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THE PEDIATRICIAN AND THE SECTION ON DISEASES OF CHILDREN *

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We stand today at the threshold of a new era of medical knowledge. But a few years have passed since anatomy was the only branch of medicine which was based on accurate observation and proved fact; physiology and histology were studied almost entirely from a hypothetic standpoint; obstetrics was practiced even among the well-to-do largely by ignorant "grannies," with disastrous results to both mother and child. Minor surgery was attempted early, but, because of the ignorance of the causes of sepsis, the results were often as fatal as the condition for which the operation was performed; while therapeutics was practiced with an empiricism comparable with the fetish of the aboriginal tribal medicine man. All of this was primitive indeed, and yet what is rapidly being recognized as the most important branch of medicine, pediatrics, was practically unknown. A sick child was the *bête noire* of the physician, who either guessed at the cause of symptoms and consequently treated them in a haphazard fashion or promptly turned the unfortunate patient over to the tender mercies of a grandmother, who was supposed to know much about the ailments of children because she had had eight or ten of her own, despite the fact that only one or two had survived infancy.

During this period, the teaching of pediatrics was almost nil, mere mention being made of children and their ailments during the course of lectures on obstetrics or general medicine. This was the case merely because little or no study had been given to the infant physiology and pathology; consequently, since nothing was known, nothing could be taught. But times are fortunately changing. Our knowledge of physiology, while far from what is to be desired, is based on careful experiment conducted scientifically in endowed laboratories. The result of such study is far reaching and revolutionizing. Histology has won a place at the head of the exact sciences and surgery has reached such a degree of efficiency that he who practices it appears almost a wizard. The practice of obstetrics has not advanced so notably, so far as technic is concerned, but through the application of the principles of asepsis, the life and health of both patients are much better safeguarded. Therapeutics has passed from the ignorant guesswork of the alchemist, through

the consequent period of skepticism, to a definite and logical position, largely through the application of rational laws of biochemistry and the knowledge of the interaction of the internal secretions. In this general transmutation of knowledge the child has not been lost sight of. Pediatrics has evolved into a study of seriousness, dignity and importance. The public as well as the profession is awakening to the hitherto undreamed of importance of its careful study, and I think I can state without a single challenge that the study of child life is the most important of the allied medical branches.

It is a far call from the "old woman" of a generation ago to the pediatrician of today. Of necessity he must be an all-round specialist, so far as his knowledge goes, limiting his efforts merely by the age of the patient. In the broadest sense, what must be the equipment of the pediatrician? Primarily, as all medical men, he should be possessed of a liberal general education. He must have a medical education in keeping with the highest standards of today.

The attendants in the best general hospitals are usually men of the highest culture, and from them must come most of the student's inspiration. The training of such a hospital is all but indispensable, while the special knowledge gained by an internship in a children's hospital is a *sine qua non*. Thus alone can he acquire the necessary acquaintance with the principles and problems of general medicine. He should also possess a surgical training which will acquaint him with those diseases usually classed as "surgical," their diagnosis and the indications for operation, and since biology and biochemistry are fundamentals in any branch of medicine, the microscope must be his constant companion. Through an intimate knowledge of infectious diseases alone may he become the sanitarian which is required, for pediatrics has well been called the "national preventive medicine."

These in brief must constitute his equipment from the standpoint of technical education—but he must not stop there. He must be a leader of thought in his community, not confining this leadership to the members of his profession, but, going further, must establish his position "speaking as one having authority" on all matters pertaining to child welfare, for the practice of pediatrics goes further than the mere diagnosing and treatment of diseased conditions, it must deal more and more with the prevention of disease as well. To this end the influence of the pediatrician should be felt in the boards of education, the council chamber and in all sociologic endeavor. Do I hint that the pediatrician must be a politician? Yes and no. Not the politician who seeks leadership

* Chairman's address, read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association; San Francisco, June, 1915.

for personal gain, but rather that leadership which "vaunteth not itself," seeks no preferment, nor accepts pecuniary reward. That leadership which, through self-sacrifice, backed by the requisite knowledge, makes him so respected and trusted that his views may be accepted and the principles he advocates applied. Nowhere are such men so needed as on boards of education. Our school buildings are frequently insanitary in the extreme, ventilation and lighting are both inadequate, while the mind of the average child, for whom the public school systems of necessity exist, is frequently taxed to a dangerous degree. The health of a community depends on the health of its children. As the health—physical, mental and moral—of the schoolchild is safeguarded, so the health of the community is conserved.

