes and confines and controls its rising waters within a wide and ample bed, the while that we have the opportunity afforded to us either to increase the elevation of the banks so as to confine the increasing flood, or to make cross-cuts and canals which shall convey some of the waters away, till their menacing elevation shall have somewhat lowered, and by-and-by the cessation or diminution of the rainfall shall have rendered the use of the canals unnecessary. If we had the power to

control rainfall or supplies at the same time, as in the body we have the power of dealing with food supplies, we should be much more able to control the elevation of the waters and to say: Thus far and no further.

431. The sudden rise of the dangerous mountain torrent well represents irritation with intolerance; while the slower and more moderate, yet withal most powerful, accumulation in the great river well symbolizes irritation with tolerance.

432. Or the state of irritation with tolerance may be likened to the behaviour of soldiers under discipline attempting to go through a narrow pass; yet do a hundred men attempt to go through an opening that will only allow six to pass. They become blocked, and slowly come to a standstill.

433. The state of irritation with intolerance, on the other hand, is like a crowd of persons flying from a burning theatre, jostling one another, blocking up the doorways, and trampling one another to death in wild panic.

434. The former offer a rather helpless mark for the attack of an enemy; but the latter not only do this, but are their own enemy and often self-destructive besides.

435. The former are what have been termed the chronic,

or izanic, diseases, the latter the acute, or ædanic. And the blood (and lymph) corpuscles behave like the soldiers and the crowd in the chronic and mild, and in the acute and short diseases respectively.

436. In both cases the indication is to diminish the numbers attempting to pass, and to diminish the causes that led to the block; but there is greater need for haste to act in the latter condition than in the former.

437. The analogue of the way in which the numbers attempting to pass may most certainly and most safely be diminished both in the izanic and the œdanic conditions of the body is by restricting the supplies of food which led to their multiplication or increase in the first instance.

438. It is better to put less into the stomach, less food and less often, than to keep washing it out with water or boric acid solution, or other antiseptic or detergent. If you manage the stomach properly it will, in fact, wash itself out.

439. Irritation with intolerance is nearly synonymous with a low resistance and great reaction; while irritation with tolerance is nearly synonymous with a high resistance and slight reaction.

ON DILATATION OF THE STOMACH.

440. The commonest cause of dilatation of the stomach is putting too much food into it and putting it in too often. On the other hand, a common cause of contraction of the stomach is putting too little food into it and too seldom. In cancer of the stomach patients cannot retain food, and so small and contracted does the stomach become from this cause that, in operating on carcinoma of the stomach, it is a danger that the surgeon should open the colon instead of the stomach. By the time that carcinoma has set in, it is generally too late for treatment, but before that time proper management of the times and quantities of food might have postponed or prevented the onset of the disease.

441. The best means to reduce dilatation of the stomach is to put into it less food and less often.

442. If a person wakes tired in the morning after having slept for six, seven, eight, or more hours, plainly the cause of his fatigue is not want of rest.

443. If he had three meals the day before, plainly also the cause of his fatigue is not want of food. And

444. If he had no particular exertion for a day or two before, or no particular exposure to cold, or wind, or rain,

it is equally plain that neither exposure nor exertion is the cause.

445. In all these conditions, the cause is that he has been overfed, that he is suffering from poly-siteism and pollaki-siteism, which will probably have been going on, not for one or two previous days, but for many.

446. He will recover from his stiffness even if he continues to overfeed himself, so long as he is young enough and sound enough; but similar attacks will continue to recur. If the overfeeding is great, the attacks will recur at shorter and shortening intervals and with increasing severity. If the overfeeding is less, the attacks will recur at longer intervals of time, and with perhaps lessening severity, or with now less and then more severity. If the overfeeding is only a very little too much, the attacks may be at such long intervals of time that it never occurs to him for a moment, or if it does occur to him he cannot believe it, that there is a continually acting or a frequently acting cause, still less that the cause is poly-siteism and pollaki-siteism. Indeed, in that case the attacks may be so far apart that each appears to be only a single attack, and not one of a series.

447. As a person will recover from his stiffness, etc., even when the causes of the stiffness continue, so long as he is young enough and sound enough, so it is with other

illnesses. He will or may recover from them also so long as he is young and sound enough, even when the causes of them persist.

448. Immediate recovery, therefore, from a single attack of illness is not a proof that the patient has been well managed. At the most, it may be admitted to be a proof that he has not been unskilfully handled.

449. While recovery from an illness may be due simply to the tendency of the organism to return to health, and may not be due to the treatment undergone, and while, therefore, even the verified prediction that a patient would recover if he did so-and-so, does not prove that the treatment was correct, stronger proof can sometimes be offered of the correctness of the treatment. Thus, if the adviser says 'the cause of your illness is so-and-so, abstain from that, or diminish the action of that cause, and you will recover'; and by abstinence or diminution you do recover accordingly; and if then he says, 'If, now, you allow that cause to act again, you will again suffer in the same way as you did before'; and if daringly, or for any reason, you do allow that cause to act, and suffer according to the prediction, you will have little difficulty in agreeing or in being convinced that the alleged cause was either the whole or a main part of the real cause of your suffering. But even further strengthening of the proof can sometimes be made, for the adviser may say, 'If you now abstain

from the action of that cause again, or again diminish the amount of its action, you will recover again as you did before; and if, further, you continue free from the action of that cause, or take yourself completely away from its power, you will after a time have no further attacks of that illness.' If you find all these predictions come to pass, you will have no difficulty in believing that the alleged cause was the real cause, or a principal part of the real cause, of the illness.

450. Evidence quite as conclusive as this has again and again offered itself to me in the treatment of recurring attacks of erysipelas of the face, of recurring attacks of bronchitis, and of recurring attacks of headache.

451. Of course, the time may come, and in the life-history of every individual who lives long enough does come, when the removal or diminution of the action of the alleged cause may not remove its alleged effects, because the long-continued action of the cause may have set up organic and irremediable disease, and this notwithstanding that the alleged cause may still have been a main part of the real cause of the ailment.

452. If the feeling of fatigue, etc., on waking in the morning occurs on a diet of 2 pounds of food daily taken in three meals, the plain inference is that this quantity and these times are too much for the person; that his resist-

ance is unequal to such poly-siteism and pollaki-siteism, and he ought to reduce his diet to, say, 1½ pound of food taken dis-siteously. If after six months of this régime he still suffers in the same way, he should reduce his food to 1 pound or even 12 ounces; and if after six months' trial of this last régime he still suffers, he should become mono-siteous, so as to accommodate the digestive labour of the body to its resistance.

453. What is true of stiff, painful muscles, as the anterior tibials, the muscles of the calf, hip, thigh, or back, or neck, or of the erector spinæ or infra-spinatus muscles felt as pain between the shoulders, is true, the necessary name-changes being made, of attacks of recurring headaches, sick-headaches, megrim, neuralgia, or tic, as they are almost indifferently and synonymously called; of recurring attacks of bronchitis, asthma, sleeplessness, broncho-pneumonia, facial erysipelas, or almost any recurring affection. The chief predisposing cause of these affections or any of them is poly-siteism and pollaki-siteism. The person suffering in these ways is too abundantly or too often fed, or both.

454. If hurrying to catch a train makes a man's muscles stiff the next day, or the next again, or if such hurrying makes him pant and blow, or if either that or some slight knock makes him black and blue (if he suffers from peliosis

or pelidnosis, as it is called), the probabilities are very great indeed that he has been overfed.

455. If a boy is stiff next day after doing gymnastic exercises, or if a ride on horseback or playing some game, as cricket, for instance, makes one stiff and sore, he has been overfed.

456. It is wise in such a case to refrain from hurrying; but it is wiser to eat less, to reduce the number of meals from three to two, or from two to one, and the gross quantity of food taken from 2 or 3 pounds to 1 pound daily, or even less.

457. When dis-siteism fails to relieve or cure recurring ailments, mono-siteism may succeed. If this fails, try a long course of a-siteism. If none of these cures, the case is generally incurable.

458. Persons generally think that a fast continued for four, five, or six weeks would kill them; but it would not. Recurring attacks of illness, however, always tend to culminate in some more serious or fatal illness. Even if a-siteism for six weeks did prove fatal (which, however, it does not), the question is whether it would be preferable, if one must die, to die of fasting or to die of disease. The latter is certainly much more painful.

459. I cannot doubt that, if the population were advised in this sense, much of the acute and short, and also of the mild and long disease, with intercurrent acute attacks, which now afflicts the community, would disappear. It would not all disappear, but very much of it would.

DIRECT AND INDIRECT DISEASES.

460. The aphorisms which dealt with swelling and shrinking referred to the diseases which may be called 'direct' and those which may be called 'indirect.' It may now be said that it is a very common error both among the public and on the part of medical men to mistake indirect disease for direct. It is also a very grave error, because direct disease is mostly due to oligo-siteism, while indirect is mostly due to poly-siteism and pollaki-siteism. The former, therefore, ought to be treated by increasing the food, the latter by diminishing it. Most ulcerations, most neuralgias, and most inflammations, even of the chronic and wasting character, are indirect. They are mostly instances of the attenuation of excess, or the starvation of over-repletion; and their proper treatment ought to be by restricting the diet, so as to induce the system to use up the effete material accumulated within it. How disastrous, then, when they are mistaken for cases of direct disease, and are treated by poly-siteism and pollaki-siteism.

461. No doubt such diseases often seem to improve under poly-siteism and pollaki-siteism; but when this is so,

it is at the cost of and under the great risk of some other diseased condition appearing later in the body, probably at some other place or part. If more food is taken for any length of time than is required, it is quite impossible that it can fail of doing harm in some way to health and life.

462. When wrong feeding, or kako-siteism and kako-aeration, are seen to be the chief causes of disease, we see further that the hopes for improvement in health lie rather in agatho-siteism and agatho-aeration than in pharmacy or pharmako-therapeutics, although the last may, nevertheless, have its proper sphere of action.

463. Cramp or spasm is over-contraction, or too severe and too long-continued contraction of muscular fibre. The condition of muscular tissue which leads to cramp is in due course, unless treated, followed by a weak, flabby, relaxed state of muscular fibre, by what may amount to partial or complete paralysis. Writer's cramp is followed by writer's palsy or paralysis; and angina pectoris, which is really a rheumatic cramp or spasm of the heart (a state of excessive inhibition), is, if it does not prove fatal, which it often does, apt to be followed by the weak, flabby, dilated heart, which ceases beating from want of power. Death in the former state is due to excessive contraction of the heart, in the latter to inability to contract. The accompaniment of the former condition is strong systole; of the latter unresponsive diastole, that is, a diastole quite unresponsive

to the presence of the blood in the ventricle, which is usually the immediate cause of another systole.

464. The treatment of the former condition must be by relaxants, as warmth, to remove or mitigate the excessive contraction or spasm of the muscular fibre of the heart; the treatment of the latter must be by stimulants and tonics.

ON ANÆMIA.

465. The anæmic girl is in a state of indirect, not of direct, anæmia. Her circulation is, really, blocked. It is in a state which may be called 'constipation of the circulation.' The muscular elements of the vessels, and particularly their transverse fibres, are hypertrophied, and being, besides, over-stimulated, they go into a state of excessive contraction. The effect of this is to narrow the lumen of the vessels, and to prevent the blood from flowing freely along them, and by this means, of course, a proper supply of blood is prevented from reaching the tissues. The consequence is that the girl appears pale and anæmic, and no doubt is so. But the cause is really an excess of food-supply, which in the first instance caused the muscular elements to hypertrophy, and as the over-stimulation of too much food, of poly-siteism and pollaki-siteism, still continued, the hypertrophied transverse muscular fibres contracted and narrowed the lumen of the vessels. The process is really a beautifully adapted provision of Nature

to limit the blood-supply to parts which have already been over-nourished, and which would tend to become still further hypertrophied if the nutritive process were carried still further. The process is plainly one of starvation, due to over-repletion, caused by contraction of hypertrophied or over-fed muscular fibres. And obviously the means of treatment proper to such a state is to restrict the diet until, some of the hypertrophy of the muscular fibres of the vessels having been removed, some of the spasm passes off, the blood flows more freely, and the anæmia is reduced. To recommend more food, as is so often done, is to do the precise opposite of what good treatment demands. The meals ought to be reduced in number and quantity, not increased.

HOW CONSTIPATION OFTEN PRECEDES THE ONSET OF CANCER OF THE BOWEL.

466. A natural process almost precisely similar occurs very often in the intestine. From long-continued poly-siteism, the muscular fibres of the intestine become hypertrophied, and, over-stimulation of excess of food still continuing, the muscular fibres go into strong contraction. The effect of this, while it first empties the bowel of its contents, is to prevent the contents from being able to pass, and so to cause constipation more or less obstinate, according to the amount of the hypertrophy. The proper treatment is to recommend oligo-siteism till the over-stimulation has been removed, and till some of the hypertrophy

has subsided, when, the normal relations between the longitudinal and transverse muscular fibres being restored, the bowels begin to act peristaltically again, and the constipation passes off. If this course is not pursued, in course of time the structures, being still over-nourished, will begin to degenerate, other structures will become involved, and by-and-by it will be found that malignant disease has set in. It is in this way that cancer so often supervenes upon long-continued constipation.

