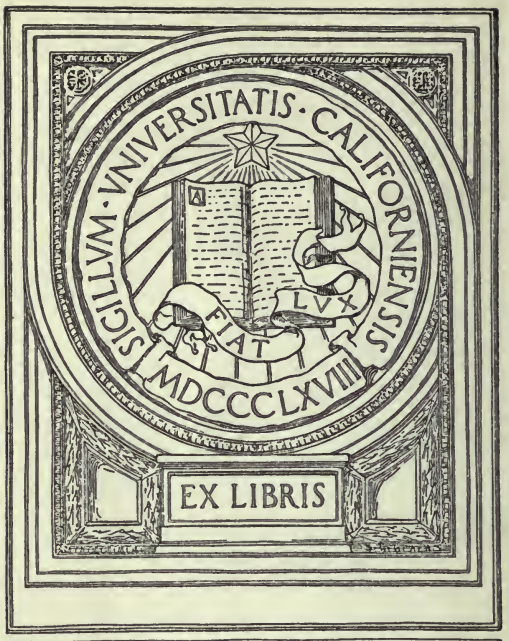

SIGILLVM · VNIVERSITATIS · CALIFORNIENSIS
LVX
FIAT
MDCCCLXVIII
EX LIBRIS

AN INTRODUCTION TO HIGH SCHOOL TEACHING

THE MACMILLAN COMPANY
NEW YORK · BOSTON · CHICAGO · DALLAS
ATLANTA · SAN FRANCISCO

MACMILLAN & CO., LIMITED
LONDON · BOMBAY · CALCUTTA
MELBOURNE

THE MACMILLAN CO. OF CANADA, LTD.
TORONTO

AN INTRODUCTION TO HIGH SCHOOL TEACHING

BY

STEPHEN SHELDON COLVIN

PROFESSOR OF EDUCATIONAL PSYCHOLOGY IN BROWN UNIVERSITY
AND INSPECTOR OF HIGH SCHOOLS FOR THE STATE OF
RHODE ISLAND
AUTHOR OF "THE LEARNING PROCESS," ETC.

New York
THE MACMILLAN COMPANY
1917

Set up and electrotyped. Published September, 1917.
Reprinted December, 1917.

Norwood Press
Berwick & Smith Co., Norwood, Mass., U.S.A.

PREFACE

The following pages have been written with the purpose constantly in mind of giving practical help to those young men and women in our colleges and universities who are soon to enter upon the work of high school teachers. The topics treated and the materials selected have been chosen with this object in view. The writer has continually asked himself this question, "What ought the beginning high school teacher most of all to know in advance of entering upon his profession?" The author believes that the prospective teacher should have some conception of what the present day high school is and what it aims to be; that he should know something about the pupils that he will meet in his classrooms; that he should have formed certain professional ideals and should possess certain ambitions, and that he should be acquainted in some detail with the problems of class management and of instruction. There is much more that is desirable but less essential for him to know in advance of his actual teaching.

This book emphasizes particularly general methods of instruction as they apply to the high school. It has not, however, attempted to treat under separate topics instruction in special subjects. This problem has already been adequately treated in Monroe's *Principles of Secondary Education*, and in Johnston's *High School Education*, as well as in many books dealing specifically with the various studies of the high school curriculum. The student preparing to teach in any particular field, should obviously acquaint himself not only with the general principles of instruction, but also with the details of instruction in his chosen subjects.

This book has little to say about high school organization and

administration. These matters while of importance to the teacher, are the primary concern of principals and supervisors. Further, they have been extensively considered by Hollister in his books, *High School Administration*, and *High School and Class Management*.

The writer believes that all instruction should be definite and concrete,—that it should be accompanied by a wealth of illustration, and that it should issue in many practical applications. A helpful book likewise should possess these virtues. For this reason a large number of specific examples have been incorporated in the text with the hope of giving point to the various facts and principles therein discussed. All of these examples have been taken from actual classroom practice. They have been chosen from thousands collected by the author, who during the past five years has visited scores of high schools and hundreds of classes. To this extent the book employs the "case method" of exposition, and to this extent, at least, it is the record of practical experience.

At the conclusion of the book is placed a selected bibliography, through reference to which the student may be guided in his further consideration of the various topics discussed in the preceding pages. By the use of this bibliography the scope of the book may be enlarged in any desired direction.

In the Appendix have been included a detailed outline to be used in connection with observations of teaching in the grades and in the high school, and also samples of typical lesson plans. It is hoped that those instructors who wish to apply in practice with their classes the matters considered in this book will find these additions suggestive and helpful.

The writer is indebted to many persons for aid in writing this book, but he finds himself under obligation above all to the hundred young men and women who as graduate students in Brown University, have during the past years worked as practice teachers in various high schools of Rhode Island, and whom it

has been his good fortune to direct. The writer hopes that they may have learned something from him; he is conscious that he has learned much from them. He is also indebted to the critic teachers who have supervised the work of these beginners, and who have given him many valuable suggestions.

Among the various books and articles that have been of great assistance to the author he wishes first to mention the writings of his friend and former colleague, Professor W. C. Bagley, and in particular his recent book on *School Discipline*. The book by Professor S. C. Parker on *Methods of Teaching in High Schools* has also been extremely helpful. Much of the material included in the following pages had been collected, some of the chapters written, and the remainder outlined when Professor Parker's book appeared. It was with much pleasure that the author of the present discussion found himself in substantial agreement with Professor Parker concerning many of the most vital questions relating to high school method. The writer is also indebted to Dr. Romiett Stevens, who in her monograph, *The Question as a Measure of Efficiency in Instruction* has furnished him with much concrete material and many important suggestions in regard to the question as a method of instruction.

The writer wishes to acknowledge the material assistance rendered him by Mr. Wayne P. Smith, who has read the book in manuscript and has given him important advice, and by Miss Grace E. Bird, who has read the book both in manuscript and in proof, and who has been untiring in her help and criticism in the details of composition.

In conclusion the author ventures to express the hope that although this book has been written primarily for the college student about to begin teaching, it will prove of value to the young teacher in the first years of service and also to the older and more experienced high school instructor.