In the council chamber? Most emphatically, *yes*. One has but to glance casually over the ordinances of any community to see their utter futility from a health standpoint. Fortunately, the modern tendency is to permit the rules of the board of health to be law. But these rules do not generally include the direction of building and construction. This is usually unnecessary for the better class of dwellings, but only a short trip through the tenement district of any city will disclose insanitary conditions which, if realized by the public at large, would cause a panic. Are we our brother's keeper? We are. But if we have not an altruistic spirit, if we are impelled only by the baser motive, self-protection, we have but to remember that from the homes of the poor come our servants who prepare our food and nurse our children. Does not the pediatrician then owe his influence in stamping out tuberculosis and moral disease in a community to the children of both rich and poor? What a power one man with knowledge can be, on an official board, in improving insanitary housing conditions.

From the settlement home, one of the expressions of that newer religion, sociology, have come some of the most valuable suggestions to our profession. The "follow-up" work done by district visiting nurses and trained social workers has done more to ferret out the reasons for the spread of disease and to stamp out certain diseases than almost any other single agency; and to none has this been of more benefit than to the child; hence, the need of the knowledge and counsel of the trained pediatrician on the advisory boards of such institutions. A thorough knowledge of sociology is perhaps of more importance to the study of pediatrics than almost any other branch of information.

But the pediatrician must go even further still. He must acquaint himself with the more recent investigations, particularly in the field of heredity. Many of these studies are based as yet on hypothesis alone and lack tangible proof, but it must be remembered that most great scientific truths have been conceived in the minds of great thinkers as hypotheses long before they became proved fact.

Many diseases and conditions which were formerly considered directly inherited have been proved to be acquired during the prenatal state, and although they have been transmitted directly from mother to offspring while in utero, they are none the less acquired and not inherited. Therefore a sharp distinction must be made between inheritance and the influence of prenatal environment. We are aided in making this distinction by certain biologic investigation which has suggested if not proved that no disease is transmitted

from mother to child unless there be a solution of continuity in the chorionic villi; and by the epoch-making discoveries of Gregor Mendel in fixing definite laws of heredity.

The transmission of physical characteristics and moral traits from generation to generation has been understood only since the introduction of the theory of "cell determiners" which is best explained through the hypothesis of "intracellular pangenesis" of Hugo DeVries, while certain other phenomena of character and temperament can be explained satisfactorily only by the "mechanistic theory of evolution." To quote Crile on this subject: "Man is a unified mechanism responding in every part to the adequate stimuli given it from without by the environment of the present and from within by the environment of the past, the record of which is stored in part in cells throughout the mechanism but especially in its central battery—the brain." These latter apply very forcibly to mental conditions; that is, normal, supernormal and subnormal, but especially the last, for we recognize that a child who is even slightly subnormal mentally is always less resistant to disease as well as unable to acquire knowledge. Thus it will be seen that the pediatrician must also be an alienist. This is particularly necessary at present, when there appears to be an ever increasing number of these cases coming under our notice.

Only through constant study and frequent postgraduate work can the pediatrician keep fully abreast of the best thought. Those of us who live distant from the large centers of teaching must make frequent visits to these centers and receive instruction from those possessing the facilities for scientific work. Shorter courses of postgraduate work, however, may well be taken in attendance on local, state or national societies, all of which should be considered in this light, and for the pediatrician the Section on Diseases of Children should be of great benefit. What, then, are the opportunities and duty of this section?

This section should be the clearing house for this country of the best work done each year in pediatrics. Affiliated with it are all of the leading pediatricians of America and most of those general practitioners who are particularly interested in disease as manifested during childhood. The papers read before this section should constitute the best course of lectures obtainable and must be so selected that an ever increasing number should feel impelled to attend the sections even at the cost of personal sacrifice. To further this aim a symposium might be arranged for each session led by some invited guest of such reputation that a good attendance may be assured. The utterances of the section as a whole should eventually become authoritative to the general public as well as the profession. The best papers should be selected for pamphlet distribution and even to a limited extent be given publicity through the daily press. To accomplish anything in this direction there must be established a careful censorship of all material so that nothing but sound advice and proved fact would be disseminated.

A committee from this body could well cooperate with organizations such as the Child Welfare Bureau of the federal government, the American Association for the Study and Prevention of Infant Mortality, the U. S. Public Health Service and state boards of health in studying the causes of infant mortality and

aid in their prevention.¹ Perhaps the American Medical Association might even see fit to establish a council on infant mortality and morbidity analogous to the other councils which have done such excellent work in their several fields of endeavor. Such a council could issue bulletins advocating certain procedures and broad principles and condemning unwarranted practices; or direct the agencies for child welfare in a manner which is not only suggestive but even authoritative. Thus could its influence be felt in a forceful and useful manner.