467. Obviously, to order purgatives would be of little use in this condition; of none, indeed, except as a merely temporary expedient, unless at the same time some amount of oligo-siteism were enjoined so as to prevent the process from continuing. And similarly, to order wine for the anæmic girl, as it would have the effect of dilating the vessels, and so of letting more blood flow into them, would be apt to cause a still further hypertrophy of the muscular fibres of the vessels, which, when they came to contract, would still further narrow their lumen and intensify the anæmia. But it would be quite different if oligo-siteism or a-siteism were enjoined, as then the blood would gradually part with the excess of its nutritive material, and so the hypertrophy and its consequent anæmia would be relieved and reduced.

468. Anæmia, therefore, as we generally see it, is not an instance of direct starvation, but of indirect; it is an

instance of starvation due to over-repletion. And its treatment ought to be by oligo-siteism or a-siteism, and not by increase of the diet.

469. As starvation also causes direct anæmia, we see again, how opposite causes may induce apparently the same state. It is not really the same state, but it appears to be so. But while direct starvation must be treated by feeding, indirect ought to be treated by restricting the diet.

ON ULCERATION.

470. Ulceration (like most or all other disease-conditions) may be due to one of two opposite causes: to under-feeding, that is, to oligo-siteism or a-siteism, and to over-feeding, that is, to poly-siteism and pollaki-siteism. The former, or oligo-siteous ulceration, is direct; the latter, or poly-siteous, is indirect; but the former form is so rare that I doubt if in a thirty years' experience I have ever seen it. The latter, or poly-siteous, form is very common indeed.

471. When ulceration is direct, or due to oligo-siteism, it must, of course, be treated by increase of the diet; but when it is indirect, or due to poly-siteism and pollaki-siteism, it must be treated by restriction of the diet.

472. Ulceration is molecular death (caries), or even death in bulk (necrosis), of superficial structures like

epithelium, skin, etc., following on or succeeding to previous overgrowth or hypertrophy. Hypertrophy is due to poly-siteism and pollaki-siteism, to too abundant and too frequent feeding, more material getting into the blood from the food than is required by the body, or than is used by it, either for conversion into heat and motion, or for natural repair. Hypertrophied tissue always has a low vitality, and is apt to die, molecularly or in bulk. It is 'labile,' as it has been termed, so leaving, after it has separated, a raw spot or place, which is the ulcer.

473. The usual cause of hypertrophy being poly-siteism and pollaki-siteism, the indication for its treatment will therefore be, as also for the ulceration which follows it, and wherever in the body the ulceration may appear, to restrict the diet. That is to say, the same treatment is indicated whether we have to deal with a gastric ulcer or an ulcer of the cornea, or an ulcer of the leg, or an ulcer between the toes following a soft corn, or an ulcer of the tonsil, or soft palate, or pharynx, or mouth, or lips, or nose —it is doubtful if we should except even syphilitic ulcers of these parts—or of any other place in the body. An excellent treatment for ulcer of the stomach is to give an ounce of milk and thin barley-water, equal parts, every hour or every two hours during the day, and only water in similar quantities, if the patient is thirsty during the night, and to continue this for several days or weeks till the pain disappears. The quantities may be very gradually increased

as the ulcer begins to contract in size and to heal. The process of ulceration can be well observed in the leg, where varicose veins with hypertrophied walls have been present for a long time, and thickened cellular tissue has appeared around them. This thickened cellular tissue is, of course, a hypertrophy, or overgrowth, as is also the thickening of the vein coats; and, having a low vitality, it is apt to die. The very process, indeed, by which hypertrophy or overgrowth is effected, viz., the congestion of blood directed to the part, is the means by which ulceration is brought about, because the congestion of blood causes increase of growth, and the increase of growth infiltrating the surrounding tissues prevents the blood from getting to the overgrown part in sufficient quantity to nourish it; and it dies, forming the ulcer. (This is very similar to what occurs in a flush time in business, when the increased demand for goods increases the price, while by-and-by, the price still rising, checks further demand, and is very apt to destroy it altogether, so causing a slump or panic. The flush time corresponds in business with hypertrophy or overgrowth in the body; the slump or panic with ulceration; part of the business, as of the tissue, actually dying.) Occasionally, even, molecular or more extensive death occurs in the vein coats themselves, in which case hæmorrhage even of an alarming sort may complicate the ulceration. But as a rule, the ulceration, by a conservative provision of Nature, is confined to the skin and cellular tissue, and then we get ulceration without

hæmorrhage, or with only a little oozing of blood from the part. If, besides the local treatment resorted to, such as bandaging, packing with wet applications, strapping, blistering, etc., we do not restrict the diet, we make but slow progress in the treatment of such ulcers; but if the patient will allow us to restrict the diet in the same way as patients do generally allow its restriction in gastric ulcer, we make quicker progress in the healing of the ulcer, and may even shorten it from a year or more to a few weeks, and with far less tendency to break down again in the latter case than in the former. For it is not as a rule the difficulty of healing an ulcer which annoys us. It is that after we have succeeded in healing it, it breaks down again, and we are where we were before. Now, if we think of it well, we shall find that the rationale of the treatment of gastric ulcer by an ounce of milk and thin barley-water or other nutritive material every hour or every two hours in the day, say from 8 a.m. to 9 p.m., or 7 to 14 ounces of the mixture in twenty-four hours, really means giving the patient less food material for a time than is required for the maintenance of life. We so induce the body to feed on itself, to use up the accumulated unused material and to convert it into the heat and energy of life. This treatment is an imitation of Nature's own indication, who stops supplies absolutely in many cases, the presence of the feverish state (or the rapid combustion of the accumulated effete material) being accompanied by an absolute refusal to take any sort of food for sometimes a long period of time. To

give food in such circumstances is really a damage and not a help to patients; and doctors and nurses in general are far more anxious than they ought to be to hasten the time when they can give more food, very often by this means laying the foundation for another attack of illness on the part of the patient, either of the same or of a different kind. To say the truth, the administration of water in small quantities would in most cases be quite as efficacious, or even more so, in the treatment of gastric or other ulcer than the administration of milk or milk and barley-water, or milk and water. There are very few cases of indirect ulceration of the leg, *e.g.*, however extensive, which could resist a six weeks' fast. Or, if this treatment seems too drastic, a cup of coffee or cocoa might be given at 9 a.m. (preceded or not by a glass of hot water at 8 a.m.), a breakfast-cup full of mutton-broth or chicken-broth at 12 or 1 p.m., and a glass of milk and barley-water at 7 or 8 p.m. This treatment continued for eight or ten weeks, with or without rest, would cure, or at least bring a long way towards cure, the most intractable and most extensive ulcerations of the leg, at least in people under sixty years of age.

474. To sum up, therefore. The commonest form of ulceration met with in practice is local death of superficies to a greater or less extent, and follows hypertrophy, which, again, is due to poly-siteism and pollaki-siteism. The best indication for its treatment is to restrict the diet, *i.e.*, to

recommend oligo-siteism, or even a-siteism for a time; and after the patient has recovered, to recommend such moderation in the diet as will not lead to a recurrence of the complaint, *i.e.*, mono-siteism or dis-siteism to the extent of, say, a pound of food daily, or such quantity as the resistance of the patient may be able to endure.

475. All hypertrophy is due to poly-siteism or pollaki-siteism, or to both.

476. The best way, and the only healthy way, to modify the organism is to do so, or to attempt to do so, through the general nutrition, that is, through the respiration and the food, not through medicines; scarcely even through exercises, although these are helpful and natural. But if the nutrition is moderate, and neither in excess nor in deficiency, the exercise obtained in the prosecution of the ordinary business of life will be sufficient to maintain the body in health. Still, as this hardly ever is so, exercises will in most cases be found useful and helpful to health, and this in addition to the movements performed in the prosecution of the ordinary business of life.

477. Corns, or papillomata, and cancer, or epitheliomata, are both overgrowths of epithelium, and they both arise from an excess of material in the blood. From which consideration comes the indication that to cure corns and to prevent cancer we ought to restrict the diet. We must

recommend oligo-siteism and oligaki-siteism, possibly sometimes even a-siteism for a time. As simple and malignant diseases shade off into one another by insensible gradations (chronic mastitis, *e.g.*, and scirrhus mammæ are often found together, and it is sometimes difficult to say where the one ends and the other begins), corns and cancer may be viewed as different phases of the same process of disease, or as diseases of the body similarly brought about.

478. All exudations, like all hypertrophies, being due to the presence of excess of nutritive material in the blood, which nutritive material can find its way into the blood only through the food, such affections of the head and face as the exudations that cause neuralgia, rheumatism, megrims, recurring headaches, etc., are marks of poly-siteism and pollaki-siteism. If, realizing this, we diminish the food-supply, we shall find a slow, and sometimes even a rapid, improvement in these affections, after, perhaps, some temporary aggravation. As these neuralgias, megrims, recurring headaches, etc., often foreshadow the onset of graver diseases, like apoplexy, we are often able, by means of oligo-siteism, to postpone or prevent the occurrence of apoplexy and other grave affections.

479. The same oligo-siteism, therefore, which enables persons to wear boots which were formerly too tight for them (by causing absorption of papillomata about the

feet) enables them to postpone or prevent the onset of grave diseases like apoplexy and cancer.

480. Indefinite postponement of an ailment is equivalent to its prevention. Persons often die of one disease who, had they lived longer, would or might have died of some other, whose onset, having been indefinitely postponed, had been prevented. Persons are often, *e.g.*, swept away by influenza and pneumonia, who, had they lived longer, would have died of diabetes, or cancer, or Bright's disease. We have already seen that the same causes which give a man pneumonia often cause endometritis in his wife and enlarged tonsils or adenoids in the children, and that the same oligo-siteism which is suitable to prevent the one, and even to cure it after it has supervened, will be the only means likely to prevent the onset of the others, or to cure those of them which are curable.

481. Persons seldom die of old age pure and simple, mostly, on the other hand, dying of disease due to the slow accumulations of waste unassimilated stuff in the blood from the poly-siteism and pollaki-siteism to which we are nearly all subject.

482. In civilized life, at all events, before a man wastes and consumes away 'through starvation,' he has nearly always become overgrown through excess—through poly-

siteism and pollaki-siteism. His wasting and consuming away is nearly always a case of the starvation of over-repletion.

ARE INFLAMMATIONS INSTANCES OF STARVATION DUE TO OVER-REPLETION?

483. All inflammations being accompanied generally by the throwing out of exudations which block the circulation to the parts affected, it becomes a question whether we may not view most, or even all, inflammations as instances of starvation due to over-repletion, since inflammation coincides with an increased flow of blood to a part; and a chief factor in the increased flow is caused by the blood containing more material in it than is required for proper nutrition, owing to previous poly-siteism.

484. How does an abscess, say, in the parenchyma of an organ occur? By congestion of the part with blood. The vessels dilate; an excessive number of corpuscles are carried to the part; they crowd on one another, and after a time block the circulation, partly by their over-crowding, partly by the exudations which are thrown out into the tissues. In this way, a small part of the tissue, having its blood-supply cut off or greatly diminished, actually dies, and the dead part is thrown off as an abscess, or is opened into and relieved by the surgeon's knife.

485. The same statements are true, *mutatis mutandis*, for eilemmatous inflammations, suppurations, etc., which may also, therefore, be viewed as instances of starvation and its consequences due to over-repletion; and similar principles explain the occurrence even of passive effusions into the pleura, peritoneum and hollow cavities of the body. The long-continued passive congestion of blood loaded with excess of nutritive material leads that blood to slowly part with some of its watery (and lymphous?) constituents, and so to produce those pints of, or even gallons of, effusion found in hollow cavities in the body. A minor degree of this affection is often found in the form of effusion, for instance, into the bursæ in front of the knee-joints.

486. In politics, commerce, religion, philosophy, and medicine, unfortunately, construction has too often to be preceded by destruction. We must first destroy a large number of wrong principles and assumptions before we can proceed to formulate new and sounder ones. Still more unfortunately, it too often happens that sound principles formerly seen and accepted are from time to time again displaced in favour of less comprehensive and less sound ones. It is not only in medical terminology that what has been supposed to be advance has turned out to be retrogression. With all our science and all our scientific advance, it is a question whether the physician of to-day has as good and sound and comprehensive a view of the theory and practice of medicine as a whole as, for example,

Cœlius Aurelianus, who wrote in the early part of the Christian era. In discussing cerebritis, or meningitis, or 'phrenitis,' as he called it, he asks the question, 'What part is chiefly affected in this disease? Some say,' he says, 'it is the head, some the brain, and some the membranes of the brain.' And then he gives his own opinion in these terms, profoundly philosophical, it appears to me, if expressed in non-Ciceronian Latin: *Nos igitur communiter totum corpus pati accipimus . . . sed plus pati dicimus caput* ('I therefore am of opinion that in phrenitis all the parts of the body suffer in common, but that the head suffers most of all'). As if he had said what he knew then, but what we his successors, the heirs of all the sixteen or seventeen centuries which have rolled on between his time and ours, have too much forgotten now: 'Most local ailments are only local expressions of general states.'

487. The man who attempts to construct lays himself open to adverse criticism, and as no man is omniscient or infallible, no doubt some of the criticism will show flaws in construction. But without construction, progress is impossible, and the man who dares to attempt it must be prepared for adverse criticism, just and unjust. The former he will attempt to answer, and if necessary to meet by changes in his method or system. The latter he will try to forget.