STEPHEN S. COLVIN.

BROWN UNIVERSITY, July 15, 1917.

CONTENTS

CHAPTER I

CHAPTER II

CHAPTER III

CHAPTER IV

CHAPTER V

PAGE

CHAPTER IX

PAGE

CHAPTER XII

CHAPTER XVII

AN INTRODUCTION TO HIGH SCHOOL TEACHING

INTRODUCTION TO HIGH SCHOOL TEACHING

CHAPTER I

THE NATURE AND SCOPE OF SECONDARY EDUCATION

Broad Application of the Term Secondary Education.—Each year our American colleges and universities are graduating numbers of young men and women who intend to make teaching either a temporary or a permanent career. For the most part these graduates plan to secure positions in schools of secondary grade. Of these schools they often have vague, inadequate, and erroneous notions. To an extent the significance of secondary education is to them a closed book. Few could give an accurate statement of the nature of secondary education, describe its aims, or outline its methods. Although this ignorance is most unfortunate, for it they are not altogether to blame. The term "secondary education" has such a broad application, and is roughly used to characterize schools of such differing types that it is difficult in a brief statement to furnish any accurate notion of what secondary education implies. It is the aim of this chapter and of succeeding chapters to discuss its most essential aspects from the standpoint of the needs of the novice in secondary teaching.

Secondary Schools of Europe and of America Compared.—(a) *The secondary school of Europe differs from that of America in the fact that the former is not a continuation of the elementary school.*—In America we commonly think of the secondary school as directly following the "Grades," or the elementary school,

in which the rudiments of an education are acquired. This is true for America, but not for Europe. There the secondary school is not a continuation and extension of the common school. It is a school by itself. The secondary school in France receives a boy at the age of six and offers him a course covering twelve years, the first five of which are devoted to learning the elements and in preparing for his secondary education proper, which generally begins in his eleventh year. In his earlier years he gains the rudiments of knowledge in the same school in which later he does his more advanced work, and this school is entirely distinct from the common school, which furnishes education to the great majority of the children of France.

To the German secondary school the boy is admitted at nine, after three years of preparation either in the common school, or in the *Vorschule*, a school definitely preparatory to the secondary school. Thus, except at the very beginning, there is no connection between the German elementary school (the common school) and the secondary school.

In England conditions are more in a state of change; but the oldest type of secondary schools, the so-called "public schools," by no means public in the American sense of the word, are far removed from the elementary schools of the people. Schools like Rugby, Harrow, and Winchester, centuries old and established in ancient traditions, are even more remote from the masses than are the secondary schools of Germany and France.[1]

(b) *The secondary schools of America are democratic; those of Europe are aristocratic.*—The Public Schools of England, the *Gymnasia*, and other secondary schools of Germany, the *Lysée*, and the Communal Colleges of France furnish education not for the masses, but for the classes. They are primarily designed to train the leaders of the nation. In America on the other hand the vast majority of secondary schools throw their

[1] In America the older endowed academies, of which Exeter and Andover are types, have some resemblance to the English public schools.

doors open wide to all the children of all the people and urge them to enter. There is no thought of educating the chosen few, but the ambition of these schools is to enroll all the children of secondary age. They aim to become higher common schools, to be in fact as well as in name "people's colleges." Each year more and more boys and girls of secondary school age avail themselves of the opportunity to study in these schools.

(c) *The secondary schools of America offer a more varied program of studies than do the secondary schools of Europe.*—We often think of secondary education as dealing with a particular and somewhat restricted type of studies. If we form our ideas of the secondary school program from the school at which we prepared for college, we are likely to assume that the curriculum of the secondary school is definite and relatively restricted in content. We think of the foreign languages, both ancient and modern, of English, of mathematics, of science, and of history. We may know that in many schools some manual training is offered to the boys, and cooking and sewing to the girls. Few of us, however, have any idea of the varied and extensive curricula offered by many secondary schools in America. In this respect these secondary schools differ from those of Europe, which offer courses of study less diversified than those found in a large number of our best American schools. This difference in the breadth of the curriculum arises largely from the fact that the secondary schools of Europe are aiming to do a few definite things in a few definite ways, while the secondary schools of America are striving to do many different things, often in ways that are not standardized or clearly formulated.[1] Not only are the aims of secondary education more general and less definite in America than in Europe, but also educational control is less

[1] The vocational courses that are being introduced in ever increasing numbers in our American high schools are cared for in Europe by special trade schools quite distinct from secondary schools, and enrolling a distinct class of pupils.

centralized here than in Germany and France, and is determined to a large extent by local interests and needs. Of this diversified curriculum of the American secondary school we shall have more to say in the next few pages.

(d) *The secondary school of Europe is a fee school, while the secondary school of America is generally a free school.*—In Europe secondary education is not entirely at public expense as is generally the case in America. Tuition charges for the most part are not excessive, but they are sufficient to make it impossible for many parents to send their children to these schools. In America not only is tuition free in the great majority of our secondary schools, but also in many towns and cities free textbooks and supplies are furnished to the pupils. The poorest families can therefore avail themselves of the privileges of these schools for their children.

The High School is the Typical Secondary School in America.—The free public high school is by far the most common secondary school in America. There are numbers of private secondary schools, parochial schools, and academies. However, these latter furnish but a small percentage of the secondary schools of this country.[1] The great mass of children in America receive their secondary education in the high school, supported by public taxation, and directly accountable to the community in which it exists. These schools are rapidly multiplying, and the attendance is showing a remarkable ratio of increase. Most of them have sprung up since the Civil War, and the last quarter of a century has witnessed an unprecedented development of these institutions of learning. Today there are approximately a million and a quarter pupils in our public high schools, about one to eighty-three persons in our total population. This ratio,

[1] In the report of the United States Commissioner of Education for the year 1916 there were listed 13,922 schools of secondary grade, and of this number 11,674 were public high schools enrolling nearly ninety per cent. of all pupils attending secondary schools.

which at present is greater than that of any country in the world, is sure to increase decidedly in the next decade.[1]

The private secondary schools copy in many ways the aims, methods, and programs of study of the public high schools. They differ principally from the high schools in the fact that they are fee schools, and appeal to a more narrowly selected class of pupils. They are more aristocratic on the whole, and in this respect resemble more closely the secondary schools of Europe than do our free high schools. Further they are generally not co-educational, and in this respect also resemble more closely the European secondary schools than the American high school, which is predominatingly but not exclusively co-educational.

