

One Hundred Minus Five and Other Reflections: Presidential Address, American Pediatric Society, 1984

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Five years from now, we shall mark the centenary of the oldest of American pediatric societies. This thought, plus an abruptly cancelled vacation, led to the lucky discovery of a complete set of the transactions of the Society in the library stacks at New York University. The thin, neatly bound, little disturbed volumes filled a shelf and provided me with several afternoons of absorbing reading. Some of the words evoked nostalgic images of long ago when this was a more intimate society; others spoke across the years about subjects that concern us today.

Abraham Jacobi in 1888 was the first president of this Society. He was a fiery revolutionary as a youth and became a respected leader in American medicine. He established the first wards devoted to the care of children at Bellevue Hospital and at other hospitals in New York City. As president, he addressed an audience of 23 members and guests, all general practitioners, at the first scientific meeting of this Society. "Pediatrics does not deal with miniature men and women with reduced doses, and the same classes of diseases in smaller bodies. . . .," he said. In this simple way, he described the need for a new medical discipline and explained why a new society was established. In a more prophetic vein he predicted that the Society, by its interest and research in infants and children, would contribute to the knowledge of the medical profession at large and prove of lasting benefit to the community. These were brave beginnings for a small band of physicians, but the years have borne out the hope.

Job Smith, the mild soft-spoken perpetual student, was chosen to be the second president and, incidentally, the first Chief of Pediatrics at Bellevue Hospital. He recalled his experiences with New York City foundlings. These unfortunate infants were given to the care of pauper women housed on Blackwell's Island in New York's East River. "The steamboat every morning brought foundlings to the island, and every afternoon removed an equal number for burial in Potter's Field." A tragic equilibrium.

Emmett Holt, Sr. enlarged on this picture of American pediatrics in the 19th century in the fourth presidential address before this Society. Need I mention that Holt first completed his training at Bellevue Hospital before he established and became chief of the famed Babies Hospital? In his opinion, children's hospitals were important because of their contributions to research, to teaching, and, finally, to the care of patients not treatable at home. It seems strange to consider the treatment of the seriously sick of least importance, but this becomes understandable when one considers that the hospital mortality for infants under 1 year of age was 45%! Holt placed the causes of death in this order: marasmus in infants whose mothers were dead, sick, in asylums, or intemperate; acute starvation because of extreme destitution with the infants' diets limited to tea or beer; neglect, with systematic and regular drugging with opium; acute pulmonary or intestinal diseases; and the uniformly fatal diseases such as tuberculosis and meningitis. The realities that these good doctors struggled with send a sobering message to all who long for the good old days.

Job Smith in 1899 also addressed a subject that remains pertinent today. He stated, "In my opinion, this Society should remain distinct from any other medical organization, should have its own separate times for holding its meetings . . . whatever may be the merits of the latter (organization)." His concern at that time was to establish an independence and identity for this small group of physicians with a broad interest in the welfare of children and a particular interest in the advancement of knowledge. After almost 100 years, we can observe with satisfaction that the American Pediatric Society, and its legitimate offspring the Society for Pediatric Research, have achieved the status the founders strove for; they are respected, internationally recognized pediatric societies. Basic to that success has been the careful selection of members and the quality of the scientific presentations at these annual meetings. We must jealously retain control of both these elements.

On reading further in the transactions, I came across a spirited interchange among the members in 1927 about the involvement of the Society in broad social and political issues. Isaac Abt, a leading pediatrician of the day, who to my surprise never worked at Bellevue, carried the day with the statement, "It is our mission to stimulate and encourage scientific work . . . not become entangled in political and legislative questions." Attractive as this injunction may appear to be, it is not possible today to maintain such aloofness. During this past year, the Baby Doe controversy has reappeared, slightly modified but retaining its potential ability to invite heavy governmental intervention into a complex and delicate situation. Fetal research, that promising frontier for care of the unborn infant, is again threatened. And there is a bill before Congress that would greatly limit the independence of the National Institutes of Health, making it more subject to the whims and direction of the legislature. We made clear our position on these and similar issues to members of the government and shall continue to do so. Fortunately, there are many who are attentive and sympathetic, recognizing that we do not speak from the bias of self-interest. However, to maintain this favored reception, we must select our issues with care, limiting ourselves to those on which we can speak with the firmness of acknowledged authority and as the unselfish representatives of the infants and children of this country.