PHILOSOPHY IS NECESSARY AS WELL AS EVIDENCE.

488. With all the many and undoubted benefits which Science has conferred on humanity, especially in the century just closing, must surely be reckoned the drawback that she should have displaced from her proper place and throne a comprehensive philosophy. There is, perhaps, some excuse for humanity and for medicine that they have partially forgotten philosophy. The discoveries of science have been so brilliant that man's mental vision has been dazzled by them, and in the wonderful revelations of detail they have forgotten the comprehensiveness of view and of conception, without which a fair and full and sound view of things is not possible. Besides that, the use made by science of such terms as 'force,' 'power,' 'law,' being nearly always translated into the concrete form of mass-motion, mass-lifting, or unvarying sequence or succession, men's minds have been drawn away from the general and forced to dwell too much on particulars. In medicine this has taken the form too much of an *inductio per enumerationem simplicem*, and so we have often failed to see the wood for the trees. The trees have been so numerous as to hide the wood. If we had stood at a distance or at some elevation we should have had a much better prospect of seeing the lie and disposition of the wood, and its relation to the surrounding country. No doubt in time all this will come. Science can do nothing without philosophy.

Philosophy must be directed, or at least kept *en rapport* with Nature, by science. In good time, no doubt, the happy union of the two will be accomplished, and the unnatural divorce at present in existence will be undone and annulled.

THE LAWS OF THE ORGANISM AS REGARDS DISEASE, ETC.

489. Assuming that disease is any and every departure from health, the laws of disease seem to be very few and simple. Many of them have been incidentally referred to in the course of these observations. Perhaps other and higher generalizations will evolve themselves as time goes on. New details will undoubtedly be added to medicine as time goes on, but whether new principles will appear is doubtful. New specific fevers, *e.g.*, will very likely appear, and new micro-organisms associated with their course will very likely be discovered. But if this should be so, it will be found, when they are discovered, that they will follow the course well known in the case of the other fevers already recognised; that, for example, new fevers will be characterized by a primary depression, and a secondary reaction, to be again followed by the depression of convalescence before the return to the normal of health. It will also be found that their chief predisposing causes will depend on the way in which persons are fed. Especially will this be found to be the case if complications are present.

Their immediate exciting causes will be some as yet unknown spores or germs or micro-organisms, favoured in their growth and development by impure or insufficient and vitiated air, by kako-siteism or by insufficient exercises.

490. The whole science of bacteriology is new, having arisen during the last generation. It has added an immense number of facts to our knowledge; it has familiarized us with the growth and development of spores, germs, and micro-organisms in general in the body co-incidently with or during the progress of disease. We have also obtained some knowledge of the actions these micro-organisms perform in the body, and the ways in which toxins and antitoxins are generated in the course of their development and growth; and we have obtained some knowledge of many other facts, although no doubt many more remain undiscovered.

491. But if the presence of living micro-organisms in the body is a new idea superadded, *e.g.*, to the atoms of Democritus or the ὄγκοι of Asclepiades of Prusa, the modes of growth of these living micro-organisms, and the ways in which they generate toxins and in which antitoxins form, will be found to follow those laws of the growth and development of the economy with which we are already familiar. The ὄγκοι of Asclepiades may have been viewed by him as alive, for he thought that larger or smaller forms of them caused the quotidian, tertian and quartan

fevers, although in the second century of the Christian era physiology or the action of healthy life had not been separated from pathology or the action of diseased life. To-day it is evident that the facts of health shade off into those of disease by quite insensible gradations, or, in other words, that physiology is separated from pathology by no strict line of demarcation.

492. Although no memory can possibly carry all the details of knowledge, almost any intellect, certainly any average intellect, can apply those laws which have already been formulated to the government or management of the case of disease in hand, and can also predict that the proper management of it will consist in the moderate management of the body as regards air, food, and exercises.

493. I do not know if there will be general agreement as to what the laws of disease are; but it seems to me that an attempt at the restatement of a few of the principal ones might, perhaps, serve to clarify and simplify our ideas on medical theory and practice.

493 (*a*). The most fundamental law which the economy appears to manifest is that, given the two actions *strictum et laxum*, *τάσις καὶ χάλασις*, shrinking and swelling, or contraction and dilatation, the occurrence of the one always tends to be followed in time by the occurrence of its opposite. Contraction and dilatation are properties

common to all forms of matter, organic and inorganic, but the organic forms of matter behave differently from the inorganic forms, mainly in a kind of self-regulating action not found in the inorganic, or at least not to the same extent. Agents acting on the body or parts of it are therefore contractivo-dilators, and may *seem* to be dilativo-contractors; but in fact all agents which act on the body at all act as contractivo-dilators.

493 (*b*). The structure of many organic parts and their arrangement in layers of longitudinal fibres, crossed by transverse ones, leads at once to this: that not only does *laxum* follow *strictum*, but *strictum* in many cases actually causes *laxum*, because contraction of longitudinal elements causes dilatation of transverse elements. It is impossible to understand either physiological or pathological action without the appreciation of this great fact. Out of it arise, to it are related, and with it are bound up all those paradoxes, or apparent paradoxes, in medical treatment to which attention has been drawn, and which have tended to fill the minds of inquirers on the one hand with despair lest medicine never can advance into the scientific arena, and on the other have furnished its opponents with their sharpest shafts and most cutting weapons.

493 (*c*). In the domain of function (as distinguished from structure), while moderate stimulation causes normal functioning, excess of stimulation causes either deficiency

or absence of function, irregularity of function, or excess of function.

493 (*d*). Closely connected with this is the statement that constant causes acting on the economy show themselves not in constant, but in periodic effects. If, therefore, we find periodic attacks of illness we should look for a constant cause, or for one acting at short intervals of time and frequently. Properly speaking, it is doubtful whether there is any such thing as a cause which acts constantly on the organism. What seems to be a constant cause is one which acts not constantly, but intermittently at very short intervals of time.

493 (*e*). Within moderate limits, the effect of an agent is proportional to the quantity of it acting, and inversely, as the resistance, or, perhaps, as some root or power of the resistance of the organism or the part of the organism acted upon. But

493 (*f*). Those moderate limits are very speedily exceeded or transcended, when we find coming into play another law, viz., that while the quantity of the agent in action may alter in arithmetical ratio, the resistance of the organism seems to alter in geometrical ratio.

493 (*g*). It may be true that the ratio of the increase of a sensation in physiology, or of alteration of function

in medicine, to its stimulus, is that of a logarithm to its number.

493 (*h*). In the sphère of drug action the same laws hold, with, in addition, this: that drugs tend to have a selective affinity for various organs, parts, or tissues, and to act on them in preference to others. But

493 (*i*). When they do act they act as contractivo-dilators, and may appear also to act as dilativo-contractors.

493 (*j*). This action may, however, be apparent rather than real, and the better statement might be that (alternative law for *i*) drugs and other agents always cause contraction, but according as they cause to contract the longitudinal or the transverse elements of tissues, they cause apparent dilatation or apparent contraction. In any case, contraction of a given element of tissue tends always to be followed by dilatation of that element, and dilatation of it by subsequent contraction. The effects known in physiology as inhibition and acceleration are intimately bound up with this statement. Neither acceleration nor inhibition implies, fundamentally, anything more than has already been seen, viz., contraction and dilatation of longitudinal and transverse elements respectively, along, perhaps, with the government of longitudinal elements by one set of nerves (the cerebro-spinal ?) and of the transverse elements by another (the sympathetic ?).

493 (*k*). Neither the blood nor the organism can create anything. They can convert, but they cannot create.

493 (*l*). Whatever, therefore, is found in the body must have been introduced from the outside, and nearly always through the digestive system or through the respiratory. (Here, however, we are reminded of Leibnitz's addendum in reference to another question, *Nisi intellectus ipse;* and perhaps we ought to add, *Nisi corpus ipsum?* We speak, however, *practically* rather than theoretically.)

493 (*m*). Hypertrophy is impossible unless the blood first contains within itself the materials out of which the hypertrophy was produced. Wherefore (again practically rather than theoretically)

493 (*n*). Hypertrophy is due to poly-siteism and pollaki-siteism.

493 (*o*). Atrophy, on the other hand, may be due directly to oligo-siteism or a-siteism; or it may be due indirectly to poly-siteism and pollaki-siteism.

493 (*p*). The exciting causes of disease being the various agents so often referred to, might be divided into those acting from the outside and those acting from the inside of the organism. The former are the exciting causes of injuries, inflammations, specific inflammations, and fevers,

according to the various definitions of those affections. The latter are the exciting causes of rheumatism, gout, cancer, diabetes, etc. But

493 (*q*). The scheme, or plan, or course of injury, inflammation, specific inflammation, fever, rheumatism, gout, cancer, diabetes, is in all cases the same, viz., primary depression or contraction, secondary elevation or dilatation, and tertiary contraction or depression; and in the fourth place, return to the normal. Of course, this is only the scheme or plan, so to call it. One or more of the steps may be omitted, or missed out. There may, for example, be no stage of elevation (some malignant cases); and, of course, there may be no recovery.

Lastly, perhaps, this statement, the culmination of all inquiry at the oracle of organic nature, is worthy of being stated as a law:

493 (*r*). Moderation (of which as regards food an attempt has been made at a definition) in all things is the only safe and the only unfailing rule.

FURTHER OBSERVATIONS AND REFLECTIONS ON THE CONNECTION BETWEEN POLY-SITEISM AND POLLAKI-SITEISM AND SOME PARTICULAR FATAL AND NON-FATAL DISEASES.

494. The reason why cancer (I refer specially to carcinoma or epithelioma) is incurable, or is nearly always uncured, is this: In cancer, or before the cancerous state appears, before the cancerous exudation is thrown out, the blood has been for a long time overloaded with nutritive material in excess of its requirements for the nutrition of the body. Too much chyle has been finding its way into the blood from the food. And generally, also, the very fact that the food and chyle are in excess has led to indigestion, the chyle being emptied into the blood, and that for a long period of time, in an imperfectly assimilated form. It is an accident that the source of the excess of chyle has been an excess of such carboniferous foods as bread, potatoes, puddings, porridge, cakes, and sugar. The principle is that too much food-stuff has found its way into the blood; it might have been from any sort of food. In my experience I must say that cancer is nearly always due to an excess of amylaceous and saccharine foods, to poly-amylism and pollaki-amylism, and to poly-glycism and pollaki-glycism; but I would not for a moment say that they are incorrect who assert that in their experience it is due to an excess of proteids ingested, particularly in the form of meat, to poly-proteism and to pollaki-proteism.

Although that does not coincide with my experience, a very large proportion of my cancer cases not liking meat, and many of them hardly ever taking it, it may very well be the case that the habits of other sufferers are different from those I have seen. In the view, however, that carcinoma is caused by poly-siteism and pollaki-siteism, I evidently have the support of those who believe it is due to an excess of meat; and although this agreement may have little influence on the treatment of the disease, it is of the very greatest importance in suggesting the steps that are to be taken for its prevention. For while he who thinks that carcinoma is due to poly-amylism and poly-glycism will warn his patients against an excess of starch and sugar in the diet, and while he who thinks it due to poly-proteism will warn his clients against consuming an excess of meat, both will be found directing the attention of patients to the evils of an excess of food, to the evils of poly-siteism and pollaki-siteism.

495. The history of a patient who is found to be suffering from carcinoma is in my experience something like the following: She usually at some time has suffered more or less severely from indigestion, gastralgia, dyspepsia, heartburn, and as a rule she has lost her teeth early in life from this cause, although she usually attributes this to the medicines she has taken. She has very often been subject to the occurrence of herpetic eruptions about the mouth, attributed to 'cold.' She has generally 'taken

cold' easily, has had anæmia perhaps, and may have suffered from nasal troubles due to rhinitis, and not infrequently has been subject to headaches. Then, after, perhaps, an attack of rheumatism, the significance of which occurs to no one, the blood, finding itself loaded with nutritive material in excess, is troubled with its burden, so to say, and proceeds to throw it off in the form of an overgrowth of epithelial tissue or in the form of an exudation into epithelial tissue. There are abundant supplies in the blood when the process of throwing out the exudation begins; and as fast as the cancerous exudation is thrown out, or as fast as epithelial overgrowth occurs, more and more pabulum is carried by the blood to feed the new growth, especially as the advice generally given to such patients is that they should keep on eating in order to keep their strength up. Even without free and full feeding there are already too abundant stores in the blood, but by the process of over-supply these are still further increased. Consequently, from these over-abundant supplies, too often maintained in this way, the cancerous overgrowth grows and grows, while the patient wastes and wastes. At this point, or sooner, in the history of the illness, living micro-organisms may perhaps appear in the growth, having possibly been lying latent or dormant in the body for a long time previously. Long before, they may have been swallowed with the food, and may have lain dormant until the activity of the processes going on in the morbid growth may have attracted them to

its seat, as to a soil suitable for their further growth and development. No doubt in all bodies, however healthy—or, at least, in the large majority—living micro-organisms might be found, ready to be stimulated into activity by the occurrence of any inflammatory or febrile action. When the active processes of development have fairly set in, the formation of toxins and other morbid actions may lower the health and strength, until after a time death results. The last fact of all, or one of the latest to occur, is a dropsical effusion often of many pints of red or bloody serum from the blood, due to its overloading. The only hope for such patients is starvation, relative or absolute oligo-siteism, or a-siteism, an advice which seems, however, so opposed to common-sense when offered to wasted, worn, attenuated patients, that they are very rarely offered it; and when, or if, it is offered to them, their friends, lay or medical, generally interfere to prevent their taking it. It is not impossible that an early case of cancer, diagnosed by unquestioned authority, may perhaps be treated in this way rather than by the knife, and that cure may result.