The Aims of the American Secondary School.—The most generally recognized aim of the American secondary school is to train boys and girls to become useful members of the communities in which they are to live, in other words to promote good citizenship in the broadest sense of the term. This aim is so comprehensive that it includes all other aims that are ordinarily advanced as reasons why a boy or a girl should take a high school course, with the exception of the narrow and unjustifiable aims of mere self-advancement, and personal pleasure.

There are many ways in which young people may be educated to become good citizens. The parochial and church schools emphasize religious and moral training; many of the academies and private schools stress a cultural and disciplinary education, aiming to furnish their pupils with the graces of life, to give them an appreciation of the finer things in the civilization of the past and the present, to afford them a comprehension of some of life's

[1] The percentage of the boys and girls in our high schools compared with the total population varies greatly in different communities and in different parts of the country. In the state of New Hampshire, according to H. A. Brown, 87.4 per cent. of the children who graduate from the elementary schools enter the secondary schools and of these 55 per cent. complete the course (See *The School Review*, Vol. XXII., p. 145 [1914]). This percentage is much greater than that in many states, cities, and towns.

fundamental problems, and to equip their minds to do effective work. Many of these private schools consider it their chief function to serve as preparatory schools for colleges, technical schools and professional schools. They measure their service to the community largely in terms of the number of boys or girls that they have sent to some higher institution of learning. There are other schools of secondary grade, some private and some public, that emphasize particularly the training of young people for some definite occupation. These schools are vocational schools, and their purpose is to give rather specific training for life's work. The so-called "commercial colleges" are examples of private schools of this type.

The Trend Toward Vocational Education in our High Schools.—(a) *While the American high school strives to accomplish many things, it is today turning its attention more and more to some form of vocational education.*—The public high school sets before itself all aims that lead to the making of good citizenship, with the exception of those that involve dogmatic religious instruction; but it emphasizes to a greater extent than do the leading private secondary schools preparation for a specific calling in life. The public high schools are much nearer the great mass of people than are the private secondary schools, and the people are more and more demanding that when their sons and daughters graduate from the high school they shall be equipped with an education that can apply immediately to the earning of a living.

There is today considerable uncertainty in American education as to the way in which the vocational training of young people is to develop. Is it to be an important function of the high school, or is it to be given over largely to so-called "trade schools?" These admit boys and girls to their courses as soon as they have completed the period of compulsory education (generally at the age of fourteen) and often before they have finished the work of the grades, and they aim at little more than to teach these young people the essentials of the trade that they have selected to follow. If the trade schools succeed in becoming the typical and usual means of training boys and

girls for definite work in life, the vocational phase of secondary education will become less and less important, and the high school will ultimately more closely resemble the secondary schools of Europe, setting before itself as its chief function the preparation of a relatively selected class for the "higher callings" in life. If the trade school finally establishes itself as the chief means for vocational preparation, the high school as the people's college, as a higher common school to which all children of secondary school age go, will not be a possibility. The development of the trade school as an institution apart from the secondary school is in a way a menace to American democracy, which can best be fostered by having a free public high school to which all children of secondary school age shall go. Here they can acquire common elements of culture, common ideals, and perfect themselves in basal habits of knowledge and skill, while they are learning at the same time those things which will be of direct and immediate use to them on graduating.

(b) *This vocational trend is toward an education that is practical, but at the same time cultural and disciplinary.*—While our high schools are more and more introducing vocational courses they are not developing into mere trade schools. The courses offered are generally to be classed as pre-vocational or semi-vocational, rather than strictly vocational. In some instances, however, we find courses that aim to accomplish little more than to prepare the pupil for some definite and specific occupation on graduation.

A careful distinction should be made between the terms vocational, semi-vocational, and pre-vocational. A vocational course of study aims to prepare a pupil immediately to take up some occupation in the community at graduation, and strives so to train him that he will have sufficient knowledge and skill to enter upon this occupation not as a novice but as a competent and qualified workman. This course aims to do little else. A semi-vocational course aims to turn out the capable workman, and at the same time to provide him with a more general equipment. The pre-vocational course of study does not aim to furnish skilled individuals for any calling; what it strives to do is to discover tastes and abilities in high school pupils, and

further to give these pupils a fund of general knowledge and some elementary skill necessary to, or desirable for, certain life occupations. Expert ability in these occupations is secured by further study and practice after graduation from the pre-vocational course. Manual training is work of a pre-vocational nature. It tries out aptitudes for hand work, and where these exist it gives the pupil skill in manipulation; it furnishes him with ideas of procedure in doing manual work, and it may inspire him with ideals of the dignity of such work, but it does not aim to make him, nor could it make him, a skilled machinist, carpenter, or cabinet-maker.

Typical Courses of Study in the High School.—(a) *The college-preparatory and the general cultural courses.*—While there is a marked trend toward vocational and similar courses, the college preparatory and the so-called "general," "academic" or cultural courses of study are the dominating factors in most of our high school programs.[1] These courses are in many respects identical because of the general supposition that what most cultivates and disciplines the mind is that type of study which is still required by the majority of our older colleges for entrance to their classes and lecture halls. In these courses the foreign languages, secondary mathematics, with at least three years of English, some history and physical science, are the important elements. The college-preparatory course provides four years of Latin, and in some schools three years of Greek, but since Greek is no longer required for college entrance, and since it is elected by only a small number of pupils, it is offered less and less frequently as the years go by. In some of our oldest and most conservative high schools, as well as among those of the more "progressive" type, it is not possible to study this language.

[1] T. H. Briggs has said in an article on secondary education appearing in the report of the United States Commission of Education for 1914—"So far as the number of secondary schools is concerned, the great majority are undoubtedly continuing traditional activities without serious consideration of the needs of the pupil or of the results actually obtained."

