

# GROWTH AND EDUCATION

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BY

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# **GROWTH AND EDUCATION**

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## PREFACE

SOME years ago I became greatly interested in the question how a child grows. Principal Burk's monographs gave full information concerning growth in height and weight, and concerning some of the most important changes in the nervous system. Professor Donaldson had told us of the growth of the brain. Concerning the growth of heart, lungs, and other organs, I could find at first but little information. I found an abundance of books concerning diseases of children, but not one attempting to give a complete account of the growth of all the systems in the normal or average child.

It looked as if we had been rearing and training our children without ever asking whether the child entering school was merely a small edition of the adult, or something quite different. We seemed to have been attempting by education at home and at school to supply the child's needs without having first asked what those needs were, and whether they differed slightly or greatly at different ages.

It seemed to be of the greatest importance to discover first of all whether all organs needed exercise equally at all ages, or whether every organ had its special epoch or epochs when exercise was more profitable than earlier or later. In the latter case we needed to know what organs at every epoch most needed exercise, and of what kind and amount. Furthermore, it would be useful to parents and teachers to know whether

children and youth have the same or steadily increasing vigor, endurance, and power of resisting disease or adverse conditions at all ages, or whether there are periods of less power of resistance, when leniency and care are necessary.

Later I became surprised at the large amount of material concerning the growth of different organs and systems which is scattered through medical and other journals or in separate monographs. The chapters in this volume on the growth of the child are based on a large amount of this material arranged and tabulated. At first I intended to publish the tables as an appendix in this volume. But I preferred to defer their publication until I had gathered much more material and had gained answers to certain important but difficult questions.

I have taken for granted the often forgotten or neglected axiom that a healthy physical growth and development are during childhood more important than any amount of learning. In the first chapter I have tried to show that physical training and education are more needed to-day than ever before. The facts of human evolution, briefly discussed in the second chapter, seem to prove that, until the human stage is fully attained, the muscular system is the head and the strategic centre of development rather than the brain. In other words, the brain is developed through the exercise of the sense-organs and the muscles rather than these through the training of the brain. In this respect the young child resembles the animal. If the higher mental powers of the brain do not awaken until the eleventh or twelfth year, it is of little use to attempt to train them before this time. If, during all these earlier years,

the muscles are needing and craving exercise, we certainly should do well to meet and satisfy these needs.

The balance of organs in the child's body, in other words his constitution in the literal derivative sense, is quite different at different epochs. The great mental changes during youth and early manhood are familiar to us all. The physical changes during childhood and early youth are equally great, but often pass unnoticed or but poorly understood. Yet these physical changes modify or cause certain traits in the child. What appears to us carelessness or clownishness in gait or behavior may be due to immature muscles. Poor eyesight and defective hearing often cause the child to be considered stupid. The young girl is often blamed for lack of application when the real cause of her poor success in school work is lack of outdoor exercise and of sufficient lung capacity.

We wisely desire that our children should form right habits of physical, mental, and moral behavior. This is well. But let us not forget that the child must think and act as a child. Most of his childish instincts and cravings are wise and healthy, even though they appear rude and unsatisfactory to us. What appears faulty, when judged by adult standards, may be normal, natural, and beneficent in the child. Many of his failings are due to immaturity, and he will outgrow them of himself in due time. We need to learn when not to notice, as well as when and how to correct. The parent who knows and understands the laws of growth will have more faith, hope, and courage, and will be spared much needless anxiety.

When one has studied the different epochs of child life, he cannot fail to see how admirably the life on

the New England farm a half-century ago was fitted to promote physical and mental growth and development. The debt of New England to the farm has never been duly recognized. The preponderance of town and city, and the changes in farm life, have resulted in the loss of certain elements of the education of our fathers which we can very ill afford to spare. These losses have greatly decreased the efficiency of the home in education, and have thrown a far heavier burden of responsibility on the school. Hence our education is often criticised as unpractical and not suited to fit boys and girls for life. The present condition is certainly not the fault of the teachers, nor altogether that of the parents. New burdens have been thrown upon the school almost without warning. The educator has to face new and very difficult problems. Our present system has not been able to reform and change front quickly enough to meet the new emergency. But the emergency must be met, and it will be met mainly by the school. Hence parents and teachers need to know and understand one another; and to work in harmony, unison, and mutual help and support.

This book is intended to be an introduction to the study of the growth of the child. Hence the most important part of it is the bibliography. If I can introduce teachers and parents to the monographs and articles cited, I shall surely have done them a service. I have attempted to select articles which are accessible, accurate, and trustworthy, and not too technical. I am well aware of the incompleteness of the bibliography. Much of whatever excellence it may possess is due to the great kindness and patience of Dr. Louis N. Wilson, Librarian of Clark University. I am under great obligation to



him and his assistants for many services and acts of kindness.

I wish to express my thanks to President G. Stanley Hall for many helpful suggestions and for his unfailing kindness and encouragement. I am under great obligation to Drs. Hitchcock, Holt, Porter, Hastings, and Hall, for permission to use the material in the tables. I wish to thank Dr. E. M. Hartwell for permission to use his table of mortality of Boston children. Part of the material has been used in lectures in Boston, under the auspices of the Committee of Education of the Twentieth Century Club. To them I am very grateful for a great opportunity and for many kindnesses.