496. But this eventuality is not very likely to occur. The aphorism 'Once cancerous always cancerous' is too apt to be true. When the causes have acted long enough which lead to cancerous formation, as a rule the organism has been so profoundly modified in the direction of disease that no change in diet is of any avail. Occasionally treatment may be of use, but very very seldom. The medical

man will therefore be chary of recommending a course of treatment to which the patient and friends are hostile. He had better not recommend it unless for some reason he feels quite confident of success. His treatment is certain to be blamed if the patient does not recover, even although the case was hopeless from the first; and since, unfortunately, even starvation does not cure carcinoma, the chief hope left is to warn the public against the poly-siteism and pollaki-siteism which causes it, with a view to its prevention.

497. Of course, operation may be demanded in view of the possibility that there may be no recurrence, or that for many years there may perhaps be no recurrence. But undoubtedly this proceeding ought to be accompanied by the advice that the patient should live differently in future, and that she should, in plain words, very much reduce the quantity of food consumed.

A CASE OF CANCER.

498. The following case of cancer recently came under my observation, and except that the case ran a rather quicker course than usual, it is like a great many more which are occurring continually, and is detailed on that account and in order that the law of such cases may be seen. Some time ago, I saw in consultation a lady, aged forty-four years, who was dying of cancer which had begun in the right mamma. The history was that two years before, she

had observed a small tumour in her right breast, but had postponed seeking advice because she hoped that it might disappear. As it did not, but, on the contrary, the nipple became retracted, she had the breast removed at the infirmary of a neighbouring large town by one of the surgeons to the institution. This was done eight months before I saw her. The tumour was a scirrhus of the breast. When I saw the patient she was sitting on a chair breathing with difficulty, and complaining that the least exertion caused palpitation, rapid irregular action of the heart, and great dyspnœa; the pulse was 130, small, thin, thready. The scar left by the wound at the right breast was crimson red, and extensively infiltrated with a large number of raised hard nodules of no doubt cancerous material. The left mamma showed a tumour which the patient said was exactly like the one which had formerly been seen in the right breast. The right side of the chest was inactive, not rising and falling with the respiration; it was dull all over, and no doubt the pleural cavity on that side contained pints of fluid (sanguineo-serous ?). The medical attendant some time before had punctured the right pleural cavity, and had withdrawn about 30 ounces of serous fluid. The patient had, however, been rather distressed than relieved by this proceeding, the explanation of the failure that the medical attendant offered to himself (and which was probably correct) being that the removal of the fluid had caused dragging to take place on the pleural adhesions of that side. For this reason I did not press my suggestion

to again puncture the pleura and withdraw the fluid or some of it. At the point where the puncture had formerly been made in the pleura, between the eighth and ninth ribs, a small nodule had formed, suggesting deposition of carcinomatous material there. The glands in both axillæ were enlarged and infiltrated. It was evident that nothing could be done for the patient, and I was told that she died the same night.

EXPLANATION OF AND COMMENTS ON THIS CASE.

499. The patient was dying when I saw her, but everything that human skill could do for her had been done. Her aged mother's pathetic suggestion that when the weather became warmer, and her daughter's condition more favourable, she might be able to have an operation performed on the other breast was hopelessly out of the question. No operation, except perhaps puncture of the pleura to withdraw the fluid and so to relieve the dyspnœa (but even this was not promising in view of former experiences), offered the least chance of relief. Two years before I saw her a tumour had formed in the right mamma, and had increased so that it had to be removed sixteen months after it was first seen. In eight months more the scar had become infiltrated with cancerous nodules. The glands were enlarged in both axillæ, and a tumour had formed in the left mamma.

500. Now, we may take two views of the succession of these facts in the history of the patient and her disease. According to the first (the usual one) the infiltration of the scar with cancerous material and the infiltration of the glands of the axillæ on both sides were due to a recurrence of the growth after removal. It had perhaps not been removed freely enough—such is the suggestion made to us—and a recurrence, in this case local, but sometimes regionary or in the neighbourhood of the former growth, had taken place. The occurrence of a similar growth in the other mamma is explained by the suggestion that a metastasis or change of place in the disease had occurred. The same explanation would be offered if a cancerous formation should possibly occur at the point where the trocar was inserted to draw off the serous fluid from the pleural cavity.

501. The second view would be—and I submit it as a much better and more comprehensive explanation—that the occurrence of the growth in the scar, and the formation of the new growth in the other mamma, as also at the point of puncture of the pleura, were all due to the same causes as led to the formation of the original growth, viz., the state of the blood of the patient. According to this view, all these formations of cancerous matter are successive effects of a common cause, viz., the state of the patient's blood.

502. The exudation of a large quantity of serous or sero-sanguinolent fluid into the pleural cavity was also an effect of the same overloaded condition of the blood, which proceeded to relieve itself of its contents in this way, after having made repeated attempts, so to call them, to relieve itself by the deposition or exudation of the cancerous material into the mammæ and the other places mentioned.

503. It will be said: Where is the proof that the blood was loaded with excess of nutritive material, when the blood was not examined? It is no doubt difficult to prove this in the absence of examination. There can be little doubt, however, that, at least at an earlier stage of the case, an examination of the blood would have revealed a certain stickiness, and perhaps crenation of the corpuscles, in the same way as has been found in other cases. Possibly, also, the corpuscles might have been found too numerous. But increased stickiness or gumminess of them would have made it impossible, or at least enormously difficult, to demonstrate this fact, if it was one, since this quality would have prevented the easy flow of the corpuscles, and might even, therefore, have made them appear *less* numerous, rather than more so. But if it is just to infer that the carcinoma in this case was the culmination of malnutrition, as is shown in the examination of the patient's life history, then the inference that the food, having been taken in excess of the bodily necessities, loaded the blood with effete and unused products becomes

very probable. Whether the production of excess of material occurred through the agency of the bone-marrow or the connective tissue, as physiologists suggest, or in whatever way it may have been brought about, the food is, and must be, the remote cause of all the materials present in the blood; and if food was taken in excess of the requirements of the body we should have a cause adequate to account for the whole condition. The indigestion, to be immediately referred to, from which the patient had suffered at an earlier stage of her life, is a proof of mal-assimilation; and this fact lifts the suggested cause into a *vera causa*. Fewer meals, and less food at each of them, would no doubt have cured the early indigestion, and might have prevented the later calamitous developments of the disease. But the fact that the urine in these cases has generally a high specific gravity, and contains urea in excess, is a proof of overloading of the blood.

504. Obviously, in the first instance the cancer was a deposition or exudation from the blood. In the case under consideration no cause could be assigned for the growth. It came of itself, as the phrase is, ἄνευ προφάσιος, as Hippocrates expressed it. But even if it had started after the receipt of a blow, or after some fatigue or exposure to cold or wet, or some other exciting cause, the local growth must be viewed as the local expression of general conditions of blood and tissues, since the exciting causes would

not be sufficient to produce such a result in an ordinarily healthy person.

505. Now, when this view is taken, the question at once arises, How or whence did the blood obtain the material out of which the growth was formed? Well, what other source could there be but the food? In point of fact, I was told, in answer to my inquiries, that although the patient had been considered strong and healthy, she had suffered from prolonged and severe indigestion. There had been prolonged mal-nutrition or mal-assimilation of food. No doubt the chyle obtained from the food, being improperly elaborated, was poured into the blood in excess of the bodily requirements; and although she was what is called a small eater, her food was taken too frequently, as the following account of her food habits will show. She had breakfast about 8 a.m., of tea, sugar, and a little milk, with, say, 3 ounces of bread with butter, sometimes a little marmalade, and occasionally an egg. At 12 or so she had dinner of meat, say, 2 or 3 ounces; potatoes, say, 6 ounces; bread, 2 to 3 ounces; and rice, sago, or tapioca pudding, 4 or 5 ounces. At 4.30 she was 'faint,' and had bread and butter, 2 or 3 ounces, with tea, sugar, and milk, as at breakfast, and sometimes a little jam. About 8.30 or 9 p.m. she had 'pasty;' or bread and milk, or 'boiled milk,' as it is called, that is, bread and milk boiled together, say, 3 or 4 ounces of bread, and 6 or 8 ounces of milk. One sees that there was bread at every meal, and, in particular,

that there were four meals in the day, the bulk of the food consisting of bread, potatoes, puddings and sugar. The food was, no doubt, wholesome and plain enough, but was taken too often, although not in what could be considered large quantities; but her resistance to food being low, and the demands of her body not being great, owing to her occupation at home being a light and non-laborious one, the continuance of these food habits was sufficient to induce cancer at an early age, of which, and of the effects of which, she died. The total quantity of food taken, exclusive of fluids, would be about 5 ounces at breakfast-time; say, 14 or 16 ounces at dinner; about 2 ounces at tea-time, perhaps 3 ounces; and about 4 ounces at supper-time, besides a tumbler-full of milk; say, in all, about 27 ounces—not at all a large amount of food, if taken at two meals, say 9 a.m. and 4 or 5 p.m., but which, taken as it was at short intervals, allowed the digestion no rest, and led to the lamentable consequences described. Small, however, as the amount was compared with what is taken by many persons, it was probably much in excess of the requirements of the patient, who was small in person, and performed very light duties. And at least the severe and prolonged indigestion from which she suffered is accountable for on this view.

506. If this is so, it will be asked, Why are persons so suffering wasted and attenuated before cancer sets in? If the cause is poly-siteism and pollaki-siteism, how can

patients waste? The answer to that is what has been given so often before in these observations—they waste or attenuate through excess; they suffer from the starvation of over-repletion. As an accident—and it was so in the present case—the food taken in excess, too frequently and too abundantly, was bread. But in principle it might have been anything. The cause was essentially poly-siteism and pollaki-siteism; accidentally it was poly-amylism and pollaki-amylism (as in my experience it nearly always is). If it be asked, as it may be with point, This woman was thin, and you account for her getting cancer because she showed the attenuation of excess; how do you account for the fact that stout persons develop cancer as well as thin ones?—the answer is obvious. The same causes which make A thin make B stout, and any poly-siteous and pollaki-siteous person, stout or thin, is liable to develope cancer, the essence of the cause being not the thinness or stoutness which they manifest, but the poly-siteism and pollaki-siteism which led to these conditions. Thinness, or spareness, is, in fact, the primary izanic or direct effect of poly-siteism and pollaki-siteism; stoutness, or obesity, is the secondary, or œdanic, or indirect effect.

507. Such seems to me to be a much better and fuller and more comprehensive theory than the other. Instead of viewing the course of the disease as a recurrence in the scar and at the point of puncture in the pleura, and instead of viewing the occurrence of the second tumour

as a metastasis from the first, it is easily seen, and the explanation becomes quite simple, that the blood having been loaded with waste, effete, unassimilated material, proceeded to deposit the same, first in the original growth and in the neighbouring glands (also, no doubt, in the fascia of the pectoral muscle), then in the scar, then in the other mamma and the axillary glands, next in the point of puncture made by the trocar as it entered the pleural cavity, and lastly all over the body. These successive processes were rather successive effects of a common cause than causes and effects of one another. Very likely, towards the close of the case, there may have been a metastasis or passage of growth-particles from one point of the body to some point near it, so helping to spread the cancerous process. But such a metastasis does not offer a reasonable explanation of the appearance of the growth in the second mamma, it being much more likely, and the explanation being much nearer to hand, that the same state of the blood which caused it in the first mamma caused its appearance also in the second. This view is also confirmed by the pathology, for if carcinoma is essentially an overgrowth of epithelial tissue, 'the appearance of two epithelial cells where there ought normally to be only one,' the question is, How or whence can such overgrowth arise except from the blood? Obviously, neither the blood nor the body can create anything; but it can convert one thing into another; it can convert food into cancer or any other tumour growth. And when, through

the ingestion of more food, and oftener into the body than is required, the blood becomes loaded with excess of material, the formation of such tumours is a very likely process to occur, and seems completely to be accounted for without the necessity of supposing a regionary or local recurrence or a metastasis; although, on the other hand, it may be admitted that both recurrence and metastasis do occur or may occur sometimes. Still, they could not occur unless the blood contained in it the materials out of which such depositions are formed, and the food is so very obvious a source of supply of such materials that it seems unnecessary and violates the law of parcimony to go further in search of a cause.