The general course differs from the college-preparatory course chiefly in offering as a substitute for the classics more extensive options in modern languages, a greater opportunity to pursue the sciences, and to stress such subjects as history and civics. It differs from the college-preparatory course in emphasis and degree rather than in kind. Over three quarters of all high school pupils are at present pursuing the academic courses, yet not half of these will on the completion of these courses enter higher institutions of learning.

A small high school in Rhode Island which aims solely at college preparation and general culture offers one course of study for all of its pupils. This course includes the following subjects:—English (four years); history (three years); Latin (four years); French (three years); German (two years); algebra; geometry; physics; chemistry; elementary science; drawing; and music. Various options are offered, particularly for those not preparing for college. This school is typical of a large number of the better small high schools in New England.

A large city high school of the strict "classical" type offers a course that has changed little in the last twenty years. It stresses Latin, Greek, mathematics and English. It preserves the best of the old traditions as to what constitutes an adequate preparation for college and for life as far as culture and mental discipline are concerned. Schools of this type are growing relatively and actually less frequent as our educational ideals and practices change in the direction of a more direct and practical application of learning to life.

(b) *Pre-vocational courses.*—Schools that attempt to furnish a pre-vocational education are growing rapidly in numbers and in influence. They are for the most part a development of the "manual training" high schools of two decades ago. They emphasize hand work, applied science, mathematics, and practical courses in English; they offer opportunities to study modern language and history. In these schools are generally found complete courses in the domestic arts for girls, and in some parts of the country, particularly in the North Central and South Cen-

tral states, courses related to agriculture and the arts particularly connected with rural life. In 1915 the number of secondary schools offering courses in agriculture as reported to the United States Bureau of Education were 4,918 out of a total of 13,922, while 3,999 offered courses in domestic arts and 3,013 in manual training. In many of the schools offering agriculture there were brief text-book and informational courses alone, but in others there were thorough-going courses of a distinctly vocational nature. Though in some of these pre-vocational schools the courses in the manual arts, the domestic arts and in farming tend to be somewhat narrowly practical, it cannot be said that their chief aim is to graduate skilled mechanics, cooks, nurses, or farmers, but rather to develop in the minds of the boys and girls taking these courses a taste for mechanical pursuits, home duties, and rural occupations, at the same time furnishing these pupils with sufficient knowledge and skill to serve as an introduction to these pursuits.

A large Eastern high school of a thoroughly pre-vocational type offers the following subjects together with the older studies, but not including the classics:—Mechanical drawing, carpentry, smithing, carving, modeling, turning, pattern-making, machine shop, shop mathematics, business methods, and applied science. In addition to these courses primarily for the boys, it offers to the girls sewing, millinery, dressmaking, cooking, nursing, and other similar subjects relating to the care and management of the home. In a Western high school the work done in the domestic and the mechanic arts takes on a more definitely practical trend, though it is hardly to be classed as strictly and purely vocational. Courses are offered in joinery, cabinet-making, concrete and cement construction, and the like. The boys have helped to do much of the concrete work around the school building, and have constructed cabinets and tables for the school. The school has purchased a forty-acre lot, and the boys are improving this for a playground and athletic field. In the drafting department two of the public school buildings have been designed by the pupils. The girls in the household arts course manage the cafe-

teria and frequently serve luncheons and dinners for various school functions. The girls in the sewing and millinery departments often make their own costumes.

(c) *Semi-vocational and vocational courses.*—We have defined a semi-vocational course as one that prepares directly and with relative completeness for some specific occupation in life, at the same time giving a considerable amount of general culture. The best example of a semi-vocational course is found in our commercial high schools, which make it their chief aim to train capable book-keepers, office clerks, stenographers, and typists, and also to provide their pupils with a considerable amount of liberal education. Such schools, therefore, include in addition to the strictly commercial subjects, courses in English, history, science, some mathematics, and foreign language. To this more general type of work about half of the total course of four years is devoted.

A school of this type, just organized, offers the following:—English (four years); history (four years); civics; algebra, commercial arithmetic, rapid calculations; book-keeping; penmanship; correspondence; physics, chemistry, general science; French, German, and Spanish; shorthand and typewriting; commercial geography, commercial law, economics. To these are added drawing, debate, and practice in public speaking. A definite amount of work, a large part of which is of a vocational nature, is required, and there is in addition a wide range of choice among other subjects. No pupil can graduate from this course without having a considerable amount of general knowledge and culture.

In a number of commercial high schools a two-year course of study is offered that is strictly vocational in its nature. There is no subject in the curriculum that does not have a definite and practical relation to the occupation that the pupil is to follow on receiving his diploma. In this two-year commercial course we find the best example of a high school taking upon

itself the functions of a trade school. The total number of secondary schools that reported offering commercial courses in 1915 was 3,625.

A number of high schools offer in their senior year a vocational course designed to train teachers for the elementary schools. Such courses were offered by 1,481 schools in 1915. These schools are found chiefly in the North Central states.

Organization of High Schools in Reference to Courses of Study.—(a) *High schools offering a number of separate courses of study.*—Many high schools organize their curriculum into distinct courses of study, such as the "Classical Course," the "English Course," the "Modern-Language Course," the "Scientific Course," the "Manual Training Course," the "Business Course," the "Domestic Arts Course," or the "Agricultural Course." All of these courses have subjects in common, but they have others that are peculiar to the particular course in which they are listed. The pupil chooses early in his career which course he wishes to follow, and after he has entered upon any one of these courses it becomes increasingly difficult as he progresses to change over to another course.

(b) *High schools offering a wide range of electives.*—Another type of school offers an equally wide range of subjects, but these are not specifically grouped into definite courses, and relatively free election under direction and advice is permitted, unless the pupil is preparing to take up on graduation some activity of a very specific and definite nature, in which case his election of subjects will be strictly determined by his future needs.

