Two Lectures

INTRODUCTORY TO THE CLINICAL COURSE ON THE DISEASES OF WOMEN AND CHILDREN.

DELIVERED AT THE MIDDLESEX HOSPITAL.

BY

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LECTURE I.

GENTLEMEN,—Although the value of clinical teaching has been fully recognised in medicine and surgery, no adequate provision has yet been made in the various medical schools for clinical instruction in the obstetric department of the profession. Every general practitioner finds that at least one-half his patients are women and young children, and his skill and energies are constantly taxed by the emergencies of midwifery practice; yet, because no obstetric clinical instruction has been required by the examining boards, none has been instituted by the schools generally.

The councils of the two most eminent medical corporations having for a long period consisted almost exclusively of physicians and surgeons who did not practice midwifery, and who were therefore inclined to underrate its importance, have allowed the requirements in obstetric medicine to fall far behind those in medicine and surgery. The College of Surgeons, without insuring any improvement in the practical teaching of midwifery, some time ago reduced the systematic lectures on this subject from a course of six months to one of three months; and it is obviously impossible in so short a time to teach the diseases of women and children, as well as the principles and practice of midwifery. As I believe it to be the duty of the medical teacher to see that the regulations of examining bodies do not form the measure of his efforts for the welfare of his pupils, more particularly if those regulations are defective, I propose to follow the example of the physicians and surgeons, and to give a series of clinical lessons on the various Diseases of Women and Children, as cases occur in the hospital. I hope in this way to supplement the short summer course of midwifery, and may possibly be enabled to give some hints which will be serviceable in your future practice.

As introductory to the study of diseases peculiar to women and infants, I will first briefly draw your attention to some of the leading characteristics belonging to the two classes of patients, which exert a marked influence in the production and progress of the morbid affections to which they are liable; I will then point out some of the principal difficulties you may expect to encounter in investigating their diseases.

From certain structural and physiological peculiarities possessed by women and children, they are subject to various diseases, specially their own. They are liable, however, to be attacked by some maladies in common with adult males; but it is well ascertained that, when they are so attacked, the

common disease will, in accordance with the age and sex of the patient, be modified in its course, be attended by other symptoms and complications, and perhaps terminate differently in each case.

The pathological anatomy in women and children differs also remarkably from that of other patients. Special modes of diagnosis have to be employed in investigating their ailments, and special therapeutics employed in their treatment.

In children, the processes of nutrition and growth are much more active than in adults of either sex. Not only does assimilation of materials from without go on for the purpose of supplying the waste which organs suffer in the performance of their functions, and of preventing atrophy of tissues already existing, but the progress of growth is going on so rapidly in every part of the body, that a greatly increased activity in the function of nutrition is demanded, and changes in integral parts go on much more rapidly. In accordance with this, assimilation, respiration, and the circulation of the blood, go on at a much quicker pace in infancy and childhood, and the reproductive power of the various tissues is greater than in adults. Injuries, if they be not too deep or too extensive, are more easily repaired, and generally more perfectly. A broken limb, if properly treated, is sound and well in half the time necessary for the cure of a like injury in an adult; and the rapidity with which young patients recover after severe attacks of acute disease, is proverbial.

As a rule, it may be stated that the younger the subject, the higher is the reparative power. During foetal life, which is only one step anterior to infancy, the capability of regeneration of parts almost reminds one of the remarkable capability for repairing injuries observed in some of the invertebrated animals. As, in a crab, the claw will be reproduced which has been torn off by some accident; so in the foetus before birth, attempts are repeatedly made to reproduce a limb which has been severed from the body by some accident or disease. Instances of what have been denominated intrauterine amputation have been put on record, where, in the neighbourhood of the cicatrix left as the result of spontaneous amputation *in utero*, minute fingers, each provided with a well formed nail, were found engrafted on the stump, giving undoubted evidence of an imperfect attempt to reproduce the limb which had been lost, and thus repair the injury.

