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## THE EDUCATION OF THE PHYSICIAN AND POSTGRADUATE STUDY IN THE HYGIENE AND DISEASES OF THE NURSING INFANT\*

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The history of the study of the diseases of infancy and childhood in America is intertwined with the development of all branches of medicine into special studies. As in all countries, the undergraduate study and postgraduate training of the American physician in the diseases of infancy and childhood has at first been slow and gradual. At the present time, we can say that the pursuit of knowledge in the hygiene and diseases of infancy receives its full quota of attention and acknowledged importance in this country. It is only within the past thirty years that pediatrics has become a recognized department of study in our universities and colleges. There are good reasons for this, and one of the most important is that in other lands this study of children was also of tardy recognition. In this new country where every foreign influence receives its quick response, pediatrics was not recognized as a distinct department of internal medicine until the late seventies. At this time and before, the various medical schools and universities combined the study of diseases of children with that of obstetrics and diseases of women. Even in the dispensaries and clinics the two departments, that of the diseases of women and that of children's diseases, were combined. As late as in the eighties, I knew of a reorganized dispensary which combined the treatment of infants and children with that of women. As Osler says in a notable address before the American Pediatric Society: "The foundation of accurate knowledge in internal medicine has been the study of the problems of the pathologic laboratory." Thus, from the empirical clinical field we turn for a good reason—for the development of pediatrics in America—to the study of pathology. And it was certainly those whose knowledge of pathology was well grounded who first broke the road to the modern trend of the study of the diseases of infancy and childhood in America. Before the seventies, the universities and medical colleges had no independent chairs of pediatrics.

In 1876, the reorganized faculty of the College of Physicians and Surgeons in New York, an offshoot of Columbia University, recognized the importance of the intimate study of the diseases of infancy and childhood as a branch of special pathology. The incumbent of

the chair of pediatrics at this time was A. Jacobi, and the reorganized faculty was under the leadership of Alonzo Clark, who was one of the first to bring to America the light of modern pathology as reflected from the French schools. Jacobi, in all his teachings, it may be observed, rather leaned to the German school of pathologic anatomy and was a student of the work of the immortal Virchow and an expounder of his doctrine. To this source I lay the first development of pediatrics in America. Before this time, the influence of the English and French schools was predominant, and these were mostly clinical. With the development of pathology and pathologic anatomy in America, through the leadership of Delafield, a pupil of von Recklinghausen and Rindfleisch, Prudden and Welch, pupils of Virchow and Cohnheim, and with the special direction given to such studies by teachers such as Jacobi, we may date the development of pediatrics as a separate special pathology in America. The charm of the earlier teachings of Welch and Prudden led many young men abroad to seek the treasures, part of which were taught to them in the lectures of the teachers I have named. Germany and its many schools were the Mecca of these young men, and to-day the influence of the German school of pediatrics is predominant in America and has completely displaced the English and French influence as a leading factor. We have only to turn to the earlier text-books written by American authors on diseases of infancy and childhood, those of Meigs, Pepper, Smith and Keating, and compare them with later works of Holt, Rotch and Koplik to confirm these views. If the pathology of infancy and childhood in gross was the first great branch which has been responsible for the advance of pediatrics in America, the study of the various infections were of next importance, and with the advent of bacteriology the diseases of infancy and childhood received another impetus from the teachings of the parent country.

With the development of bacteriology, the studies of Booker, Jackson, Prudden and others were directed along pediatric lines following closely the impetus received from Germany in the work of Koch, Loeffler, Gaffky, Baumgarten, Escherich and Heubner. The younger generation of physicians here, charmed with the teachings and work of the leaders at home, brought also their quota of study both at home and abroad. I need not point out here how productive a field for both pathologic and bacteriologic study the subject of the diseases of infancy and childhood has always been; and American workers have been quick to recognize the fact that in the child is reflected the fate of the adult. The study of prophylactic hygiene of infancy and childhood is of only recent date. I recollect the day when diphtheria, as it was also abroad, was treated in the open wards in full ignorance of the facts connected with

\* A report and address read by invitation before the Third International Congress for Child Welfare, Berlin, Sept. 11-15, 1911.

its infectiousness and communicability. To-day we see in America the full recognition of the importance of the hygiene of the newly born and the first months of life. We fully recognize our debt to teachers such as Koch, Escherich, Runge and Epstein in shedding light on these problems. I think that to-day the feeling of uncertainty in the presence of infection of the newly born has to a great extent been relieved, and the importance of such infections is fully recognized.