(c) *High schools offering a few, definitely restricted, and highly organized courses of study.*—In this third type of school a particular group of subjects is taught to the relative exclusion of others. We have, for example, Classical High Schools, Technical High Schools, Commercial High Schools, and Agricultural High Schools. Schools of this type usually develop in large centers of population, or in communities engaged in a rather

narrow set of activities. There is a tendency in these schools, especially in those that emphasize largely vocational needs, to offer a narrow curriculum, and one too little concerned with general culture.

It has been urged that schools which offer combined courses of study are better adapted to the needs of our American life for the reasons, (1) that combined courses are more economical and avoid unnecessary duplication; (2) that they keep interest in public education a unit and prevent antagonisms in a community among those who emphasize different educational values; (3) that they offer boys and girls who desire vocational training the more liberal training provided by the general course; (4) and chiefly that they bring together children from various strata of society, offer them a common training, and instill in them the same essential ideals, a matter of no small importance in a democracy.

The Size of the American High School.—It is difficult to describe briefly the American high school in terms of its aim and its course of study; it is even more difficult to describe it from the standpoint of its size. Here the range is great. On the one hand we have the numerous one, two, and three teacher high schools, generally situated in small rural communities, and poorly housed and equipped, and on the other hand the large city high school, sometimes with hundreds of teachers, and thousands of pupils, splendidly housed and magnificently equipped.

An example of a school of the latter type is the Washington Irving High School in New York City. The school building cost one million, two hundred and fifty thousand dollars. It contains among other things a number of seven-room model apartments in connection with the courses in household arts; it has a conservatory on the roof for instruction in botany; cages for animals borrowed from the zoo; a laundry plant; a bookbinding plant; a banking department; several large rooms with two hundred sewing machines; typewriting rooms; a classroom with a department store for the study of salesmanship.

It cares for six thousand pupils, and has three hundred instructors on its faculty.

The one, two, and three teacher high schools are the most frequent; they also enroll a greater number of pupils than do the medium sized and large high schools. One of the important problems of secondary education is to strengthen these smaller schools. In some instances they are given state aid. Another movement toward making them more efficient is to consolidate these weaker schools into a larger and better central school. When this is done we find in many rural communities, township, and in some instances county high schools that have taken the place of the local high schools, and that have modern buildings, substantial equipment, and trained teachers. In other localities efforts have been made to induce communities supporting these small and inadequate schools to cut down their course of study from four to two years, and to provide for the education of the boys and girls beyond the tenth grade by sending them to a large neighboring high school at the expense of the community in which these pupils live.

Present Tendencies in Secondary Education in America.—(a) *Part-time courses.*—At present, secondary education in America is undergoing marked changes, and it is difficult to predict what will occur to modify it in the next few decades. We have already mentioned the marked trend toward vocational education.[1] In connection with this movement there have been introduced in a number of our technical high schools so-called "part-time" courses that are largely of a narrowly vocational nature, though they do not entirely exclude more liberal studies. These courses give the boy a chance to spend

[1] "Reorganizing high schools to meet the needs of all the people chiefly through vocational subjects," is the note that runs through the report of the high school authorities in practically all the States. (Report of the United States Commissioner of Education for 1914.)

part of his time in the high school, and a part in the shops of some local industry in the capacity of an apprentice.

This plan was first worked out in the University of Cincinnati in connection with the engineering school, but has been taken up by a number of important secondary schools particularly in Cincinnati, Beverly and Fitchburg. According to the Fitchburg plan, which is typical, the first year the boy spends all of his time in the school, and the next three years, partly in the school and partly in some local shop. Under this scheme he works alternately one week in the school and one week in the shop. He is associated with another boy whose work is so arranged that the week the first boy is in the school the second boy is in the shop engaged in the work that the first boy has left on going back to the school. Boys are paid for their work in the shops. They can work also during vacations.

(b) *Continuation courses.*—Continuation courses, which are common in Europe, are being introduced into some of our American high schools, and are closely connected with vocational training.

Such a course was established in Cincinnati in 1909. Under this plan apprentices in the city shops attend school one half-day a week without loss of pay. They study drawing, shop problems, mechanics, applied mathematics, industrial reading, composition and civics. The teacher assists the boys in the shops two half-days a week.

(c) *Evening courses.*—The evening high school has been an integral part of American education for many years, but it is growing in influence, efficiency, and extent with the development of the vocational tendencies in our public education. It is a part of the general movement to make a wider use of our school plant, and to give opportunities for all who desire to secure a better preparation for life. This movement began in the elementary school, but has extended beyond the high school into many of our best universities and colleges.

(d) *Credit for home work.*—In the attempt to bring the work of the classroom more closely into relation with life, schools are recognizing activities not strictly connected with the curriculum as being worthy of credit as a part of the education of the boy and girl. Credit for home work has found its way from the elementary school to the high school in a number of localities.

For example, the high school at Santa Monica, California, gives two credits out of the sixteen required for graduation for work done at home. Credits are allowed for farm work of various sorts, household duties, work in local trades and industries, carrying a paper route, and for correct personal habits, such as sleeping in the open air, retiring at ten o'clock, taking a cold bath, and walking three miles a day. Credit is granted also for taking music lessons, playing golf and tennis, swimming, and summer vacation travel with a written description submitted to the teacher. A similar arrangement exists in the St. Cloud, Minnesota, High School. Over fifty high schools in Nebraska and neighboring states give credit for work done at home in household occupations.

(e) *The "Junior High School."*—One of the most important movements in high school education in recent years is the organization of so-called intermediate schools, or junior high schools, as they are more commonly named. Under this plan the elementary education of the child ends with the completion of the sixth grade, and in the immediately following grades work of secondary character is introduced. There are various forms which this movement is taking, but in general the seventh and eighth, or the seventh, eighth, and ninth grades are separated from the elementary school and reorganized by offering some elective subjects to provide for individual tastes and differences. To accomplish this a number of pre-vocational studies are introduced, and some of the standard high school subjects, such as a foreign language and algebra, are added. Generally departmental teaching takes the place of the room teaching

of the grades. The work in the junior high school is followed by a course in the senior high school. Thus under this plan the entire period of secondary education covers six years. In some instances the junior high school is found in the same building with the elementary school, while in other instances it is separately housed or under the same roof with the senior high school.