But because the nutritive function is so active and the vegetative function so remarkable in the young, the progress of disease, when once commenced, is much more rapid than in those who have reached the age of maturity. Let once the nutrition in any part or organ deviate from a healthy to a morbid process, and, because it goes on speedily for a wholesome purpose in health, it advances rapidly towards death in disease. It is well established that inflammatory affections are more frequent in children than adults; that they are more generally acute in character, and run through their various stages more speedily. Medical treatment, to avail anything, must keep pace with its progress, and be prompt and active. If you wish to be of essential service to your little patient, you cannot, as a rule, put off your visits from one day to another, as is commonly done in the case of adults. Your visits must be frequent, in order that you may be able to observe the rapid and varying changes which take place in the pro-

gress of the disease, and suitably provide for the various contingencies which succeed each other.

A case of croup, for example, may run through its various phases very rapidly. In the course of a few hours, active inflammation may produce so thick and extensive an exudation in the trachea that air cannot be admitted to the lungs, and the child dies of apnoea. The disease, therefore, to be combated successfully, must be met at the outset, and attacked vigorously, but yet prudently; and you may be much more hopeful of recovery if you recognise the true character of the disease early, and are prepared to meet it by proper remedies.

Further, it deserves to be borne in mind that the effects of disease in young children are not limited to the period during which the attack is present, but often have a remote effect throughout the life of the individual. The injury it inflicts on the young and tender frame is necessarily deep, because when acute disease is present the action is intense and the progress rapid; so that, notwithstanding the great power of reparation possessed by the tissues, the ravages are so wide-spread and the disorganisation so great that permanent injury is inflicted, and some organ important in the economy is crippled in its function during the rest of the life of the patient. But this is not all; perhaps the organ so crippled in function is one which, under natural conditions, exerts a controlling and co-ordinating influence over nutrition in other parts of the body, and then the evil is not limited to the organ immediately implicated, but its effects are apparent in the impaired nutrition of the rest of the body. These remarks apply to some acute diseases of the nervous system in young children, and particularly to acute hydrocephalus. Recoveries from this disease are not frequent; but if life is preserved, it probably results that the rest of the body is injured in its development, and perhaps the mind itself is permanently weakened.

Young children are more susceptible to external influences than those of mature years. They have less power of resistance to cold and other depressing agencies than older people, and suffer far more seriously from bad hygienic arrangements and deficient or improper food. These are peculiarities in the infantile constitution which are not sufficiently impressed on the minds of parents, whether they be poor or belong to the better educated classes; and they are apt to be less regarded by medical men than they deserve to be. The fashion of dressing children in this variable climate, and especially in cold weather, so that the extremities and a considerable portion of the body are exposed, from an erroneous idea that it is both comely and wholesome, is perilous in the extreme. The doctrine of "hardening" children, as it is called, by exposure to cold, is opposed both to the dictates of science and of common sense, and, put in practice, is a fertile source of disease. It seems absurd, indeed, that when the lowness of the temperature obliges parents to cover their bodies and lower limbs with warmer clothing, no such precautions should be thought necessary for their young offspring, whose bodies are much less able to resist a low temperature, and to whom warmth is one of the requisites for the preservation of health! I am often tempted to suggest to mothers who clothe their children in this injudicious way, that they should try a like exposure of their

own bodies to the inclemencies of the weather. Without doubt, the deleterious effects on the health of the parents would be less than on the health of their children.

Again, to keep up the process of healthy nutrition in those of tender years, a suitable diet is imperatively required; and the younger the child, the more important is it that its diet should be carefully attended to. My impression is that the ailments of two-thirds of the infants under a year old, who are brought for advice to the out-patients' room of the hospital, are induced by improper feeding; and a large proportion of disease in those who are older arises from the same cause.

It is a wide-spread and deep-rooted fallacy that the various forms of farinaceous food are more nutritious and digestible for infants than milk diet. If, from any cause, a mother is unable to wet-nurse her own child, instead of supplying it with the best substitute—the milk of the cow or some other animal, which contains all the necessary elements for nutrition, in a form which approximates nearest to its natural food—the poor child is fed on biscuits moistened with water, on arrow-root, sago, or some other of the farinaceous series. The result is that atrophy in all the tissues of the body commences, enlargement of the mesenteric and lymphatic glands accompanies it, and at length diarrhoea, or some acute visceral disease, carries off the wretched little starveling.