As in every country, the active practicing physician is found to forget the main principles of his training, and we find in private practice much more serious lapses against the fundamental truths of hygiene and infection than in institutional work. The cause of this can be easily traced. To-day, even in the medical schools, sufficient stress is not laid on the study of the hygiene of infancy and childhood, the prophylactic side as compared to the clinical study.

The clinical study of diseases of infancy and childhood has made great strides in the last two decades in America; the charm of these practical clinical studies has gripped the no less important fields of hygiene and prophylaxis. Effort has been mostly expended on the part of making the medical student a good diagnostician and very little time has been given to the study of how, by hygiene and prophylaxis, the physician may teach the mother to avoid disease. I may say, in my daily work I am more and more impressed by the indifference which some physicians show to the rights of mothers to know and to be taught the simplest truths for the safety of the children and themselves. Among the poor this is especially evident. Outside of the clinics the private physician seems to think that with a few directions as to the preparation of an artificial food, his duty is ended. The general welfare of the child, the simple teachings as to its care, the care of the mouth, the body, the eyes, the genitals, all are passed by, perhaps on account of the stress of other duties.

The physician does himself as well as his patient injustice by the indifference hinted above; the result is that the laity have been quick to respond to the impetus of specialism, even in pediatric work, much to the harm and chagrin of the general physician. The remedy is still with the physician, and I am certain that he will also be quick to respond to this demand for extraordinary work on his part. The general activity during the past two decades in America in the welfare of infants and children was put on a secure basis in 1896, in the establishment of the American Pediatric Society. The union of the leading minds working in the same field has resulted in the establishment of many smaller societies for the study of diseases of children, so that in most states of America, societies for the study of diseases of children have been organized. The benefit to the general practitioner and through him to the laity has been inestimable. The laity have also taken an extraordinary interest in the study and welfare of infants and children, in the organization of societies for the study of infant mortality and the reduction of this mortality. The culmination of these activities among the laity has been seen during the early part of this year, in the great exhibits of the child welfare activities held in New York and Chicago.

I have said that pathologic studies first held their own, relegating hygiene and prophylaxis to a minor rôle. It seems to me that there is a distinct reason, not yet mentioned, for this. In European countries the government takes an intimate interest in the new-born, its fate and prosperity as also of the growing infant. In

America this interest is the care of private individuals, and for this reason the whole realm of child welfare and infant mortality has been of late cultivation, but, though late, it is none the less active and sincere and now in the full era of its development. One of the first activities in the direction of child welfare, hygiene and prophylaxis in our country has been the institution of milk stations, or the *gouttes de lait*. The importance of these institutions in large cities, especially in the United States where the cities are congested with the poor from all quarters of the globe, the hopelessness of treating and caring for infants in the old way by simply prescribing for the child and sending the mother on her way, was first made evident to me on my return from studies in Germany. In connection with the largest pediatric dispensary probably in America, in the summer of 1889,<sup>1</sup> I established the first *gouttes de lait* with consultations. In this I not only instructed the mothers in feeding the children, but also those mothers who had some breast-milk were encouraged by all means to nurse their infants in addition to giving artificial food. The infants were weighed and the mothers thus encouraged in the progress of their little ones. This so-called milk depot was the first in America. Modeled on its plans, later on the Strauss depots were established, but the latter lacked the consultation feature. To-day, not only does the original institution of the *gouttes de lait* exist, but its usefulness has been fully recognized and New York has probably more milk depots in existence, also with consultations, than any other city, not only in America, but Europe. In 1911, in that city and its environs, there were sixty or more such milk stations under private and municipal control.