Among the reasons advanced for the organization of junior high schools the following are the most important: (1) The earlier beginning of secondary education than at present is the custom in America is more in accord with the practice of European schools and with the needs of child nature; (2) it makes the transition from elementary to secondary education less abrupt; (3) it keeps pupils longer in school; (4) it furnishes an opportunity to provide for individual tastes and differences among children at an earlier age than is possible under our present system; (5) it allows the earlier introduction of such subjects as foreign language, high school mathematics and prevocational studies; (6) it avoids the waste connected with the last two years of the elementary school program, which contains much unnecessary review, and which emphasizes far beyond any actual need the formal aspects of English and arithmetic.

The movement for the junior high school was first started in the United States about ten years ago and during the last decade it has been put into operation in a number of important school systems throughout the country. According to Briggs, who outlines the status of the junior high school in the report of the United States Commissioner of Education for 1914,[1] one hundred and sixty-seven cities reported that they had one or more junior high schools in operation in some of its forms, although over half of this number do not satisfy the details in many particulars.

(f) *The "Junior College."*—In various parts of the country, notably in California, the high school has extended its work up toward the college as well as down toward the elementary school.

[1] Vol. I, pp. 135–157.

This upward tendency has given rise to the "junior college" in which the equivalent of two years of college work is furnished in the high school in a graduate course. Pupils are thus encouraged to continue their studies beyond the normal period of high school education, and under proper conditions are admitted to college as juniors at the completion of the high school course.

Conservatism Still Pronounced in Secondary Education Throughout the United States.—In following the discussion in regard to the changing aspects of secondary education the reader may have formed the impression that great uncertainty and diversity exist in regard to high school aims and methods. This is true, however, only to a degree. Many reforms have been advocated, but only the less radical have been put into practice to any considerable extent. As has already been pointed out the older and more conservative type of secondary education still dominates the situation. Nevertheless the movement, already well under way, to make the high school of greater service to the community that supports it, as well as of greater practical value to the pupil and more suited to his needs, will continue to grow in force.[1] The young teacher who enters the

[1] The experiment in secondary education about to be undertaken at Teachers College, Columbia University, is a most important step in this direction. A statement issued by the General Education Board (Jan. 19, 1917) reads: "The General Education Board announces that it will provide Teachers College of Columbia University with the funds necessary to establish and conduct a school for the purpose of constructive work in the reorganization of elementary and secondary education. The keen and extended discussion of President Eliot's paper on 'Changes Needed in Secondary Education' and Abraham Flexner's paper on 'The Modern School' have convinced the General Education Board of the importance of supporting a school conducted in coöperation with Teachers College for the purpose of working out by cautious experimentation, suggested improvements in the curriculum, so that it may be better adapted to the needs of modern life than is the curriculum now in common use.

"The organization of the school under the auspices of Teachers College insures the careful study of every experiment by the Faculty of Teachers

profession at the present time, and who remains in service for any considerable period, will be in the midst of important changes and must have a mind to understand them and a sympathetic attitude toward them, striving to evaluate them properly and to aid in their advancement when they seem desirable. Such a teacher must remember that the high school is aiming to give an education to a large number of pupils of varied home training, tastes, and abilities, and that no aristocratic or exclusive notion of what secondary education ought to be will fit the high school situation as it exists today. He must make

College, many of whom are among the ablest critics of educational procedure in the world. This arrangement will make for carefully considered and continuous progress toward the goal for which the school is established. A number of colleges have already expressed interest in the undertaking, and it is hoped that academic coöperation will be obtained.

"In the curriculum modern languages will be stressed and experiments will be made with a view to determining what methods of teaching English, French, and German give the most substantial practical results. New methods of teaching literature, history, and civics will be tried, and in this connection efforts will be made to ascertain whether the important ancient classics cannot be effectively used in translations. Latin and Greek as languages will not be taught in the school. Science, industry, and the domestic arts will be prominent throughout the school, and increased attention will be given to music, drawing, and art. The subject of mathematics will receive special consideration in the hope of working out a rational course of study which connects the study of mathematics with its use, and which also makes adequate provision for those who have special ability or desire for this subject.

"Organized recreation, play, and games will be provided for. Constant efforts will be made by means of individual, class, and school excursions, by means of pictures, lantern slides, charts, maps, shop and laboratory, special reading matter, and discussions, to give the pupils sufficient contact with their natural, industrial, social, economic, vocational, and domestic environment so as to derive the basis for their school work from real situations, and thus make school work constantly real to them. The school will frankly discard that theory of education known as 'formal discipline,' and will undertake to secure training through the careful and thorough study of subjects which are in themselves valuable. It is believed that a much more effective discipline can be thus secured."

up his mind that more and more the demand for vocational and practical education will be voiced, and that the older ideas of a cultural and a disciplinary education will be pushed to one side to satisfy the demands of the present day. Above all he must free himself from the notion that the high school exists chiefly for the purpose of preparing boys and girls for college. This does not mean that the young teacher fresh from academic studies is to abandon his college ideals, but it does mean that he must readjust many of his notions in order to make them conform to the present day aim of education, whose watch-word is preparation for efficient living and community service.

CHAPTER II

THE HIGH SCHOOL PUPIL

The Teacher Must Know the Pupil.—The teacher must teach his subject to *individuals*,—the pupils under his charge. This is a truism in education, but one that cannot be repeated too often, particularly to the young teacher fresh from college, where he has been given the impression by many of his instructors that the only thing necessary for him to know is his subject. Indeed he may have gained the idea that to know anything about school methods, or the minds of his pupils is beneath the dignity of a teacher in the high school. Such trivialities should be left to the elementary teacher, he feels. Nothing, however, could be farther from the truth. Though no teacher should of his own volition seek to give instruction in a subject with which he has not a large measure of familiarity, and though high scholarship and accurate knowledge mean much for his success, they are not the only elements in this success. The teacher who does not attempt to know something about the pupils under him, who does not recognize the problems of fitting his instruction to their needs, interests, and capacities, is in grave danger of failing. The best teacher is the one who knows his subject, and at the same time knows how to impart it to his pupils; but he cannot know how to impart it unless he knows the boys and girls under his charge, both individually and collectively. To know them as individuals he must come in vital contact with them in the classroom, and in the wider life of the school. He cannot be provided with this knowledge in advance. It is a problem for him to work out on the ground; but a knowledge of his pupils collectively, an understanding of the type, or types of high

school pupils that he is likely to encounter, can be secured in part before he actually meets them. It is the purpose of this chapter to present in regard to boys and girls of high school age some of the most essential facts that have been reasonably well established by observation and investigation.