Leaping ahead to our middle years as a Society, Dr. Sam Levine in 1960 elaborated on the proper preparation of a pediatrician. He was concerned with the "relevance" of pediatric training, though he did not use that particular term which gained popularity many years later. He made a plea for involvement of the pediatrician in ". . . all aspects of child life and health in his community—mental, moral, emotional, and social, as well as just physical." This has become the dominant stated philosophy of many influential groups in pediatrics.

In sharp contrast, Dr. Donald Seldin in his presidential address to the American Association of Physicians has defined the central goals of medicine as ". . . the relief of pain, the prevention of

disability, and the postponement of death by the application of the theoretical knowledge incorporated in medical science to individual patients." Certainly there is more to the practice of medicine than this restrictive definition would seem to imply, but we can profit from careful examination of the thesis that motivated this pronouncement.

There are broad areas in the welfare of the child in which our particular experience, knowledge, and orientation permit us to function as experts. There are broader areas in which we are properly concerned because of our interest in the young. But here, our decisions are derived more from our own general experience and development within this society and this culture. We may be experts and we may take a position, but the relation between the two is inexact. It would serve us well if we kept clearly in focus these two related but different roles. That ever-troublesome subject, the curriculum, might benefit if we were to more sharply define that body of information, those skills, and that critical mode of thought that qualified the pediatrician as an expert and which we have a primary obligation to transmit to our students. Certainly Dr. Levine did not contemplate incorporating all aspects of child welfare into the discipline of pediatrics, nor did Dr. Seldin intend to exclude by his restrictive definition the contributions that a physician can make towards other issues that affect the well-being of his patients.

Surveying the present scene from the vantage point of this podium is thrilling. The audience of 23 has increased to a cast of thousands. The scientific fare for this meeting is lavish: plenary sessions, specialty sessions, poster sessions, business and social breakfasts, lunches, dinners, and evening discussions. There is something for everyone and too much for most of us. We are both exhausted and stimulated. We need no longer lament, as the elder Holt did in 1923, that "comparatively few members of the society have had the training, have now the opportunity or the resources, for profitable scientific research in the laboratory." The situation has changed dramatically, particularly with the emergence of the National Institutes of Health as the chief supporter of biomedical research. The American Pediatric Society and the Society for Pediatric Research, in association with the European Society for Paediatric Research, sponsor a thriving international journal, *Pediatric Research*, in which the transactions of our conferences appear. Surely our world looks bright and it is.

This does not mean we can afford to be complacent. Research and the academic life have lost appeal for many of our brightest students. The reasons are multiple. Some can be remedied and hopefully will. Many will remain. If one seeks security and shelter from the rigors of competitive life, it is not to be found in the academic medical center of today. The ivory tower has disappeared with the elephant tusks of India. Why then are we devoted to this life? I shall not try to explain. Others have in the past and their attempts have failed to satisfy. And yet it is incumbent on us to transmit the message, to seek out the most promising and talented students, to instill in them a curiosity about the unknown, and to convince them of the wealth of satisfaction in the world of inquiry.

As we start the countdown to the first century of our society, this large and select gathering before me permits considerable optimism for the future.

I would like to raise one more issue of a somewhat more personal nature. I have never spoken of it publicly before, but I think that this audience of scientists will be capable of handling a difficult subject objectively and without undue emotion. My life in research has had a Janus-like character. I have for many years maintained two laboratories in which I pursue quite independent interests. In one I have studied those provocative biochemical diseases known as the inborn errors of metabolism. The subjects have varied. At one time or another I have been engaged in the investigation of maple syrup urine disease, familial dysautonomia, disorders of lysine metabolism, etc. Currently, the Zellweger syndrome and the tiny peroxisome absorb my

attention. It has been fun permitting fancy and opportunity to guide my efforts.