Another development of child welfare has been the school inspection instituted by the board of health. This also is an emanation from the teachings of the American Pediatric Society. In 1890, Cailié first suggested that daily school inspection of children would tend to reduce the liability of infection, and the New York Board of Health in 1897, as also the Massachusetts Board of Health (1894), and that of Philadelphia (1898) quickly saw the utility of such work. To-day the daily inspection of school children is a well-developed department under the auspices of the boards of health in the various large cities of the country. This system of school inspection cannot be overestimated as to its importance. The children who show need of care and medical guidance are referred back to the family physician; there is an endless educational chain established; not only infectious diseases, but the hygiene of the nose and throat and the management of defective vision and hearing come under the supervision of the health authorities. So important has this department of board of health activity become that in New York a department of child hygiene and welfare has been established by the board of health. This department has at its command nurses and physicians whose duty it is to educate not only the laity, but incidentally the physicians.

The division on child hygiene of the New York Board of Health takes cognizance and has money appropriation to control the practice of midwives, to supervise foundlings, to supervise day nurseries and institutions for the care of dependent children, to care for babies and reduce infant mortality, to inspect school children medically, and to issue employment certificates. Nor are these empty activities; the work of the health board and

1. New York Med. Jour., Jan. 31, 1891.

especially this department has, though only recently organized, begun to attract wide attention. One of the most notable activities of the department of health is the supervision of the milk-supply and the establishment of some fifteen milk depots, *gouttes de lait*, where not only pure and good milk is furnished at a nominal price, but where mothers are instructed in the care of infants and the preparation of their food.

In 1910, some 250,000 pupils were examined in the public schools, an earnest of the enormous amount of work done and to be done in this melting-pot of 4,000,000 inhabitants. With this, there has been also free dental treatment following inspection, as also trachoma treatment. It would carry me away from my theme to go further into detail with regard to the work of what promises to be probably the most modern handling of the problems of child hygiene and prevention of mortality.

I will not enter into all the activities tending to child welfare which have sprung up of late years. I need only refer to the Russell Sage Foundation, which has been engaged in the study of child welfare and infant mortality in America, and in New York especially, and the far-reaching work of the Society for Improving the Condition of the Poor. In all this activity, where do we find the general practicing physician? I am in a position to know that the practitioner appreciates the helping hand which is given to him by these societies in his daily work among his patients: the district nursing and teaching, the furnishing of food for the infant, the education of the mother in the care of the infant. But in this uprising in the study of infant life, the hygiene of the new-born, the fate of the new-born, the fostering of the life of the infant, I see that if this development is to keep the pace that it has in the last ten years, it will grow beyond the control of the general practitioner. There will always, as Jacobi aptly says, "be an infant mortality": no matter how perfect our system of prophylaxis and hygiene, there will always be the inexperienced mother and father to reckon with. There will always be the problems of environment and heredity, and there will always be the irreducible quota of infants who are born only to see the light of day and pass out. But the whole realm of infant and child welfare has of late years received such an impetus in America, and so much wealth and interest are being expended in the care of the infant and study of infant life that the inevitable result will be the building up of a new field of human interest. Just as formerly the general practitioner attended to the wants of the infant and child, and the accomplished practitioner with skill in discerning the needful as to sick infants was much in vogue, so now he has drawn to his aid and acknowledged the wider experience of the special pediatricist. On this side of the Atlantic we are just tending to the full development of an entirely different department of usefulness, that is, child welfare. It is the fault primarily of the general practitioner that the very side of his work which is the most important and interesting has been hitherto the most neglected by him.

I have taken at random 1,000 cases of infant-feeding from my private practice. Of these 1,000 cases, I find that an infant at the breast is taken away at times for the most trivial causes; the result is that the infant suffers, and I may say, also the mother.