J. M. T.

AMHERST, MASSACHUSETTS, 1907.

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# GROWTH AND EDUCATION

## CHAPTER I

### PRESENT NEEDS IN EDUCATION

It was a favorite maxim of Socrates that, if a thing is good, it surely must be good for something. What is an education good for? This much-abused word has been used in many senses. Its definitions vary greatly. Higher mammals were educated by their parents before man appeared on the globe. The lowest savage tribes educate their children, and their systems of education are often interesting and instructive. Great thinkers from the most remote times have written on the subject. But we are still disputing over definitions, and the ideal system has not yet been discovered.

What we most need is not so much a complete, accurate definition, as some criterion by which we can test our present systems and methods, and see whether they are accomplishing all that we can reasonably expect from them. Our test must be one which can be easily and readily applied, if it is to be of practical use. This thought of Socrates, that a good thing must be good for something, may, perhaps, furnish us a standpoint from which we may wisely view our present systems, and seek to discover possible improvements.

If any one could discover or frame a system of education which would enable the child and the man to avoid or to cope with the dangers of life, and to seize its

opportunities; in one word, to meet its emergencies successfully, he would evidently render us a great service. Such a system would be exceedingly useful. Seizing the opportunities of life means making the most of ourselves physically, mentally, and morally; it implies health, vigor, and power; knowledge and wisdom; goodness and love; use, service, and the highest joy. It means making the most and best of this goodly world in which we live, and framing from our surroundings an environment to which we may wisely conform, and hence survive and progress. Opportunity is limitless; we fail to recognize and grasp it.

But the dangers and opportunities, in one word the emergencies, of state and individual are not the same in different places and times. Every state frames its system of education to meet its own dangers and to grasp its special opportunities, and to enable its citizens to do the same. The dangers of the German state and citizen are evidently not the same as ours. A nation in the middle of Europe, with few natural boundaries and surrounded by warlike neighbors, has dangers which we find it hard to appreciate. Differences in soil, climate, and natural advantages, in government, traditions, and social conditions, give to the individual citizen opportunities and emergencies different from ours. Hence a system of education which would be exactly suited to German needs would not suit American conditions. We may learn much from the German, and he from us; but neither one of us can safely copy the other. We have our own dangers and opportunities, and must meet them as best we may.

Similarly a system of education suited to the needs of one period of our national development will natu-

rally be inadequate when conditions have changed to any great extent. In the eighteenth century New England was peopled with a comparatively homogeneous English stock. It was as vigorous, sturdy, and tough a race as the world has ever seen. English climate and conditions had given it marvelous strength and endurance. The boldest and most vigorous had been sifted out for the planting of the New World. It was leading an agricultural life, of manual labor, largely in the open air of the country. The birth-rate was very high, and the population increased with marvelous rapidity.<sup>1</sup> The transfer of the somewhat heavy English Puritan stock to the nerve-tonic of our bracing air, new conditions and emergencies, and the spur of necessity, had roused all the mental powers of this marvelous people. They were keen, quick, shrewd, inventive.

They were scattered in small towns and villages, each one of which was more remote from its nearest neighbor than is New York from Boston or Chicago to-day. Every village was fringed with farms scattered over the hills, wherever a man could wring a living from the soil between the ledges. Wealth and luxury were almost unknown, the farms furnished the necessities of life. Behind them stretched the wilderness, tempting the adventurous as well as the shiftless to a life of barbarism, if not of savagery. Educated men were rare, books few and expensive. No wonder that the first settlers feared that learning would be buried in the graves of their ministers. Illiteracy and barbarism were very real dangers in those days; from wealth, luxury, and the evils of overcrowding they had little to fear.

The stress and strain of life bore heaviest on the

<sup>1</sup> Walker, "Restriction of Immigration," *Atlantic*, vol. lxxvii, 1896.



tough muscular system. This rested and recovered quickly, for the sleep of the laboring man was sweet. There was little competition. Life was simple, often very monotonous. Even an Indian raid must have been a welcome change. Opportunities were few. Children looked forward to the time when they would clear a farm, and establish a household, as their fathers had done before them.

These Puritan ancestors of ours were not all saints. They often drank heavily, quarreled outrageously, and varied the monotony of respectability by the rudest outbursts of animal, if not beastly, tendencies. Even their wit and jokes were often cruel. Those who disagreed with them were summarily banished. Life is certainly much pleasanter in the twentieth century.

Education was gained mostly at home. In the large families the children educated one another. The farm offered more opportunities for physical exercise than the child or boy wished. His labor was needed; "he was a member of the firm." When the forest had been cleared, the stumps burned or uprooted, and the walls built, there were endless jobs for him. Stones had to be picked up, and every plowing brought up a new crop. The animals had to be cared for, wood and kindlings had to be provided daily. All the light work fell upon the children. Very early they shared, as far as possible, the labor of the adults. Nature study was forced upon them.

The farm was a hive or laboratory of manual training.<sup>1</sup> The farmer and his boys had to be carpenters,

<sup>1</sup> Hall, "Boy-Life in a Country Town a Quarter of a Century Ago," *Proc. Am. Ant. Soc.*, Worcester, October, 1890; Abstract in *Ped. Sem.* i, 232; Bailey, *Outlook to Nature*, p. 154.