508. The theory we form of the origin and progress of disease is not of academic interest only, for it determines the line of treatment which we adopt. If cancer, for example, is supposed to be of local origin, free removal must be the measure on which most reliance will be placed for its cure. If, on the other hand, cancer is believed to be an exudation from the blood, which in turn has become loaded with unused material from too frequent and too abundant feeding, removal of the disease as widely as possible will be accompanied by the advice that the patient must live very differently in future—must eat less and less often, and perhaps alter also the quality of her food, in order that if possible the source of the exudation from the blood may be tapped, so that no more shall be thrown

out, and so, therefore, that there shall if possible be no recurrence of the disease. In the particular case which is the text of these observations, it is quite gratuitous to suggest that the disease recurred because it was not freely enough removed. The operating surgeon did all that could be done in that way, and no doubt knew all that has been said on that point. Much more likely is it that removal was too late. In fact, in the great majority of cases cancer cannot be cured by the knife. By the time that cancer has occurred, the blood has been for so long a time so loaded with effete material that no mere removal can be of any avail, and the general truth of the aphorism 'Once cancerous always cancerous' becomes too apparent. And even the advice to the patient to live differently in the future may be of no avail or of so little that the surgeon hesitates to give it. It seems perfectly obvious that too little attention has been given to this point, the recurrence of malignant disease after the freest removal by the knife being unfortunately so common as to be the rule. No doubt a considerable length of time sometimes elapses before return occurs. I have known a period of fourteen years to intervene in my own practice, and I have heard of surgeons who had known so long a period as thirty years. But these experiences are rare. It is far commoner to find recurrence in one, two, three, or four years. It would, in view of such experiences, seem to be much more hopeful to direct attention to the means of prevention, and by offering advice early as to the most

proper methods of feeding, to attempt to prevent what, after it has occurred, it is so difficult, if not impossible, to cure.

509. As the quantities and times of eating are far more important than the kind of food taken, it is not so necessary to abstain from this, that, or the other article of diet—from meat, fish, eggs, bread, and from tea and coffee—as it is to take a mixed diet in not too large quantities and not too often. We seem to hear here again a paraphrase of the saying of Asclepiades of Prusa, formerly quoted: '*Non cibus hic aut ille aut iste, sed quantum et quoties.*'

510. These suggestions regarding cancer explain how it may be attributed to a blow, as it so often is. The blow was the occasion rather than the cause. The real cause was the state of the patient, of her blood and of her tissues. A blow in a cancerous person takes on a cancerous character. But the same thing is true in gout and rheumatism, for an injury in a gouty person is apt to take on a gouty character, and in a rheumatic person a rheumatic character.

511. What has been said regarding cancer shows that even in that generally fatal disease the effort of nature is towards health. The blood, being loaded with unassimilated material through the long-continued malnutrition which precedes the cancerous state, proceeds to deposit

its excess of material as an overgrowth or hypertrophy. When this is removed by the surgeon, there are generally plenty of supplies in the blood for further deposition; and the process goes on, the overgrowth being so abundant as to block itself and to cause ulceration in the tissue, the throwing out of still more exudation leading to still further ulceration.

512. The same process goes on in other diseases, fatal and non-fatal. In almost all cases disease is caused by the presence, first in the digestive tract, then in the blood, then in the tissues, and then in the lymph, of material in excess of the requirements of the body. This material, or some of it, may be deposited as an exudation anywhere in the body, so causing local disease. When the exudation takes place into important organs, it is of course of great consequence that it should be removed, the best way in which this can be effected being through absorption. Instances of this are continually occurring in practice. According to the anatomy and physiology of the parts involved, symptoms and signs of disease will differ. Thus a man sixty-eight years of age, who was deaf and giddy and was also subject to vomiting on waking in the morning and raising his head from the pillow, was inferred to be suffering from an exudation in the internal ears and in the neighbouring parts of the head. He was advised to become dis-siteous in place of tetra-siteous, as he had

been. It was important to him that he should hear better, and that he should be able to climb a ladder if possible, as, being a contractor, he had to superintend his workmen, and his giddiness prevented him from doing so. For six weeks of the winter after he had been seen he heard as well as ever he did in his life. Besides dis-siteism, exercises had been prescribed and tapotement to the tender occipital and petrous portions of the head. The deafness, giddiness, and sickness were due to an exudation from the blood into the neighbourhood of his internal ears and other parts of his head, especially those about the occiput and temporal bones. The deafness, giddiness, and sickness were therefore the physiological or pathological translation of the state of the blood and of the state of certain tissues due to that state. They were, therefore, the local expression in the ears, occiput, etc., of the state of the blood, and were therefore the local expression of a general state. This was proved, first, by observation and reflection on the condition, and, secondly, by the means of relief, which consisted in the reduction of his meals from four to two daily, which reduction diminished the quantity of material finding its way into the blood, or allowed more complete assimilation of it. Some of the exudation was thereupon reabsorbed and converted into the heat and motion of life, the man recovering, even at sixty-eight years of age, his hearing to a considerable extent, and losing the other symptoms which had annoyed him.

513. Phthisis has very satisfactorily diminished as a cause of mortality in the past generation or so, from 2,811 per million per annum in 1850-54 to 1,468 in 1892-93, and even less in subsequent years. Cancer, on the other hand, and some other diseases have greatly increased as causes of mortality in the same period.

514. It would be much more to the purpose to inaugurate a crusade against cancer, which is becoming increasingly fatal, than against consumption, which is diminishing very satisfactorily, although the latter crusade is desirable also.

515. If cancer is due to excessive meat-eating, as some say, let us diminish our meat-eating and have more exercise. If it is due to excessive consumption of starch and sugar, as others say, let us diminish our consumption of these food-stuffs.

516. But if, as is probably the case, the cause is only accidentally either meat or starch, but in principle is polysiteism and pollaki-siteism, is eating too much and too often, let us advise the public how much and how often they ought to eat, and so prevent the increase of that scourge which is destroying rich and poor among us alike, and at the same time do away with the need for those extensive operations which are so often followed by recurrence, or further formation of the growths.

517. In order to do this, however, we must have made up our minds about causation, which is of paramount importance in medicine, especially as regards the prevention of disease.

518. It is much more urgent to crusade against increasing than against diminishing diseases, against carcinoma and influenza, *e.g.*, than against phthisis; though both crusades are good.

519. If, however, our crusade is against Disease, we need not trouble ourselves much about diseases.

520. A man sixty-one years of age, suffering from hæmorrhoids, and who had in particular one large prolapsed and irreducible pile as large as a pigeon's egg on the right side, was recommended by me to have an operation performed for cure. The recommendation was given in good faith, because I did not believe that anything short of operation could cure him. The man, however, objected to operation, and said he would like other means to be adopted. I reluctantly yielded, and without promising cure or even relief, recommended dis-siteism in place of the tris-siteism he had been accustomed to. At the end of the first week he was no better, but in a fortnight there was some diminution in the size of the prolapsed piles, and they were occasionally reduced within the sphincter, or 'up,' as he termed it. In eight weeks he was quite cured,

and that without having been compelled to interrupt his work for a day. The constipation of the bowels from which for years he had suffered was entirely removed by his two meals, frumenty being taken at one of them and well-cooked onions at the other. Local applications were also used, particularly warm sitz-baths, astringent ointments, and the pressure of a sponge wrung out of hot water to the anal orifice; but the essential part of the treatment was restriction of the diet.

521. Many women suffering from urethral caruncle have been cured by restriction of the diet. A young woman of twenty-six years of age, who had been operated on for urethral caruncle by two skilled surgeons, but not relieved of her misery, was cured by a diet of milk and barley-water continued for six weeks. At the end of that time the caruncle amputated itself by constriction of its neck, and came off one morning, without pain, in my forceps, when I touched it. It has never returned, although it is years since the occurrence of these events. There can be little doubt that, first, the caruncle was a hypertrophy of the mucous membrane of the urethra; and secondly, that it pointed to or indicated irritation and hypertrophy of the urinary mucous membrane higher up the tract; and thirdly, that, like all other hypertrophy, it was due to poly-siteism and pollaki-siteism. (I told the woman, what I believed, that it was due to amylaceous excess in the diet.) When the cause was removed, the woman being still young,

and not too great organic change having yet had time to occur, the effects began to diminish, and by-and-by to cease. The hypertrophy of the tissue having a low vitality, or being 'labile,' as it is termed, was gradually absorbed and lessened, while, through contraction of the formerly overgrown parts, constriction of the neck of the growth occurred, and a small part of it was by Nature amputated, killed and removed. My forceps only completed what Nature was doing for herself.

522. A part hypertrophied by poly-siteism and pollaki-siteism will (if organic change has not meantime proceeded too far) atrophy and sometimes be removed by oligo-siteism, or a-siteism, continued for some time (three to six weeks). It will, as a rule, be more labile, and will atrophy sooner than the normal structures of the body.

523. Urethral caruncle in women bears to the urethra and urinary passages (bladder, ureters, and renal pelves) exactly the same relation that prolapsus ani and hæmorrhoids bear to the mucous membrane lining the digestive tract. Urethral caruncle might be called prolapse, or even hæmorrhoids (for it sometimes bleeds) of the mucous membrane lining the urinary passages; while hæmorrhoids and prolapsus ani might be called caruncle of the intestinal mucous membrane. The chief cause of both is poly-siteism and pollaki-siteism; and urethral caruncle particularly is apt to be associated with amylaceous excess in

the diet. Both diseases yield, as a rule, in from three to six or eight weeks, to restriction of the diet, and in both conditions the knife or other surgical procedure is far too often resorted to for their cure.

524. A man aged thirty-eight years consulted me about frequently recurring attacks of bronchitis, asthma, and broncho-pneumonia, from which he had suffered for years. I told him that the cause was an excess of amylaceous and saccharine stuff in his diet. I advised him to eat twice a day, to take bread at one of his meals, and meat and a green vegetable with cooked fruit at the other. He did so, and improved greatly as regards his attacks, which came more rarely and with less severity, till he finally got rid of them altogether. He went on living in the same climate. No other appreciable change was made in his environment, in his occupation, *e.g.*, or in his clothing, or in his mode of life generally, so that there can be little doubt that the alteration of his food habits is the cause of his recovery. As regards clothing, indeed, he ought to suffer more now than before, for he frequently goes out without an overcoat in the depth of winter, a thing he dared not do formerly, and yet now he does not take cold. He seems to me, therefore, to be quite justified in his belief that the alleged cause of his ailments (poly-amylism and pollaki-amylism) was the real cause. But if there is any doubt still remaining, all that is required to clear it away is that he should live as he did before. If he does so, I have no doubt that he will

again begin to suffer as he did before. But I do not recommend that this experiment should be made.

525. In this case and others like it, however, probably poly-siteism was the essential cause of the illness, and poly-amylism and pollaki-amylism only the accidental cause. A dis-siteous diet, therefore, of not more than 20 or 24 ounces of ordinary food (my patient weighs about 12 stones) would probably have cured the ailment as certainly as the plan adopted, even if comparatively little had been said about amylaceous and saccharine elements in the food. I may have somewhat confused the accidental causes poly-amylism and poly-glycism with the essential cause poly-siteism; but that kako-siteism was the cause there can be no doubt in the mind of any reasonable man.

526. A person suffering from an asthmatic paroxysm feels as if he could not get breath, whereas in point of fact he cannot get rid of his breath, and the air retained in his lungs, being loaded with carbonic acid gas, partially poisons him. The asthmatic paroxysm consists of a large number of forcible inspirations or inhalations rapidly succeeding one another, with very little expiration, and can often be noticeably relieved by recommending the patient to make a succession of expirations. Generally speaking, if we attend to the expirations, if we expire freely, the inspirations will take care of themselves. The *besoin de respirer*

affects chiefly the inspiration. It should be called *besoin d'inspirer*. The termination of asthma in emphysema and bronchiectasis shows that the strain of tissue is caused by inspiration and not by expiration.

A CASE OF ANÆMIA, OR TRIPHTHÆMIA, OR CATATRIBÆMIA, AS PREFERABLY IT MIGHT BE CALLED.