Taking 1,007 cases of feeding, I have divided them for the sake of comparison into cases of infants exclusively fed from birth on the bottle, in which no attempt was made at breast-feeding, and those cases in which breast-

feeding was attempted but abandoned during a certain period of infancy, and finally those in which from birth there was an effort at mixed feeding on the breast and bottle, presumably because the breast did not suffice.

Absolute bottle-feeding..... 286 cases  
Breast- and bottle-feeding..... 721 cases

Total .....1,007 cases

Of the 721 infants, 573 were carried along on the breast for periods of time as follows:

1 month or less.....	112
2 months or less.....	89
3 months or less.....	82
4 months or less.....	59
5 months or less.....	47
6 months or less.....	40
7 months or less.....	20
8 months more or less up to 1 year and then placed on the bottle .....	124
Total .....	573

A number to the extent of 148 cases of the 721 were started on the breast and bottle from birth because either the breast was insufficient or the mother could not or did not wish to nurse the baby entirely on the breast. Thus, of the whole number of 1,007 infants we can only really say that 124 were entirely breast-fed, 12 per cent., and of the whole number, 573, or 56 per cent., were breast- and bottle-fed babies for varying periods, while 28 per cent. were bottle-fed absolutely. Of the 573 infants which were fed on the breast and then on the bottle, 60 per cent. were put on the bottle at the fourth month and the breast abandoned, and in only 20 per cent. of the breast-fed children was an attempt made from the start at mixed feeding, the practitioner abandoning the breast in the remaining cases when the breast for one reason or another was insufficient.

These statistics give a much better insight into the nursing capabilities of mothers than any others I have seen because the infants were in the hands and under the advice of the family physician and were brought to me only when the physician or the mother saw that the infants were not thriving. These statistics also give an impartial picture of conditions as they exist in practice to-day.

#### SUMMARY OF 1,007 CASES

	—Infants—	
	No.	Per cent.
Breast-fed exclusively .....	124	12
Breast and bottle (various periods) .....	573	60
Breast and bottle from birth.....	148	14
Breast until fourth month.....	342	47
Exclusively bottle-fed from birth.....	286	28

To summarize further in 1,000 cases of feeding:

10 per cent. of the infants were exclusively breast-fed  
30 per cent. of the infants were exclusively bottle-fed

The remainder were breast- and bottle-fed, and of these only 60 per cent. were kept on the breast until the fourth month, and then put on the bottle without any attempt to retain the breast.

If a physician makes only one analysis of mothers' milk and finds the fats low or high, he will in the earlier moments of lactation cease breast-feeding. Again, many mothers are dissuaded from nursing because they are nervous, others because there is not enough milk. Mixed feeding does not seem to occur to the physician of the baby. Another set of infants are

taken away because of colic. Physicians still find it convenient to grasp at the substitute infant foods. They are not given to the study of the symptoms of indigestion or the character of the stools. Whose fault is this? I must say that my impression is that the fault is as much with the teacher as the pupil. Thus I see the development of a distinct activity, the higher education of the physician in the hygiene and diseases of infancy and childhood. These, as far as the purely hygienic and prophylactic sides are concerned, are passing into the hands of the boards of health, the so-called municipal control. There is in the future growing up a distinct class of activities, those concerned with *gouttes de lait*, school inspection, home nursing visits and instruction, day nursery and kindergarten inspection, the summer management of infants and children, which will bring into existence and furnish study to a distinct set of physicians, because the physician whose work is in the sick-room cannot find time to be in the *gouttes de lait* or in the schools. It would be well for our universities to recognize these facts.

Dr. Welch, in a recent discussion before the American Association for the Study and Prevention of Infant Mortality, said that it was not the function of the university to turn out the student adequately trained in preventive medicine. I do not think this as desirable as the incorporation in the university studies of a sociologic side to the selective training of medical men. In other words, the sociologic side of medical work is fast becoming of such great importance that it will command attention as a distinct department of medicine, and in this we will see the training of a distinct class of physicians, or even laymen, who will, among many other things, devote their energies to infant and child welfare. The department of infant and child hygiene established by the New York Board of Health is an earnest of a beginning in this direction. At present, there is in the universities no definite teaching of child hygiene and welfare apart from the general chair of diseases of infancy. There is not even any such pretension. The whole development of this subject in America has been outside the colleges and universities and, as I have pointed out, much of the initiative has been taken by physicians and public-spirited laymen.

