

# THE HYGIENE OF THE SCHOOL CHILD

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## EDITOR'S INTRODUCTION

THE editor of this series has long held that an efficient teacher should know something as to the fundamental principles of child hygiene, and that a school principal should, in addition, know the fundamentals of schoolhouse hygiene. For schoolhouse hygiene we have, for some time, had a number of fairly serviceable texts, but of books relating to child development and the hygiene of instruction we have had but little in any form that teachers could use. Only recently may we be said to have come into the possession of such knowledge, and most of it is still locked up in medical and psychological journals and books.

The following treatise on the "Hygiene of the School Child" is an attempt to digest and interpret this recently accumulated knowledge, and to place it in usable form. The book might have been called, with almost equal propriety, a treatise on the "Hygiene of Growth," dealing, as it does, so largely with the fundamental facts of a child's physical development. In a companion volume, to be published later, the author will continue his interpretations by setting forth the relation of mental hygiene to the work of the school. In the two volumes, then, "The Hygiene of the School Child," and "The Hygiene of Instruction," will be

presented the fundamental facts of child hygiene and development, such as parents, teachers, and students of education should know.

The time when the preparation of teachers can be made by a study of psychology and methods ought to pass. When it does it will mean that the health and physical welfare of a child will then be regarded as of as much importance as arithmetic and geography, and then a knowledge of the elements of child hygiene will be regarded as of fundamental importance in the training of every teacher. In many colleges and normal schools such a change is now taking place, and it is for such use that this textbook has been prepared. Teachers in service, too, ought to find such information as is contained in the following pages of great interest to them personally, and of much usefulness to them in their relations with their children.

Such an interpretation of scientific researches relating to growing children as this book contains ought also to prove of much interest and value to that large and rapidly increasing number of parents who are interested in the proper rearing and education of their children.

ELLWOOD P. CUBBERLEY.

## PREFACE

THIS work has been prepared as a textbook in school hygiene for the use of normal schools, colleges, and teachers' reading circles. It has been shaped by the conviction that the primary concern of such a text should be the child itself, — the hygiene of physical and mental growth, rather than the details of school architecture and school equipment. The architect and the engineer working alone cannot guarantee the healthfulness of school life. Hygienic buildings and equipment are necessary, but they do not go far in the conservation of the child. Moreover, the average teacher has little voice in the construction, ventilation, lighting, and equipment of school buildings. She must accept these as she finds them. But she has hourly opportunity, in her control of school activities, to observe or to violate the principles relating to the hygiene of physical and mental development.

On the phases of school hygiene here treated there exists, in spite of many regrettable gaps, a large and valuable literature. Most of it, unfortunately, has remained hidden away in medical treatises and scientific periodicals on hygiene. The author has endeavored to summarize and interpret the best of this rather technical literature for the use of teachers and parents.

If European investigations, particularly those of German writers, are quoted more often than American sources, this is because school hygiene as a science has been little cultivated in our own country. America does not yet have a single periodical of school hygiene; Germany has at least four of excellent scientific quality.

It would be vain to expect that a work having the scope of the present volume could be kept free from error. Either for lack of positive investigations, or because of conflicting data, many of the subjects treated remain in dispute. In such cases, it is not always easy to be judicial and impartial.

The author is indebted largely to the counsel and encouragement of friends for whatever merit this work possesses. Dr. E. B. Hoag, Specialist in Child Hygiene for the Minnesota State Board of Health, has furnished helpful suggestions for chapters XII to XV, inclusive. Dr. E. B. Huey, Assistant in Psychiatry, Johns Hopkins University, has given invaluable assistance in the preparation of the chapters on "Preventive Mental Hygiene." Without the inspiration of Professor William H. Burnham, the work would not have been undertaken; without the encouragement of the editor of the series, it could not have been completed.

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# THE HYGIENE OF THE SCHOOL CHILD

## CHAPTER I

### INTRODUCTION: THE BROADER RELATIONS OF EDUCATIONAL HYGIENE

*School hygiene as a part of the problem of conservation*

THE rapid development of health work in the schools during the last two decades is not to be regarded merely as an educational reform, but rather as the corollary of a widespread realization of the importance of preventive measures in the conservation of natural and human resources. The prevention of waste has become, in fact, the dominant issue of our entire political, industrial, and educational situation.

In many ways society is enlarging its interest in the individual. The *laissez-faire* policy of a few generations ago is being replaced by humanitarian foresight, restrictive measures, and large coöperative social undertakings. We are rapidly becoming conscious of hitherto unsuspected power to shape human destinies and are no longer willing to remain the passive plaything of uncontrolled social and material forces. The evolution concept is doing its work. Having at last consented to look at ourselves from the biological point of view, we proceed to harness the biological and social forces which will make for the development of a hap-

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pier, healthier, and better race. Evolution has made us conscious of a future, has shown us how to attain it, and most important of all, has made that future a matter for our practical concern. Our highest boast is coming to be that we, the present generation, are living not only for ourselves, but also for the generations that are to follow.