527. A young woman, twenty-six years of age, who had been ill for three years with dyspepsia and anæmia, and had been unable to follow her occupation for two years, was cured on the following diet: For the first four weeks she took a tumblerful of milk mixed with an equal quantity of boiling water morning and evening, and about ½ pint of mutton- or chicken-soup in the middle of the day. For the next five weeks she had the same allowance of milk morning and evening, or she took hot barley-water in place of the hot water. For dinner she had ½ pint of any soup with some green vegetables in it, well cooked, as sprouts, cauliflower, or celery, or cucumber, and some Parmesan cheese dredged over it. The solid constituents of her diet did not weigh more than 8 ounces, and green vegetables contain, it is well known, about 90 per cent. of water in their composition. Nevertheless, on this diet, she got entirely rid of her dyspepsia, no longer vomited the bitter stuff she formerly did, and, to a great extent, got rid of her anæmia, her friends complimenting her on her

improved appearance. More strange it is to add that on this diet she gained 1½ pound in weight in three weeks. No doubt she drew on the over-accumulation of reserves in her body for some of the supplies on which she lived during the time, for it is not to be supposed that she can continue to live on such a diet, especially after she shall have returned to her work. And the waste, effete, unused material accumulated in her body, and converted under this régime into the heat and energy of life, was probably replaced by water in the tissues, so that she gained weight. A certain amount of this replacement by water was no doubt of the greatest benefit to the patient, for in anæmia the tissues are so shrunk and 'constipated,' or obstipated, and the circulation in them is so blocked, that the blood cannot enter them freely. The oxidation and metabolism, therefore, that ought to occur in the tissues is prevented from taking place. This leads to further blocking and further obstipation, especially if attempts are made to 'feed up,' as they so frequently are in this affection. It is not so much the absence of iron in the blood that is the significant fact in anæmia. Iron may be present, but may be prevented from combining with the hæmoglobin, and from acting as an oxygen-carrier. No doubt hæmoglobin contains a small quantity of iron, but the proportion of iron in the body is so small, that it would require the most exhaustive laboratory analysis to say whether it was in excess or deficiency in any given portion of blood or of tissue, and even then a very small error in experiment or

in calculation might materially vitiate the result obtained. And the quantities of iron given to combat the supposed deficiency of that element in the blood in anæmia are enormously greater than the requirements of the body, as much iron as is contained normally in the whole body being not infrequently ingested in a few weeks. Much of this iron, indeed, is passed out of the body per rectum, and is, besides, apt to aggravate the already existing constipation. A deficiency of hæmoglobin, no doubt, exists, but it is due to congestion of the circulation, this in its turn being caused by overloading of the blood and tissues with effete material. This overloading with effete material is, again, due to the imperfect assimilation which always forms the first stage of anæmia, the stage when the girl begins to lose her colour, and when gradually the redness of her cheeks is diminishing and contracting, till it becomes a very small circle and then disappears. The too frequent feeding which anæmic girls are almost always given to is the chief cause of this, as it is also of their obstinate constipation of the bowels, of their insomnia due to a kind of constipation of the brain, and of the preceding or concomitant dyspepsia. It is well for them that the affection takes this form. If it did not, it would probably take the form of tuberculosis. Anæmia, in fact, bears to tuberculosis the same relation which constipation does to diarrhœa, or which amenorrhœa does to menorrhagia — the one is primary or actionary, the other is secondary or reactionary; the one corresponds with *strictum*, the other with

laxum. And both are due to poly-siteism and pollaki-siteism as their remote cause.

528. As if to prove to demonstration that anæmia is due to a block of the circulation caused by an excess of material finding its way into the blood, the blood proceeds to relieve itself, so to say, or to attempt to relieve the block, by pouring out a watery effusion, a dropsy, in fact, into the cellular tissue about the ankles. Long before that happens the layers of the epi- and peri-mysium, the periosteum and often the perineurium have become congested, as could have been easily made out by making gentle pressure on numerous places in the muscles, nerves, bones and joints. In fact, a condition of *initis* or of *pan-* or *poly-inito-eilemmatitis* would have been found to be present had it been looked for. After this has gone on for some time, causing the obscure 'neurotic' symptoms that so many of these sufferers are accused of putting on or imagining, the *œdema pedum et tali* makes its appearance. If this is not attended to, and if the true significance of the state is not perceived, which unfortunately it very seldom is, the patient is apt to get into the state in which the young woman in question was—tired, pale, wasted, attenuated, sleepless from obstipation of the brain membranes, unable to work, and a burden to her friends and to herself. If rich, she is sent to this, that, or the other place for 'change of air.' (What she ought to have is 'change of food.') If poor, she sinks down and is lost sight of. But whether

poor or rich, if the causes of her illness are allowed to continue, the further course of things is most instructive, for the girl is very apt to get next a passive or more often an active and acute effusion or series of effusions into some of the serous cavities of the body. How often does the housemaid get bursitis of the knee; how often does pleurisy occur on one side or both! The commonest method taken by Nature to relieve the blood is by the occurrence of acute rheumatism, which is essentially (I was going to say) an effusion into the serous sacs of joints, usually with inflammation of the same, or into the pericardium, or an inflammation of the endothelium of the heart itself, or of the vessels. This is no doubt the immediate condition, but the remote and chief cause of it (in this sense 'essentially' the cause) is the poly-siteism and pollaki-siteism—especially the pollaki-siteism (very often taking the form of pollaki-amylism and pollaki-glycism) which has preceded it. What can be simpler? The blood is loaded with an excess of material. The circulation, becoming blocked more or less, proceeds to relieve itself on to the comparatively unimportant or non-vital envelopes of the body. No heed is given to this; the causes are allowed to go on and the effects must follow. Filling of the epi- and peri-mysium, perineurium, etc., not being sufficient to relieve the blocked circulation, relief is attempted by infiltration of the cellular tissue, and *œdema pedum et tali* sets in. Still the cries of Nature are disregarded, and after a futile attempt at relief into the bursa

in front of the knee-joint, an attack of pleurisy or rheumatic fever sets in, vital organs being attacked when Nature intended, so to say, to save them. Then follows a long period when Nature compels, not only restriction, but absolute cessation of food, by a modified amount of which we could have prevented the onset of the serious and often crippling illness which Nature has been compelled to institute in order to save life at all for the time being. In some cases these 'neurotic' (*initic*) young women get effusion into the meninges cerebri, *ex-eilemmatitis* or *end-eilemmatitis cerebri*, and die comatose. Every experienced practitioner must have seen cases of this sort, and many have been sadly puzzled and often very much disappointed at having to account for them. Our diagnosis of 'neurosis' is very apt to be rudely shocked from time to time when this frightful calamity occurs to a young patient, whose friends have, perhaps, been so unjust as to think and say she was imagining her ailments. All the rest is easy to understand, and not very difficult either to treat, when patients will do as they are told, which, when ill enough, they generally will, not all of them, unhappily. But the palpitation, the breathlessness, the 'hæmic murmurs,' how simple they all become when we realize that Nature, the *vis medicatrix naturæ* (sometimes, through want of guidance, unhappily resolving itself into a *vis destructrix naturæ*), is attempting to relieve the engorged and obstipated circulation first into one place in the body and then into another!

529. In the course of these conditions, often enough the young woman suffers from leucorrhœa, and on examination may be found to suffer from endometritis. For this she is often advised to have surgical interference. This relieves her for a time, especially as for a few days at least—perhaps a week or more—it is necessary to restrict the diet. Restriction of the diet for a much longer time without the surgical interference would in all these cases have far more certainly and far more thoroughly relieved such patients, especially if it had been coupled with advice to live differently in future, after health has become re-established; to become mono- or dis-siteous; or even, remaining trissiteous, to take 8 ounces of food at the mid-day meal, and 3 or 4 ounces each in the morning and in the evening. Under such treatment all the symptoms disappear—the dyspepsia, the constipation (for years the patient in question had never had her bowels moved without aperients, and never takes them now), the vomiting, the insomnia, the anæmia itself, the leucorrhœa, and the dysmenorrhœa. It is this kind of explanation of the symptoms, and the satisfactory effects of treatment founded on this view, which have led me to suggest the replacement of the name anæmia by triphthæmia or catatribæmia (*τρίβειν*), to indicate the view that the real cause of the illness is loading of the blood with waste effete products.

SUGGESTION OF A NEW NAME FOR INFLAMMATIONS OF, AND EFFUSIONS INTO, SEROUS CAVITIES.

530. Perhaps I may say here that just as the Greek medical writers had no name for affections of fibrous tissue in general, and do not, in fact, seem to have had the idea of it, so they do not seem to have had the idea of generalizing the occurrence of effusion into serous cavities like bursæ, the synovial sacs of joints, the pleural cavities, the peritoneal cavity, the ventricular or arachnoid cavities of the brain, etc. Each of these separate states—*i.e.*, affections of each of these sacs (or most of them)—separately they did know; but for affections (inflammation is, of course, *par excellence the* affection of a tissue or structure) of synovial sacs in general they do not seem to have had a name. Perhaps *ichoro-cilemmatitis* might serve? ('Ιχώρ = serum, or that ethereal juice, not blood, that flows in the veins of the gods. 'Ιχωρώδης = like serum, is used by Hippocrates. *Ichoroditis* is a shorter name, but would be open to the objections that it draws attention rather to the fluid effused than to the membrane by means of which it is effused, and also that it sounds too much like *choroiditis*.) To *ichoro-cilemmatitis* we could prefix *poly* or *pan*, making *poly-ichoro-cilemmatitis* or *pan-ichoro-cilemmatitis*, to signify that many synovial membranes, or that all, were inflamed; and these conditions could be distinguished from the *poly-inito-cilemmatitis* or the *pan-inito-cilemmatitis*, otherwise

rheumatism, the affection of the fibrous tissues with which they are often so closely associated.

531. Another fact of great significance in anæmia, no doubt, also is that the vessels are empty of blood, not only by blocking of the circulation, but also because the muscular fibres of the vessels, and particularly their transverse or circular fibres, are first hypertrophied, and then contracted so tightly as to hinder the blood from flowing; so that there is therefore a real anæmia, as well as triphthæmia. But if we reflect and consider how it is that in anæmia (as well as in Raynaud's disease, and in some forms of gout) the muscular fibres of vessels do become hypertrophied, we shall have no difficulty in seeing that this happens because the blood contains in it nutritive material in excess of the nutritive requirements of the body. This hypertrophy seems to be a pathological fact of the greatest significance, therefore, explaining, as it does, so many of the conditions found in the izanic state—constipation, Raynaud's disease, insomnia and anæmia. But as all hypertrophy must be an effect of poly-siteism and pollaki-siteism, another proof is added to the many already seen of the supreme importance of the question of nutrition, and of that of how much and how often food is administered. The paradoxes of treatment also, referred to in Aphorisms 83 to 111, etc., come to be explained, as also the restriction of the diet necessary to combat the states referred to, since the only proper way in which the hypertrophy of transverse muscular fibres can

be reduced, and their contraction therefore lessened, is by reducing the diet. In the case of constipation the contraction of these fibres narrows the lumen of the gut, preventing, after a preliminary emptying, any contents from passing, and hindering the peristaltic action. Peristaltic action is neither more nor less than alternate contraction and dilatation of longitudinal and transverse tissue-elements and particularly muscular elements, and reminds us closely of the mode of progression of the earthworm, formerly referred to. If the gut pulled upon a fixed point, or could, like the earthworm, fix any point in its course, progression would also occur. As it cannot and does not, the mesentery itself partaking in the movement, peristalsis alone takes place, but the mechanism of peristalsis is precisely that of the progression of the earthworm.

A CASE OF RECURRING ERYSIPELAS OF THE FACE.

532. A young woman, who had suffered for many years from recurring attacks of erysipelas faciei, and who for many months before I saw her had been prevented by her illness from following her occupation as a weaver, was informed that her diet, consisting largely of bread, potatoes, puddings and sugar, was the chief predisposing cause of her recurring illnesses. She was advised therefore to eat bread only once a day, and then not more than 4 ounces,

and to have for dinner, if she could get it, 3 or 4 ounces of any meat, with some lettuce or other green vegetable. She was also advised to diminish greatly her puddings and sugar. She did so, and very soon the attacks of erysipelas began to come less frequently and with diminishing severity, and in the course of a few months she became very much better. As she had improved so much, she after a time thought that she need not be so particular about her diet, but might do as other persons of her acquaintance did. (It is almost always a puzzle to patients, when they are told that so-and-so is the cause of their illness, to answer the question why it is, then, that the same causes do not make their friends and acquaintances ill in the same way as themselves. 'If,' they say, 'I am made ill by bread and puddings, why are not A. B. and C. D., whose habits I know very well, and who take even more of these foods than I do? Why are they not made ill in the same way?' The answer that different persons have different resistances to these things, and to the physiological labour required for their digestion and assimilation, does not seem to satisfy them. It is, perhaps, not a very satisfactory explanation, although it is all the explanation which we can give.) My patient, at least, thought she might do as her friends and acquaintances did, and after recovery took more of these foods than she had been advised to take. The erysipelas faciei recrudesced, after which she made no more experiments, but, restricting herself to what she had been advised, remained well. The proof that the alleged cause

of the erysipelas was in such a case the real cause requires no additional confirmation.

CASES OF DIABETES MELLITUS.

533. About two years ago a young woman, twenty-three years of age, was brought to me by her mother, suffering from diabetes (specific gravity of urine 1,040), many pints of urine containing large quantities of glucose being daily passed. There was also some albuminuria. Under a diet of ½ pint of milk and barley-water, equal parts, twice a day, and ½ pint of mutton tea in the middle of the day, continued for six weeks, this young woman entirely recovered, after which she was put upon a dis-siteous régime, the advice being given her to take a little meat at one of her meals (about 4 ounces), and some bread at the other. Under this régime she remained well, and then, feeling that she need not keep so strictly to orders as before, returned to ordinary tris-siteism. In a year from the time of her being first seen she relapsed, the old diabetic condition returning, and being removed by the same curative régime as before. The second attack did not last so long as the first one.

534. It will be observed that the theory on which treatment in this case was conducted was that the disease was due to poly-siteism and pollaki-siteism, not that it was due to poly-amylism and poly-glycism. The advice given, there-

fore, was that the patient should diminish her food or restrict her diet, not that she should abstain from amylism and glycism. I have reason to believe that, had she been fed on milk, meat and eggs—which the theory that her illness depended on poly-amylism and poly-glycism would have necessitated—she would not have recovered. It is interesting that a difference of view so slight as that a patient's condition depends on too much food rather than on too much starch and sugar, should make so much difference to the prospects of recovery, that on one view she would recover, and on the other not. An academic difference of opinion to causation may translate itself into the difference between recovery and non-recovery in the sphere of treatment, or into a difference, so far as the patient is concerned, between life and death.