Proper ventilation and exposure to air and light are also equally necessary to young children as to plants, and without these they wither and die.

I dwell on these details, because every minute particular which has any bearing or influence on the health of young children well deserves the attention of the medical man; and it is quite certain that he who is not familiar with the conditions for health in any class of patients is not competent to prescribe for their diseases. It is one of the triumphs of medical science that during late years infantile mortality has been gradually diminished; but you will understand much remains yet to be achieved in this direction, when I tell you that even in our day it is computed, that *one child out of every five born dies within the first year, and one in three before the completion of the fifth year*. As the intelligence of parents increases, and they become better acquainted with the necessary conditions for preserving the health of their offspring, there can be little doubt that infantile mortality will still further lessen; and it is the duty of every conscientious medical man to do what he can to diminish this preventable mortality.

Having relation to the physiological peculiarities I have pointed out, a special pathology runs through the whole range of infantile diseases. Acute inflammatory affections of the organs which subserve the functions of innervation, respiration, and digestion, and chronic diseases of the lymphatic glands and skin, are proportionally very frequent. Acute inflammation of the brain, or acute hydrocephalus, is almost exclusively a disease of infancy, a fact which finds its explanation in the rapid development which this organ undergoes in the early years of life, compared with what takes place subsequently. Inflammatory affections of the lungs are even more frequent and fatal than inflammatory diseases of the brain; and several reasons may be adduced to ac-

count for this. In the first place, the number of respirations in a young child is almost three to one as frequent as in the adult; while the pulsations of the heart, with which the process of respiration is so closely associated, count commonly above 100 in the minute in the child, and not more than 75 or 80 in the adult. Added to these is the extreme sensitiveness of the mucous membrane lining the air-passages, which is constantly exposed to the effects of external agencies; and, lastly, the peculiar sympathy which exists between the respiratory mucous membrane and the mucous membrane of the alimentary canal, the latter being seldom deranged without some secondary implication of the former.

The local peculiarities which predispose the alimentary canal to inflammatory attacks are probably to be found in the delicate organisation of its mucous membrane, the constant liability which it suffers to be injured by the presence of improper food, and its active sympathy with other parts, particularly the skin.

The lymphatic and mesenteric glands in children, because they are most actively employed in carrying on the function of absorption and nutrition, are readily affected by disease; and, if nutrition is impaired, they become the seat of tubercular deposit. The skin, also, because its function is exalted while its structure is delicate, more readily takes on morbid processes.

Looking still further into the peculiarities of infantile pathology, we learn that there are certain diseases belonging to the first years of life, and rarely or never occurring in adult age. Hooping-cough and measles, with other exanthemata, are more particularly diseases of childhood, because the *materies morbi* of these affections is very subtle, and few individuals live through the period of infancy without being exposed to their infection; but there are diseases which are associated only with the period of development, and therefore essentially belonging to children. Rickets, for instance, is a morbid condition of the bones arising from a deficiency of the earthy constituents during growth, and which results in bending and deformity. The fact that this affection only occurs during early life is of great importance in an obstetric point of view. The midwifery practitioner, attending a patient who has been deformed by rickets, can confidently rely on no increase in the contraction of the pelvis taking place between one delivery and another. But the case is quite otherwise if osseous deformity is the result of mollities ossium. This is a disease of the bones belonging to adult age, and pelvic contraction may increase progressively between each pregnancy.

To some diseases which are common enough in advanced life, young children are in a measure or altogether exempt. Acute rheumatism is not frequent in infants, and gout is very rare before the period of puberty. Carcinoma, granular degeneration of the kidney, and atheromatous disease of the cardiac valves and arteries, are also affections not likely to be met with, as they belong essentially to adult or declining life.