Is it desirable for the general practitioner, the worker among the sick, to turn aside and devote his time to a field in which from a sociologic standpoint he has not been trained? I think the time and the training are lacking, and just as the diagnosis and management of a pneumonia require skill and practice, so the details of social child welfare naturally fall to the lot of an entirely independent set of workers. Thus the state or municipality will naturally take up this field and will train, as it does now, and bring into existence a new set of physicians who will give their full time to problems which to-day are understood but not cultivated by the physician at large. At the same time, in a retroactive way the general practitioner will appreciate more and more the importance of certain lines of work in the hygiene, prophylaxis and care of the infant and child, and will in a measure be a co-worker of the physician who is working with the state in a sociologic as well as a medical capacity. Thus indirectly, both by law and precept, the state will eventually teach and enforce those primary principles of hygiene and child welfare which to-day are a matter of growing interest. For the present, the system pursued by the municipal board of health, especially in New York, has developed into a post-graduate school for the higher education of the physician

in the most important and pressing aspects of hygiene, prophylaxis and diseases of infancy and childhood.

Entering under the aegis of its activities, the physician is thrown into daily intimate contact with the infant and child, especially in the crowded districts of the city. From there his work tends directly to the research laboratories of the health boards. We find that not only the hygiene, but diseases of infancy and childhood, including infectious diseases, come under his active care.

Thus I see this postgraduate and higher education of the physician fast becoming a separate calling, a cult, apart from the active practice of medicine. The laity are quick to recognize the great resource placed at their command and are now using it in connection with the services of their regular physicians. The New York Board of Health has established a serum treatment activity. In diphtheria, meningitis, rabies, tetanus, they stand ready to apply not only the remedy, but the means of diagnosis, such as lumbar puncture.

Will the universities take up this phase of the practice of medicine? Will there be created an elective course for younger men of hygiene and preventive medicine in correlation with diseases of infancy and childhood? It seems that this is not imaginative if we look at the daily activities of the health board among the infants and the children of the poor. The increase of the work, the need for more physicians, young and enthusiastic, highly trained in the lines I have indicated will, I think, eventually result in a remodeling of the course of studies in the universities, so that men may elect to follow as a lifework the study and treatment, the hygiene and prophylaxis of diseases of infancy and childhood under municipal control, and in the most advanced scientific paths. The rôle of the general physician will broaden, he will be called on to advise and counsel, to point out the indication for interference, for diagnosis and treatment. Thus his education and higher education must inevitably keep pace with, and enter the paths of, the highest attainable scientific activity for the general welfare of the community at large.

30 East Sixty-Second Street.

## HEXAMETHYLENAMIN

### REPORT OF A CASE OF MEDICINAL CYSTITIS FOLLOWING ITS ADMINISTRATION

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Following the excellent work of Crow in 1908, hexamethylenamin has come into quite general use, as can be seen by a review of the recent literature. Its elimination, dosage, action, etc., have been studied, but little if anything has been written regarding its toxic effects, if they have been observed.

In 1899, Nicolaier<sup>1</sup> demonstrated that hexamethylenamin was excreted in the urine, and Sollman<sup>2</sup> showed that a considerable part, if not all the drug excreted by the kidneys, was excreted unchanged, and broke down liberating formaldehyd only after remaining in the bladder for at least one and a half hours. It has, therefore, been recommended in genito-urinary infections, and as a prophylactic when catheterization has to be resorted to for any length of time.

1. Nicolaier: Deutsch. Arch. f. klin. Med., 1899, xxxviii.

2. Sollman, T.: THE JOURNAL A. M. A., Sept. 5, 1908, p. 818.