The High School Pupil is an Adolescent.—First of all it should be kept in mind the boys and girls of high school age are adolescents, just developing into young manhood and womanhood. These early years of adolescence are in many ways the most critical in life, and they mark themselves off from the years of childhood and of full maturity in a fairly distinct way in most individuals, and in a striking manner in a few.

At this point, however, the writer feels that a word of caution should be uttered for the benefit of those who have gained the impression that the youth is a fundamentally different individual from the child, and that with the onset of puberty there occur changes that are second only to those that separate the postnatal existence from that before birth. In most instances there are few sudden changes that announce the arrival of the pubescent years. Generally there are no marked upheavals, no cataclysms in habits, thoughts and feelings, no radical outbreaks, or uncontrollable emotions. While interests, ambitions and ideals take on new forms, *the great fundamental principles of learning are the same for the child, the youth, and the adult.* These will be discussed in later chapters, and their bearings on instruction in the high school pointed out. In passing it may be well to say that repetition and drill cannot be dispensed with at the end of the grammar grades, that reasoning ability is not something that is born with puberty, but that it develops gradually from childhood on to maturity, and that interest and purpose in study must motivate the school work throughout its entire course.

Yet, while emphasizing the essential likeness of human nature in its fundamental elements, we must recognize the fact

that the changes that occur with the coming of adolescence are sufficiently important to modify in many ways the subject-matter of instruction and its methods of presentation. For these reasons the next few pages of this discussion will consider the characteristics of this period of life.

The Most Important Characteristics of Adolescence.—(a) *Adolescence is a period of mental and physical change.*—Although the child develops from year to year both in mind and body, the development of the adolescent is on the whole more rapid, and changes sometimes appear with considerable abruptness. There is acceleration in the growth of the body as a whole, both in height and weight, that comes with the onset of puberty; there is also growth in the bones, muscles, and various bodily organs, and a change in the relative size and weight of these parts. Lung capacity and blood pressure increase, there are the well-known changes in the quality and pitch of the voice, particularly to be observed in boys, and although there is no marked increase in brain weight, it is probable that there is a development of the brain-cells and their connections. Of great significance both in the physical and the mental life of the child is the rapid development to functional capacity of the sex-organs at this time.

As marked as are some of these physical changes, they are as a rule overshadowed by the mental changes with which they are closely associated. This is the time when the feeling and emotional life appears in new forms, sometimes attended with marked upheavals. On the intellectual side there is considerable growth in intelligence and mental grasp. These changes will be discussed in greater detail in the next few pages with particular reference to their significance for education.

(b) *Bodily development during this period is closely related to questions of hygiene and discipline.*—The health of the pupil is an important consideration during all stages of instruction, but the rapid growth of the body during the early adolescent period,

raises some important questions that the teacher should keep in mind. While but a relatively small percentage of children in America are seriously injured by school occupations, the teacher should remember that the physical development of the young adolescent often makes it particularly difficult for him to hold his mind to a task for any great length of time. Lesson assignments should be of moderate length, generally not requiring more than an hour's preparation outside of the classroom. When it is possible during the class period to help the pupil in the preparation of his next lesson this should be done. Above all the teacher should never assign unnecessary work to the pupil, merely "to give him enough to do." Insist on faithfulness and accuracy, but do not expect too much. The adolescent girl should be given special consideration. There are times when she needs particular indulgence; times when school tasks should be lightened, or even entirely remitted.

Both boys and girls often show provoking tendencies toward inattention, day-dreaming, and downright laziness. These mental lapses are in part due to physical conditions. While the teacher should do all in his power to stimulate flagging zeal and recall wandering attention, he should not too readily assume that the pupil's provoking attitude is due to a real perversity on his part. The changes in the vocal organs have a close bearing on the teacher's problem. The stammering and hesitating boy, who sometimes refuses to the point of obstinacy to talk, may have a reason for his hesitancy, diffidence, and seeming stupidity in a lack of control over his voice. Under such conditions declamation and singing are not likely to be valuable exercises. The giggling girl, one of the most disturbing factors in the high school classroom, is not merely silly; she lacks control of both body and mind. In dealing with these and similar cases the teacher must be firm, but sympathetic. To accept these annoying conditions as necessary and therefore as unavoidable is to adopt a hopeless fatalism; to consider them examples

of original sin is an equal folly. The pupil must be disciplined, but there should be no irritation or unnecessary unkindness in his discipline.

(c) *Various instinctive tendencies manifest themselves with great strength.*—During the early adolescent period certain instincts, heretofore nascent, or but weakly expressed, assert themselves with vigor. Chief among these are those complex *tendencies that center around sex.* The attraction of the boy for the girl and the girl for the boy appears in a new form. Whether this attraction shall develop into something noble and uplifting, or into something base and destroying, depends largely upon the proper education of the youth at this period. For this education the school shares responsibility with the home and the church, indeed in many instances it is the school alone that can guide the young person safely through this time of storm and stress. No high school teacher should shirk the duty imposed. He should be on the alert to recognize dangerous tendencies in the behavior of pupils in his classes or in the school building and to check them at the outset. In most instances he cannot give formal moral instruction, or discuss matters of sex hygiene, but he should never lose an appropriate opportunity, to emphasize the highest of ideals in regard to the relation of the sexes. Indirectly in various ways he can do much to help.