One of the most remarkable features, however, in infantile pathology, is the extensive and deep sympathy which exists between the several organs of the body. The nervous connexion between the various parts is so intimate, and the conducting cords are so sensitive, that disease can scarcely be present

in any one organ without involving others, near and distant, in the disarrangement. Often, the sympathetic disturbance of some organ not implicated in the original disorder is so great that it entirely masks the true malady, and, without great care, may entirely mislead the practitioner. For example, one of the earliest symptoms which commonly attends the invasion of acute hydrocephalus is an irritability of the stomach that prevents its retaining the usual ingesta. If you overlook the significance of this sickness in such a case, and prescribe merely for the stomachic derangement, you fall into a grievous error, and lose any chance you may have of combating the cerebral disease before it has made such progress that treatment is useless.

During the periods of the first and second dentition in children, there is a much greater proclivity to the development of disease than at other times; and it is then we see so well marked that curious morbid sympathy between the various organs to which I have just alluded. It is evident that, at these critical periods of infancy, some notable change is taking place in the entire system; a leap, so to speak, is being made in physiological development; and the nervous system, for the time being, is super-sensitive, resenting slight injuries, and causing sources of irritation which generally would produce little disturbance, to give rise to grave maladies. Convulsions, and other forms of nervous disease, are especially frequent about the periods of dentition; and children of excitable temperament and delicate organisation, even if they escape graver affections, seldom pass over these critical periods without disturbance of a less serious character.

The *diagnosis* of the diseases of children is attended by many difficulties, and it requires great care and perseverance to overcome them. The infant cannot tell you where its pain is; or, if it is old enough to speak, it knows not how to define its suffering. Because you are a stranger, it regards you probably with suspicion, and shrinks from anything you may attempt in the way of physical examination. If you take its hand, it draws it suddenly away; if you endeavour to auscultate its chest or look at its tongue, it struggles to get free; or, rendered peevish by its illness, it bursts into such an uncontrollable fit of crying as effectually frustrates all your efforts to ascertain its true condition. Investigating children's diseases in the same way as you do those of adults, you will be entirely at fault; for the usual modes of diagnosis cannot be adopted here. Dr. West has remarked that, to the uninitiated practitioner, the study of children's diseases may be compared to learning a new language, or to entering a country where the manners and customs are entirely different to any seen before. I believe, nevertheless, that the difficulties besetting the investigation of disease in children are much exaggerated in the minds of students, and are readily to be overcome by the exercise of discretion, earnestness, and gentleness. The student must be content to learn first the rudiments of that language in which children express their ease or pain, satisfaction or sorrow; but when these are once mastered, every sign has its meaning, and every movement its significance. The language cannot be acquired all at once, but step by step, as everything else is learned; and if to diligence be added a genuine interest and love for children, the task will be all the

easier. Little patients intuitively discover who are their friends, and soon yield themselves in passive obedience.

In seeing a young child in the ward or outpatient room of the hospital, do not at once alarm your little patient by precipitate examination, but take time to watch the colour and expression of its countenance, its respiration, and general physical condition, while you talk with its mother, and its attention is directed away from you. You will thus achieve the first steps in your diagnosis. Then, having some object at hand, as a bunch of keys or a paper-cutter, you make friends with and amuse it, while you ascertain the condition of the skin, the frequency of the pulse, and the state of the abdomen or fontanelles, as the case may be. It is well to do all this when the child is quiet; and therefore you avoid putting your finger into its mouth, or listening to its chest, until all other information is gained, as these can seldom be attempted without some resistance. Having completed your examination, you have then only to put the proper construction on the facts you have elicited.

For further information on these points, I would recommend you all to read the first lecture in Dr. West's admirable book on the *Diseases of Infancy and Childhood*. There you will learn, as far as a book can teach you, how to encounter the various difficulties in investigating the maladies of young children; and there you will find directions for diagnosis in greater detail, and given in all respects far better than I can hope to give them to you.

Original Communications.

THE STRUCTURE AND GROWTH OF TISSUES:

A SHORT ACCOUNT OF THE CONCLUSIONS DERIVED FROM SOME NEW OBSERVATIONS WITH THE HIGHEST MAGNIFYING POWERS.