Of course it must be admitted that Utopias for the betterment of human conditions are not a new invention. The imagination, fortunately, has always found satisfaction in the fanciful creation of an ideal social structure. But previous to recent governmental and scientific advances such dreams were but empty fancies, incapable of realization. The forces which make or mar the destinies of man were far less amenable to control than is the case to-day. At present the development of industrial processes and the various sciences of conservation give us hope that at least the worst conditions of poverty can be done away with; the remarkable progress of medicine demonstrates that many of man's physical ills can be overcome and many others eliminated by preventive means; and finally, the laws of heredity, when fully known and heeded, are capable of raising the average of mental, moral, and physical endowment well above where it now stands. Every civilized nation is becoming acutely conscious of the necessity of utilizing all possible means for conserving these vital resources and of adding to them.

Among the greatest of these influences is medicine, preventive and curative. Such diseases as smallpox,

tuberculosis, diphtheria, malaria, yellow fever, typhoid, bubonic plague, and cerebro-spinal meningitis have rapidly yielded up secrets which make it possible, for the most part, either to prevent the disease or to cure it. The technique of diagnosis and of surgery has been refined beyond the boldest prophecy of a few decades ago. With the growth of our understanding of disease there goes *pari passu* a keener sensitiveness to the presence of physical imperfections. We now know that an amazing amount of physical defectiveness has always stared us in the face without our recognition.

Among the masses of people, however, there remains a vast amount of ignorance with regard to matters of health and disease. The daring researches of a few score bacteriologists are more than offset by the thousands of people who still use liverwort for jaundice because of the fancied resemblance of its leaf to the human liver; by the tens of thousands who treat infectious diseases by suggestion; by the millions who spend hard-earned money for patented consumption-cures. Popular notions regarding personal hygiene are little better than a seething welter of ignorance and superstition, not all of which is confined to those who are confessedly uneducated.

### *The cost of preventable disease*

The cost of this ignorance in money, sickness, death, and grief is stupendous. Basing his estimate upon statistics of mortality for ninety different diseases and accepting the expert opinion of numerous medical

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specialists as to the ratio of preventability for these diseases, Professor Irving Fisher has reckoned that the general adoption of a few well-established hygienic principles would add fifteen years to the average span of human life. For the most part these fifteen lost years would be years of economic productivity. It is evident that every premature death entails an economic loss upon society, varying according to the age of the person dying. It is computed that the newborn child has an average money value of at least \$95. The value increases to \$960 by five years, to \$4000 by twenty years, and drops again to \$2900 by fifty years. The minimum average loss to society from each postponable death has been elaborately figured at \$1700. Of the 1,500,000 deaths in the United States each year the combined opinion of the best medical authorities regards at least 42 per cent to be postponable, or 600,000. The annual loss to the country from this cause is therefore  $\$1700 \times 600,000$ , or \$1,020,000,000.

Nor does this complete the story of waste. For each unnecessary death there are several cases of unnecessary illness, the total cost of which, counting medical attendance and wages lost, amounts to nearly \$1,000,000,000 more. The Great White Plague alone involves an annual loss of not less than \$500,000,000. Typhoid fever costs us some \$200,000,000; malaria, \$100,000,000, besides its indirect injury in undermining health; and the hookworm disease an equal amount. It is estimated that there are from 2,000,000 to 3,000,000 cases of malaria in the United States each year, and that



about 2,000,000 persons suffer from the hookworm disease. The loss of economic efficiency from alcoholism, vicious habits, undue fatigue, minor ailments, and lack of expert direction of the human machine can only be vaguely guessed at, but it is probably greater than that from all the other causes enumerated. Apart from this, however, we suffer an aggregate calculable loss from preventable illness and death of about \$2,000,000,000 per year, or over four times the total expenditures for public education. This is equal, at 4 per cent, to the annual interest on \$50,000,000,000.

The meaning of such figures can be made more clear by a comparison with other values. The total physical wealth of the United States has been estimated at about \$110,000,000,000, and the value of our annual agricultural products at about \$9,000,000,000. Our railways are worth about \$17,000,000,000, and the annual output of our manufactures about \$15,000,000,000. Our *vital assets*, however, are by far the most important of all. Adopting Professor Irving Fisher's figure of \$2900 as the average value of one individual to society, the total economic value of our 90,000,000 inhabitants reaches the sum of \$250,000,000,000. This is almost exactly 1000 times the value of our hogs, for the conservation of which the nation expends more money than it does for the conservation of its children.

But statements of economic loss do not fully represent the importance of health conservation. Waste of life or health involves grief and moral suffering which cannot be measured in gold. Infant mortality illus-