One of the greatest duties of this section is the development of the many efficient but little-known men throughout the country into writers of papers and educators of the public. To this end every effort should be put forth to insure the attendance on the sessions of the section of the 1,500 or more who, according to the information in the American Medical Association Directory, either practice pediatrics exclusively or are particularly interested in this branch, instead of the small average of 150 as at present. Our very efficient secretary has made an excellent start this year in sending out an invitation to a thousand to participate in this session and I think this is a start in the right direction which should be continued year by year.

Have I placed an ideal for the pediatrician and this section of this association too high? I think not. We follow a noble calling in the profession of medicine; we study particularly the most important part of the race; we are striving through such study to make the race better physically and to place its members in a position where they can be important members of the human family and not weaklings. Any body of men which has these for its aims cannot have too high an ideal of equipment and service.

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STARCH DIGESTION IN CHILDREN

WITH SOME CLINICAL OBSERVATIONS *

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During the past few years many articles have appeared in the literature concerning the ability of both the infant and child to digest starch. A great deal has been added to our knowledge in regard to starch digestion in infants under a year of age, but few have dealt with the subject in children past infancy. It is our object to review the literature briefly and bring to notice some clinical observations we have made in the study of cases of the latter type.

Of the three different foodstuffs, namely, protein, fat and carbohydrates, which are ingested for the supply of energy, heat and tissue building, the carbohydrates will occupy by far the largest bulk, and if the various kinds of food classified under carbohydrates be compared it is found further that the greater

percentage is ingested in a form which necessitates greater chemical action in its preparation for absorption and assimilation than is required by any of the other members of this group. This form constitutes the starches, whose chemical analysis classifies them as polysaccharids and whose properties are very different from those of the simpler members of this large group.

In order that this more complex form of raw material may be utilized in the body it is necessary that it, like all other forms of food, undergo a change, a breaking down into simpler bodies. This alteration is brought about by the hydrolytic action of certain ferments, which are present in the digestive juices found in the course of the alimentary canal. Considering starch only, we find that by the action of the salivary and pancreatic juices, this substance is converted into dextrin and finally into maltose by the ferment maltase.

In working with these ferments it has been found that they are affected by different conditions; thus the velocity is increased by heat up to a certain point, at which a destruction of the ferment will occur. The introduction of a foreign body will in many cases cause a permanent or transitory inactivation of the ferment.

The digestion of starch commences in the mouth by the action on it of saliva, which contains the two ferments amylase and maltase. The former of these ferments acts on starch, converting it through the various stages of dextrans into maltose.

By the action, then, of maltase, maltose is converted into the more diffusible carbohydrate, glucose. All starches are found to be susceptible to the action of amylase although raw starches are very slowly hydrolyzed.

As human saliva is rich in ferments the large bulk of food entering the mouth should be properly and thoroughly masticated. Thus is seen the importance of teaching the child the advisability of this procedure.

It is important to consider here what action a foreign body has in inhibiting the action of the salivary ferments; thus far little work has been done to ascertain the inhibitory effect which stomatitis, infected tonsils and carious teeth produce.

By far the greater portion of amylaceous foods are attacked after leaving the stomach by the ferments of the pancreatic juice and the succus entericus, and it is interesting to note that if the ferments were entirely absent from the intestinal canal many of the carbohydrates would be capable of being absorbed from the intestines through the action of the cells of the mucosa in converting various sugars to glucose.

The action of the ferments on the carbohydrate continues ordinarily down the alimentary canal so long as any unchanged portion remains; finally the acidity present in the lower bowel becomes sufficient to inhibit or destroy the activating agent. Any portion still remaining unchanged is very liable to fermentation from bacterial action.

The question of the ability of the infant and newborn babe to digest starch has occupied the attention of physiologists and physicians for many years. Forty-four years ago Schiffer, and forty years ago Jacobi, demonstrated that the saliva of the new-born was capable of converting a small quantity of starch to sugar. In 1908 Friedlander in Cincinnati carried on a series of bead experiments in infants of all ages to ascertain the digestibility of various foodstuffs. About this time

1. The Virginia State Board of Health sends a specially prepared bulletin on the care of infants to the mother of every child whose birth certificate is filed in that office.

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* From the Department of Pediatrics, Leland Stanford Jr. University, School of Medicine.