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II.—OF THE CELL THEORY. PROFESSOR HUXLEY'S VIEWS. CELL-WALL. CELL-CONTENTS. NUCLEI AND NUCLEOLI. GERMINAL MATTER. FORMED MATERIAL. OF THE POWERS OF GERMINAL MATTER.

WE must not look upon the component parts of tissues as fixed and stationary structures, which may exert an influence upon certain substances coming into contact with them, without themselves undergoing change; neither can the arrangement of these component parts be compared to that of bricks in a wall or a tessellated pavement; nor does their formation at all resemble the process of crystallisation or the precipitation of inorganic particles from a fluid in which they had been previously dissolved. The *germinal matter* of each component part may be regarded as consisting of particles, from each one of which endless growth may proceed as from centres, and the *formed material* external to it, as possessing peculiarities depending upon the powers of the particles of germinal matter of which it consisted at an earlier period of its existence, but no longer capable of multi-

plication—no longer able to animate lifeless particles. Every particle, then, of every elementary part, like every tissue and organ composed of these, and every living organism, passes through certain phases of existence in a definite order, moves in a definite direction, retains for a time certain peculiar properties, is at last resolved into substances of a simpler composition, and is removed to give place to particles which are ready to succeed it. The peculiar powers which it has manifested during its existence were inherited from its predecessors, which possessed similar powers; and these will be transmitted to those which succeed it.

The Cell Theory. Professor Huxley's Views. The general view entertained on this matter is the one which was brought forward by Schleiden and Schwann, who supposed that little bodies (nuclei) made their appearance in a blastema, and that an investment (cell-wall) was afterwards formed around them. Through this wall fluids passed in and out, and their composition and characters were modified while they formed part of the contents of the cell. Each cell was regarded as a centre to organisation.

On the other hand, Professor Huxley was led to adopt, with some important modifications, Wolff's view, which supposed that tissues exist originally as a transparent viscous mass, in which cavities are developed. These become the cells and vessels, and their walls may be thickened by deposits from the solidifiable nutritive fluid. All within each space Professor Huxley terms the *endoplast*; while the walls of the spaces and intervening material are called *periplasts* or *periplastic substance*. In the latter substance, he considers, the most important changes take place. In this substance, fibrillation and vacuolation occur; and, "by its differentiation, every variety of tissue is produced". This differentiation is the result "of intimate molecular changes occurring in its substance, which take place under the guidance of the *vis essentialis*, or, to use a strictly positive phrase, occur in a definite order, we know not why." (*Med.-Chir. Review*, vol. xii, 1853.)

The view to which I have been led is essentially different from either of these. So far from the cell-wall being built up around the nucleus, I maintain that it results from changes in, and the coalescence of, the oldest particles of a mass of germinal matter (nucleus). New nuclei may make their appearance in this germinal matter; and, at a later period, these may become active, and new ones may appear within them; and so on infinitely, if the mass be placed under circumstances favourable to its growth.

The *periplast* of Professor Huxley corresponds to my *formed material*—that is, to the cell-wall of the vegetable cell, to the matrix of cartilage, to the fibrillated structure of fibrous tissue, etc. So far from attributing to this structure active properties, I hold that matter, when it assumes this form, no longer possesses formative power, or power of growth or reproduction. It may become infiltrated with various substances, thickened by deposits, or altered by the action of various agents; but it is no longer capable of causing or producing change by its own powers. I do not regard this material (cell-wall, intercellular substance, periplast) as a product of secretion of the contents of the cell, but I believe it results from the alterations taking place in the particles while they possessed active vital properties, by virtue of a power which they derived from their predecessors, in obedience to which they always move in a direction from centre to circumference.

It would be almost impossible, without going too much into detail, to indicate in various living structures the parts which exactly correspond to the names which have been usually employed in the description of those structures which are generally appealed to for examples. I propose, therefore, only to express my views with reference to these parts in general terms. Their exact