535. A man, thirty-eight years of age, who had suffered for two years from diabetes mellitus, was put upon a diet of a cup of coffee for breakfast, a basin of soup for dinner, and a glass of milk and barley-water for supper; and this treatment being maintained for some weeks, the specific gravity of the urine fell from 1,040 to 1,020, the glucose diminished greatly, and the polyuria was much lessened. After that he was advised to be mono-siteous, to take one meal daily of ordinary mixed diet, with milk for his evening meal, sometimes with an onion. When I last heard of him, he was passing a normal quantity of urine with a specific gravity of 1,015 to 1,020.

536. On the other hand, a middle-aged man suffering from diabetes mellitus at the same time as the two last-mentioned persons, and who was fed, on medical advice, on a diet of milk, meat and eggs, died in six months of diabetic coma. The view taken of the causation of his illness was that it was due to poly-amylism and poly-glycism; and the poly-siteism, which was most probably the real cause, was continued in a somewhat modified form, an excess of mixed diet being replaced by an excess of nitrogenous food, and the patient lost his life. A discussion which sounds an academic one only, between the merits of poly-siteism on the one hand and poly-amylism or poly-glycism on the other, or between the general and the particular, may, when translated into treatment, be fraught with the issues of life or death to a patient.

537. Many diabetic patients, suffering really from poly-siteism and pollaki-siteism, are thought to be suffering from poly-amylism and from pollaki-amylism, or from poly-glycism and pollaki-glycism. They are very often poisoned by milk, meat and eggs, whereas they ought to be treated by oligo-siteism, and by-and-by by quantified dis-siteism or tris-siteism.

538. A man, forty-eight years of age, who diminished his food and became dis-siteous, in order to cure himself of bronchitis, asthma and rheumatism, in which attempt also he was entirely successful, was very much surprised to find

that corns, hard and soft, which he had had for many years, disappeared under the treatment; and still more, that attacks of ague, which had troubled him for thirty years since his return from the West Indies, where he had suffered long and greatly from malarial fever, troubled him no longer. For ten years now he has not had an attack of ague, whereas formerly, whenever he took a cold, he had ague.

CASE OF ULCERATION OF (PROBABLY) THE LARGE INTESTINE.

539. A woman, fifty-four years of age, anæmic, and whose appearance suggested even the idea that she might be suffering from pernicious anæmia, or some other possibly malignant affection, came into the Bradford Royal Infirmary suffering from frequently recurring loss of blood per rectum. The quantities lost amounted to as much as 8 ounces at a time, dark liquid blood for the most part, with a few clots. The site of the bleeding could not be discovered. She had been under treatment for some time, but, beyond a diagnosis of ulceration, of probably the large intestine, a diagnosis which I believe to have been perfectly correct, nothing further could be said about it, and she had not improved. The source of the hæmorrhage might have been in the rectum, although the finger could not detect it, but probably was higher up in the colon. Of course it might have been higher up still in the ileum. In any

case here was hæmorrhage recurring in a thin, wasted, attenuated woman, and evidently, unless it was checked, it must prove too much for the patient. To cut down on the bowel, first opening the abdomen and then the gut, on the chance of finding the spot from which the hæmorrhage came, and of excising the ulcer, if one was found, seemed a very haphazard proceeding. If the surgeon failed in one place, he would have to stitch up his opening, and proceed to another attempt to find the bleeding-point. If his second attempt failed, he would have to make a third, a fourth, a fifth, and even an indefinite number of attempts to find the source of the hæmorrhage along a portion of bowel measuring 8 feet long, even if it was in the large intestine, which was by no means certain. There can be little doubt that such a set of proceedings would have most probably cost the patient her life. Although, therefore, she came into hospital for operation, I refused to operate. The sequel is very interesting. Under a diet of ½ pint of milk twice a day, and a little soup in the middle of the day, continued for six weeks, this patient made a gradual and finally a complete recovery. The quantity of blood lost fell at about the third week of treatment to 6 ounces, later to 4 ounces, later to about 2 ounces, and finally ceased. The intervals at which the bleedings occurred gradually lengthening between the attacks as the quantity of the hæmorrhage diminished, plainly showed also that the ulceration was gradually healing; and although we did not see the process going on, and did not even know exactly

where it was, it was very easy to compare the healing of external ulceration which one had often seen with the steps of the process which were occurring somewhere in the bowel, and I do not now believe that our imagination was incompatible with the facts. The patient was recommended to be dis-siteous for the rest of her life, and when she left the hospital was quite well, the gray, ashy colour of her face being considerably improved. No doubt, if she maintains a dis-siteous, or, if necessary, a mono-siteous régime, she will recover still more than she has yet done.

540. This case confirms me in the general view that ulceration is starvation of tissue due to previous hypertrophy, and that hypertrophy, wherever found, is due to poly-siteism and pollaki-siteism.

541. The explanation of the *methodus medendi* seems to me here exactly the same as has so often been detailed. Through poly-siteism and pollaki-siteism (accidentally poly-amylism and pollaki-amylism, for bread-and-butter and tea was the chief diet of the patient), first over-nutrition and then starvation, through blocking of its circulation, of the mucous membrane of the bowel took place at some unknown point in the gut. Ulceration followed, which opened a vessel or vessels, so causing the hæmorrhage. Under restriction of the diet the exudation into the surrounding tissues was gradually removed, and the circulation in the place, wherever it was, gradually

became re-established. By this means the ulceration was healed and the bleeding ceased, the gradual diminution of the quantities of blood thrown out coinciding with lengthening of the intervals between the attacks. For let us look at the argument. If poly-siteism, and in women pollaki-siteism (for how often do women eat because they are 'faint'—not much at a time, but a little food and often!), is the cause of hypertrophy and exudation; if the exudation has a low vitality and dies, leaving a raw place, otherwise an ulcer—if these things are so, then it follows that oligo-siteism or a-siteism will gradually remove the blocking of the circulation, which is only another name for exudation. In the case in question, oligo-siteism *was* followed by healing of the ulceration, or was, at least, followed by cessation of the hæmorrhage, which was probably due to ulceration. Will not any sensible man who realizes the force of the steps of this argument, and who realizes besides the happy results of the treatment founded on the argument, be confirmed in his belief of the soundness of his general conclusion, and be induced, therefore, to put into operation a similar chain of argument, should any similar case again come before him, and to follow it up by similar treatment? It is probable evidence, no doubt, not demonstrative, but it is the kind of evidence on which we act in conducting the practical business of life, and is quite sufficient for the successful conduct of that business by sensible persons. In accordance with such evidence juries and judges give verdicts which, if they are

wrong occasionally, are usually correct, and give, on the whole, satisfaction to the public.

542. Any sceptic, however, who doubts the existence of the exudation which this chain of argument supposes to be an early feature in the occurrence of gastric or enteric ulceration, has only to remember what he has seen, no doubt often enough, in the case of the callous ulcer, or what he has seen, say, in suppurating gingivitis or suppurating tonsillitis, ending in tonsillar ulcer, where the steps of the inflammatory process are under his direct observation. Callous indeed will he be to evidence, if he is not driven at least to conclude that this view is likely and most probably in accordance with facts, although the steps of the process were hidden from view in the particular case described.

543. A man of twenty-eight years of age suffered for about eight years from recurring attacks of asthma, with occasional attacks of 'acute emphysæmatous inflammation of the pulmonary vesicles' (emphysæmatous pneumonia). In eight years he was only able to work (and that with the greatest difficulty and distress) for two periods of eighteen months each, at his occupation as a school-teacher. During all those eight years he had never been able in any consecutive week to lie down in bed for more than three hours successively. If he could lie down for five hours one night, the next night he would

not, for instance, be able to lie down for more than three hours, or perhaps two. For over a year he has been compelled entirely to give up his occupation as a teacher. After ten days of a diet of barley-water and orange-juice, he was able to lie down flat on his back for five hours consecutively, and the following night for six hours. Under a diet of about 8 ounces of mixed food, taken once a day (mono-siteism of about 8 ounces daily) he can now lie down for five or six hours. Even when formerly he managed to lie down, he could not lie flat, but had to lie on his right side, with a pillow under that part of his body and another under his head. Many hundreds of nights during those eight years has he had to spend sitting in his chair. This case is still under treatment, and it is therefore too soon to speak confidently, but the prognosis appears to me very hopeful, notwithstanding the fact that a certain amount of emphysæma exists in the chest, which is small and narrow. There is no phthisis. It is not scientific to classify asthmata into animal asthma and vegetable asthma, and smell asthma, etc. Besides that this is a cross division, vegetable and animal asthmata being both capable of being introduced through smell, it is at best a classification through exciting causes, the predisposing causes, which are so much more important, being omitted. Asthma is a disease due to poly-siteism and pollaki-siteism, and its treatment is best effected through restriction of the diet. When this is properly effected it is soon found that weather, and even cold and dampness, have very little

influence on it. In other words, if the predisposing causes are properly dealt with, the exciting causes have little power to induce it. I know an asthmatic who at one time could not go out in the height of summer without an overcoat, and who, if he did, was sure to catch cold. This same man can now, a few years after the time when he suffered so much from bronchitis and asthma, go out in the depth of winter without an overcoat, being entirely indifferent, also, to the presence of the densest, smokiest, or dampest fog, and he takes no cold from the exposure. All this difference has been effected by an alteration in the diet so simple that it is only with the greatest difficulty that we can be induced to believe that changes so slight can be followed by alterations so noticeable and important. To speak of the whimsicality of asthma, of its erratic character, etc., and to say that one form of it is suited by residence in dense smoke, that another is best helped by clear air, that one form agrees with a north room, another with a south, another with an east, and another with a west room; that in one form a sandy or gravelly soil is best; that one form is improved by dryness in the air and another by moisture; and to make other statements of that sort argues despair on the part of the medical adviser, who, plainly, has never seen the direct dependence of asthma and bronchitis on kako-siteism. True, he has seen it to some extent, because, as a rule, he recommends the asthmatic to abstain from supper, but the complete dependence of asthma on kako-siteism he has not realized.

In the absence of organic disease like phthisis, and in comparatively young persons (say, under forty-five or fifty years of age), in whom no very extensive amount of emphysæma has yet taken place, asthma is one of the most tractable of affections, few cases, indeed, requiring extreme oligo-siteism or a-siteism for more than fourteen days, after which they are generally able to lie down, and are able also to assimilate some suitable food. Even at greater ages it is astonishing what benefit may sometimes be obtained from proper regulation of the diet.

544. It seems unnecessary to detail further cases. Perhaps it will be said that no examples of nervous diseases or of skin diseases have been mentioned. Many 'neurotic' cases (perineuritic and initic?), however, come markedly under the same principles. The same principles of theory and practice govern them as govern other cases. In fact, it was in great measure from studying cases of "ovarian neuralgia" (many cases of which are, however, neither ovarian nor neuralgic, though some are both) that the true bearings of the theory and practice were forced upon me. Chorea is particularly amenable to treatment founded on these views.

545. As regards affections of the skin, probably no diseases yield more readily to treatment by oligo-siteism (when patients can be induced to submit to it) than do cases of skin disease. Acne, psoriasis, eczema, ulceration,

even lupus, can be markedly improved and even cured by it. But why multiply details? If principles are correct, the details arrange themselves into law and order, and the regular procession of facts and phenomena strikes the imagination of the observer with wonder, the effect being to make him inquire still further into the constitution and course of Nature, so that he may, if possible, be able to discover still more of the laws under which he lives, and that he and his fellows may obey them. Thus, and thus only, or at least thus and thus mainly, is health attainable. The apparent chaos of the signs and symptoms of disease is seen to be due to the diversity of the different organs and tissues of the body affected; and that apparent chaos and confusion arranges itself under the action of law into a remarkable simplicity, when it is seen that disease is one, though showing itself under many differing forms, as this, that, or the other system, or organ, or tissue of the economy is mainly affected.

546. The views expounded in these observations receive striking confirmation on all hands when they are applied to particular cases, and among the rest from the medical history of a well-known literary character, which is referred to here as a confirmation of the view that poly-siteism and pollaki-siteism cannot be borne by average humanity without continually recurring illness and premature death. Of course, if the law is the law, and not a mere figment of the imagination, it will be found to cover all cases belong-

ing to its own order, and when exceptions occur, some peculiarity in the circumstances must be looked for to account for them. This literary character has been depicted from her own letters most fully for our instruction, and it appears that from somewhat early days she suffered from recurring headaches. At a very tender age, we are told, she suffered greatly from cold, and found difficulty in getting near the fire at school in winter to become thoroughly warmed, owing to the circle of girls forming round too narrow a fireplace. The biographer is not a physiologist, but describes in wonderful detail, although nearly always by reference rather than description, the ailments from which his subject suffered. The incident relating to the fire occurred at five or six years of age. If only the feeling of cold had been met by judicious exercises and a wise regulation of the diet, in place of the futile attempt to get near the fire, if the oxy-uri-chæmia causing the feeling had been treated in place of the feeling itself, how different might not the result have been! For the idea of the child's father was the conventional, and perhaps natural, one, till modified by fuller knowledge, that a child's strength was to be promoted by increase of food, since we find that at about thirteen years of age, at her next school, 'a source of great interest to the girls, and of envy to those who lived further from home, was the weekly cart which brought the child new-laid eggs and other delightful produce of her father's farm'—these new-laid eggs and delightful produce of the farm being, no

doubt, taken as extras in addition to the already, probably, quite sufficient school fare. By the time the child was nineteen or twenty her headaches were in full swing, frequent references being made to them. Thus, at twenty years of age she speaks of hardly knowing herself, owing to the insuppressible rising of her animal spirits, 'on a deliverance from sick headache.' Evidently she suffered from recurring sick headaches. If only she had been told that when persons suffer from recurring ailments they should look for a constant cause, or at least a frequently acting cause! Had this been done she would have had the option of choosing whether she would accept the unpleasantness of putting upon herself a certain amount of restraint, or of going on in the old way and suffering from the recurring ailments. She would have had the opportunity and responsibility of choosing whether she would belong to those who know or to those who do not want to know. This heroine was exceptionally gifted—most exceptionally so—and saw, therefore, though without stating it, or perhaps without realizing its significance, that alternation which always goes on, and always must go on, in the body as to *strictum* and *laxum*, *τάσις* and *χάλασις*. 'Have you not,' she says, 'alternating seasons of mental stagnation and activity?' More mental power and less in the waking state, that is natural and healthy but 'stagnation and activity' have transcended the limits of health, and are as morbid or unhealthy as panic and boom in business or as depression and fever in the body.