In the second laboratory, I have studied the performance of that remarkable organ, the placenta, with a devotion that borders on obsession. As the years have passed, I have become increasingly impressed with how well it encompasses within itself the functions of the liver, the lung, the excretory system, and other well-defined organs. In fact, its broad capability suggested to me that it might be better considered as an organism than as an organ. From this startling thought it was a short step to wonder how the placenta might rank according to classical Darwinian measures of fitness for survival. It is this subject that I wish to review.

Success in the battle for food is a primary requisite for survival in this world of tooth and claw. Previously I described the placental role in nutrition as benign and even maternal. Unfortunately, objective review of the evidence makes it clear that the placenta itself consumes a considerable proportion of the food extracted from the mother. Furthermore, its privileged position on the food chain affords it priority in securing its own nutritional requirements. This feature alone should grant to the placenta a considerable survival advantage over the fetus (Fig. 1).

Let us pursue the subject further. It is now well accepted that neurotransmitters and neuropeptides are major factors in controlling what we may call the quality of life. And yet the nervous system from which these agents are generally derived also controls the infamous finger on the button. Depressing this button is the greatest of threat to the survival of the species and of the world. How does the placenta handle this combination of good and evil? It has been known for years that the concentration of



Fig. 1. The placenta as Number One.

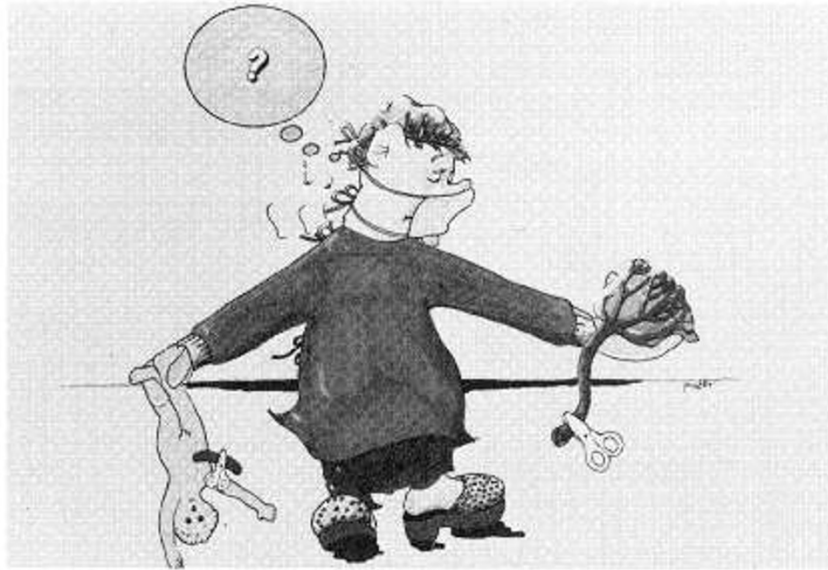


Fig. 2. The obstetrician's choice.

acetylcholine in the placenta rivals that in the brain. The catalogue of neuropeptides isolated from the placenta already is lengthy and keeps increasing. Amazingly, the placenta is devoid of nerves. It may be possible to imagine a placenta with a chorionic villus on the button, but there is no chance whatever of its activating the mechanism!

One more example should be adequate to make my point. Immune defenses are vital for survival. On the other hand, the same processes are responsible for many human ills. To some respected scientists, most diseases represent misguided efforts at self-defense. The placenta, once again, has managed to retain the good and avoid the bad. Eons ago the placenta solved the problem of transplantation rejection which still befuddles our best minds. Also there are substantial reasons for believing that the placenta possesses immunocompetence. And yet it is ludicrous to think of a placenta with hives!

The logic is clear and compelling. This organ/organism, the placenta, is admirably equipped for survival. Inevitably the next chilling question presents itself. Have our colleagues, the obstetricians, been mistaken all these years in selecting the placenta to discard (Fig. 2)? Would the world be a better place if there were more surviving placentas (Fig. 3)?

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Fig. 3. Super-P.