The ill-health goes on, for at twenty-seven years of age she speaks of a cold and headache as being doubly intolerable; and at thirty she has headaches and backaches. At the same age she is suffering 'as acutely as ever I did in my life.' But a little further on, and at the same age, when she had gone abroad, we have described to us, though all unconsciously, the chief predisposing cause of these ailments and delicate states, which were thought to be the effects of hard work, of anxiety, of 'exposure to cold,' of a bad, miserable, foggy climate, etc., in a way which is so instructive that it must be quoted. 'I breakfast in my own room at half-past eight, lunch at half-past twelve, and dine at four or a little after, and take tea at eight.' If one had been in search of a plan to induce ill-health and early death, one would have adopted that of breakfasting, lunching, dining, and having tea within eleven and a half hours of one another. If anything additional were wanting to destroy life, it would have been what some persons of my acquaintance do, viz., to have some milk and fruit brought up to their bedrooms, in case they should feel 'faint' in the night, or to make a point, as some of them have done, of rousing the maid in the night to heat milk or make tea and bread-and-butter for them. In another place she tells us that she is becoming so thin as to be approximating to length without breadth! Was that due to under-feeding? Is it likely that a person taking four meals a day would suffer from direct starvation? How is it possible? Was it not, rather, the starvation of over-

repletion, the attenuation of excess? No doubt it was. And the proper indication would have been to diminish or restrict the diet, not to increase it. The action of the predisposing cause continues. We find her describing herself as suffering from constant colds. No sooner is one passing off by its stuffy stage than another is beginning with its wet one. Writing to a friend, she unwittingly informs us of the cause of this also. 'You know our habits,' she says; 'lunch at half-past one, walk from two to four, and dinner at five.' How could any person hope to be well who followed such pollaki-siteous habits? Headache succeeded headache, cold succeeded cold, backache and rheumatism tormented the patient; and constant change of air and scene, with frequent runs to the Continent, were adopted to get rid of ailments which were not due to climate at all, but to wrong living. And as the causes continued their action, how could the effects cease? But why say more? Alas! that noble life came to an end at sixty-one years of age from disease of the kidneys, intercurrent attacks of headache and of rheumatism sadly interfering with work; and the world was deprived of the maturer sagacities which would no doubt have flowed from her pen as her age advanced. Had she overcome the physical weaknesses of humanity, she would have become even purer and more ennobled, reflecting in advanced age most clearly the transforming light as from a mountain-peak, ascending ever higher and nearer to the heavenly source of knowledge and inspiration. The hard work, the

anxiety, the cold forbidding weather, the fog, and the other drawbacks of an English climate (the healthiest, probably, under heaven, notwithstanding), would have failed to destroy the life so early, had the foundation of it, the nutrition, been put on a proper basis. And how simple the remedy! Breakfast at half-past eight and dinner at four or a little after, with the omission of the lunch and of the meal at eight (though a cup of tea alone might then have been taken if desired), such a plan would have interfered with no one's comfort, would have reduced labour to others and not increased it, would have led to the disappearance of the headaches, the backaches, the colds and the rheumatism, and would have postponed probably for twenty years the onset of the kidney disease which so prematurely ended the life. Persons are so apt to say that they eat too little at a time to allow them to adopt such a plan, just as if they could not trust to Nature to see that they have enough, and forgetting or being apparently unwilling to see that the demands of the body are much less than their preconceptions declare, and that fine literary work or pressure of anxious business is certainly not to be met by poly-siteism and pollaki-siteism. How many literary lives of the finest order and how many business lives of the highest calibre have been destroyed in this way twenty, thirty, forty years before their time, and how many delicate and refined mothers have left their children motherless from the same cause!

547. It will perhaps be objected that many persons attain advanced life and do their work well who are poly-siteous and pollaki-siteous, who eat every three or four hours, and who still live to eighty and are very seldom ill. This must be admitted. But the question is, does this occur often enough to make the rule? Is not the rule the other way? First of all, the proportion of the people who are over even sixty-five years of age at death, not to speak of seventy, or still more, eighty, is very small. Not more than 32 or 33 per cent. of all the deaths that happen occur over fifty-five years of age; about 22·5 per cent. of the mortality is among persons over sixty-five years of age; about 11 per cent. over seventy-five, and about 2 per cent. over eighty-five. Surely on any general system properly adapted to humanity, better results than these might be achieved. Putting aside the fact that about half of the children born in England die before they reach the age of five years, surely of those who reach maturity a larger proportion than now reach it ought to survive to fifty-five years of age, to sixty-five, to seventy-five and to eighty-five. When persons who so greatly mismanage their digestion still in spite of this reach advanced life, the question is, How much better might they not have done if they had managed themselves better? Does their example invalidate the general experience that it is the abstinent and self-governing who live the longest and do most work, rather than the self-indulgent? Would any sane doctor recommend the community to indulge freely in alcohol, because he has in his life met one

or two cases of persons who lived to over eighty years of age, and yet who never for forty years went to bed sober if they could go drunk? Are not these cases the exceptions which prove the rule? And is it not competent to us to ask, if they lived so long on the plans they followed, how much longer might they not have lived, and how much better work might they not have done, if only they had lived differently?

548. The following detailed list of particular ailments has been founded on a short treatise on arthritism, but has been added to and is here given as a list, though not a complete one, of the commonest effects of poly-siteism and pollaki-siteism. As far as possible, the ailments are set down in chronological order, that is, following roughly the order or succession which the ailments generally show or tend to show in their appearance from childhood to old age. I pass over eructations of wind from the stomach in infancy, as also thrush, red gum, constipation and diarrhœa, although I believe they are all due to the same cause, and I only refrain from adding the various troubles of teething because I do not wish to appear unreasonable. But as regards the indigestion from which infants so often suffer, let anyone reflect on the frequency with which so many of them are fed. Let him think of the food given every hour and a half, or every two hours, or whenever they cry, to delicate babies, and then let him compare this treatment with that recommended by Oribasius (A.D. 326-403) and

Paulus Aegineta (about A.D. 625). The latter thought Oribasius's advice so good as regards infant feeding that he copied it almost verbatim. These are the words of Oribasius: *Puer nuper in lucem editus melle primum nutriatur* (is this the source or authority for the custom followed yet by so many old women of thrusting a piece of butter and sugar into the mouth of the newly-born child?) *deinde lacte bis in die, vel ad summum ter.* Milk twice a day or three times at the outside, that was Oribasius's prescription for the feeding of the newly-born infant. And Paulus Aegineta almost slavishly follows him, for he says: *Primum alimentum recens nato infanti mel exhibere oportet; postea vero lac præbere bis in die aut ad summum ter. . . . Sufficit autem bienniun lacte nutrire; deinde ad cibos transgredi.* The infant was to be fed with milk twice a day or thrice at the outside, and the milk diet was to be continued for two years, at the end of which time a change was to be made to other foods. How much wiser a mode of treatment is this than the poly-siteism and pollaki-siteism dealt out to many infants to-day!

549. But to continue the account of the ailments due to poly-siteism and pollaki-siteism. The natural order of the rest, or their succession in time, is something like the following: Dyspepsia or indigestion, often accompanied with a dark band under the eyes, and pallor and apparent oppression after meals, with or without pain and fever, generally without, when the affection is still slight.

Flatulence, acidity, herpes labialis, herpes lingualis, going on to the formation of little painful ulcers of tongue- or mouth-mucous-membrane (or of gums seldom), tonsillitis, peritonsillitis, parenchymatous tonsillitis, or quinsy, follicular tonsillitis, *ulcus gaitri*, constipation (sometimes diarrhœa), bronchitis, asthma, broncho-pneumonia, pneumonia, rheumatic fever, chronic or mild and long-continued rheumatism, chorea with heart affections, pleurisy, scanty deep-coloured urine, often depositing yellow or red precipitates—uric acid and urates on cooling, poly-uria, pollaki-uria, chilblains, corns, Raynaud's disease and juvenile gangrene, cystitis in women with urethral caruncle, nephro-uretero-cystitis, 'impressionability of the mucous membranes,' otherwise the bronchial and urinary troubles already named; 'meteorological impressionability,' otherwise great susceptibility to take cold; *pruritis ani et vulvæ*, oligo-menorrhœa, amenorrhœa, dysmenorrhœa, menorrhagia, poly-menorrhœa and pollaki-menorrhœa, pharyngitis, ulceration of the pharynx with loss of substance of the same, soft corns between the toes with ulceration, gout, erratic pains, muscular, neuralgic, periosteal, often very obscure and called neurotic (initic?); waking tired in the morning and with subnormal temperature after plenty of sleep; facility of being fatigued. I might have mentioned the infectious diseases of childhood, but I refrain from doing so, although I feel pretty certain that they also are mainly predisposed to by kako-siteism. Migraines are also due to poly-siteism and pollaki-siteism,

as well as sick-headaches, eczæma and various other skin-affections, early baldness, loss of teeth, hot flushes followed by cold turns, clammy skin, obesity, spareness and attenuation, tendency to become feverish on slight causes; anæmia or constipation of the tissues, sleeplessness and torpor, glycosuria, Bright's disease, heart disease, various angiotic and visceral changes, congestions, hæmorrhages, as epistaxis, hæmatemesis, hæmorrhoids, *ulcus intestinale*, apoplexy, carcinoma, passive effusions, serous and sanguineous, or *ichoro*-eilemmatitis. I have already mentioned waking depressed and with a subnormal temperature, an excess of urea and uric acid in the urine, and constipation as marks of poly-siteism and pollaki-siteism.

550. If the question is asked, What is the evidence that all these various affections are due as their main predisposing cause to kako-siteism, and nearly always to poly-siteism and pollaki-siteism? the answer is, A large number of these diseases can be cured, or at least very favourably modified, by restriction of the diet; and the diseases will not recur, or will recur at longer intervals and with diminishing severity, if, after recovery, the diet is restricted to 16 or 20 ounces of mixed food taken daily and continued for, say, six months or twelve months. Nextly, the diseases will nearly all commence to return (of course, not all in one person, but some in one person and some in others), if the diet is increased beyond 20 or 24 ounces a day.

551. This will not hold as to the infectious diseases, or not as a rule; for these diseases generally come only once in a lifetime. Influenza, however, with or without pneumonia, and with or without a long, slow, subsequent depression, will be likely to return. And even as to the infectious diseases, they oftener appear more than once than is commonly admitted. Thirdly, unless great damage has already been done to the constitution, these diseases will again begin to diminish in severity and frequency of attack if the diet is again restricted. While, lastly, fatal diseases like carcinoma, apoplexy, and Bright's disease, either will not appear at all, or will appear much later, if the diet is restricted in the way suggested, and if that course is persevered with—provided always that the treatment is commenced early enough.

552. Let those who are sceptical about these statements and who may find themselves suffering in any of these ways (fatal diseases must, of course, be excepted), give this suggestion a trial, or watch its trial in persons of their acquaintance. It may be confidently asserted that under a restricted diet, properly quantified and timed or chronized, there would be far fewer attacks of slight ailments, like colds, etc. Among young people there would soon be fewer infectious diseases. There would, within a year, be much less influenza and pneumonia; within five years there would be an appreciable diminution in the incidence of diabetes, apoplexy, and cancer; while within

ten years these fatal diseases would either be very much reduced in numbers, or the ages at which they attacked the people would be higher, *i.e.*, the diseases would either be diminished in number, or their onset would be postponed in time. If the majority of diseases are due to polysiteism and pollaki-siteism, it is likely that, before they have become irremediable, they will be relieved and cured by oligo-siteism, or, where necessary, by a-siteism for a time; and the happy experience of mitigating suffering and affording relief to pain is waiting to be the reward of all who watch the processes of Nature and put into operation her salutary and beneficent methods.

INDEX.

[The numbers refer in all cases to paragraphs, not to pages.]

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ERRATA.

Page 19, line 4 from bottom, for *unmixed* read *mixed.*
Page 39, line 5, for *and* read *to.*
Page 113, paragraph 267, before *Famines* insert *Diseases due to.*
Page 142, line 4, for *narrow* read *narrows.*
Page 214, line 2, for *EVIDENCE* read *SCIENCE.*