The teacher of literature or history can in many instances, without departing from the regular work of instruction, and without forcing facts out of their proper relation, find opportunity to emphasize the great moral truths of human experience. He should not give a lecture in ethics, but he should consider it imperative to neglect no real occasion to impress upon his pupils the great value of those virtues of thought and action that have made sex-love one of the loftiest of all forms of human expression.

The teacher of biology has an equal opportunity in another and somewhat different way. He can do much to correct the indecent notions that center around sex and to remove the absurd "taboo"

concerning it, by direct, simple and scientific statements of the facts of reproduction as they appear in the animal and plant world. Much of the vileness in thought and action of youth results from the fact that these things are kept in the dark. They are considered base because they are made to appear base by the social attitude of repression concerning them. Boys and girls will not remain in ignorance of the facts. It is better that they should learn them as they are, devoid of misconception and immoral implication, than to pick them up from the worst possible sources saturated with filth and distorted by untruth. Every teacher of physiology and botany should at the beginning of the course consult with the school principal and determine just what should be taught in this regard, and when and how such information should be imparted.

Youth is often prone to tire of home surroundings; there is a longing to get away from the hum-drum routine of daily living, and to seek new experiences and adventure in the big world that lies over the rim of the horizon. What is sometimes called the "*migratory instinct*" now appears in its greatest force, and the boy in particular often feels its pulling power. School tasks are for most children at times a burden, but never more so than in these first years of adolescence. To hold the pupil in the high school, the work must be made attractive. It should be the aim of every teacher to make the classroom and the laboratory a place where the pupil likes to be. This does not mean that the teacher should not require thorough work and honest work, but it does mean that he should do all in his power to inject into the work every bit of human interest possible, to make the subject that he teaches appeal to all legitimate tendencies in young people, as far as this can be done without vital injury to the subject taught. Dry-as-dust methods, and dull logical forms of presentation may possibly succeed in the elementary school, but they are for the most part sad failures in high school. The young teacher should not attempt to present a subject in the form in which he learned it in college, unless he feels certain that

this is the form best suited to awaken the interest of the pupils under his direction. It is a common error of the inexperienced teacher to carry over, often in detail, the subject-matter and its method of treatment from the college to the high school.

In recent years much thought has been given to the question of attracting a large number of boys and girls to the high school and of keeping them there as long as possible. The problem is to awaken and to hold the interest. For this reason, in part at least, subjects that make a broad appeal to fundamental instincts and ambitions have been added to the curriculum in ever increasing numbers, and methods have been revised to make the subjects more attractive. The tendency to manipulate and construct has been in part satisfied by the manual courses; vocational ambitions have been appealed to by the introduction of commercial and technical courses; the attempt to satisfy the interest in doing something rather than in going through a series of formal exercises in preparation for doing something later has led to the development of the direct method of teaching language in which the initial grammatical work is cut down to a minimum, and the pupil begins to speak and read the language almost from the first day.[1] Science is now sometimes taught by taking up at the outset some big fact in human experience and later discovering the elementary principles that lie at the basis of it, rather than by studying the elements and later finding out how they enter into actual things. So, too, history and literature in many classes are no longer a dry catalog of facts and dates, but they are subjects that make a direct appeal to the immediate interests of young people by bringing the characters and events into vital connection with the actual, pulsating present.

Youth is essentially social. The desire to flock with one's kind, the "*gregarious instinct*" as it is sometimes called, is deep-seated in the human race, and is also a marked tendency among animals. It is never absent from life from the time when little children first play together until the very end, but never is it

[1] See Chapters IX., p. 193, and X., p. 201.

more intense than at the high school age. At this period, too, come out in full force other social tendencies. Not only do youth like to congregate together, but they have strong "*feeling for kind.*" They show sympathy as never before, they strive actively to coöperate, they desire approbation, they have a regard for the rights of others even at the expense of their own wishes, and they show a loyalty to those of their group that at times is little less than heroic. All the best tendencies at the basis of altruism may appear now in their greatest strength. The school and the teacher must recognize these socializing factors, give them all legitimate opportunity for expression and use them when possible for the attainment of desired educational ends.

The school should have a reasonable number of social functions, properly supervised and controlled by the teaching staff. The teacher should consider it a part of his duty to stimulate desirable school organizations and to give some of his time to promoting them. Musical clubs, dramatic clubs, debating societies, athletic organizations, and even dancing clubs have their place in the well-regulated high school that cares for the best interests of its pupils. These organizations, however, must be open and democratic. Secret societies have no place in the high school, and clubs founded on any basis other than that of membership in the high school and ability to enter upon the activities that they tend to promote, are a menace to the integrity of the school.

The "social instincts" should be provided for not only through school organizations; they should be given opportunity to express themselves in the class work. Every teacher should aim to make his class a social unit,—a distinctly coöperative affair.[1] Each pupil should have the attitude of contributing something to the class as a whole. He should recite not to the teacher, but to the class; he should bring into the class special bits of informa-

[1] See particularly Chapter VII., p. 148.

tion for the use of all. The teacher should guide, organize and direct, but not completely dominate.

Our school rooms are so arranged physically as to prevent coöperation. The desks should not be placed in formal rows as at present is almost universally the custom, but the pupils should be seated in chairs arranged in a semi-circle with the teacher in the center. Each pupil who takes part in a class exercise could then easily address the class as a whole. He would look into the faces of his mates, and not into the back of their necks. The tendency to recite merely to the teacher would then be largely done away with. The pupil would "talk up," not mumble or whisper as he often does at present. The whole tone of the recitation would be greatly improved. Unfortunately the teacher can do but little to overcome the inherent difficulties due to the present seating arrangement. When he has a small class in a large room he can, however, arrange his pupils by seating them in the back row, and in the two outside rows, thus placing them in the form of three sides of a hollow square. This method of seating should be followed when it is possible.

Although the teacher can do little in regard to proper seating, he can accustom his class to recite to the class and not merely to him; he can ask individuals when they discuss a topic of some length, or read before the class to stand in the front of the room, facing their mates; he can assign to individual members topics to look up or facts to investigate as a basis for subsequent report, and at times he can let certain pupils aid him in teaching the class. The teacher, however, should never surrender entire control; he should always be on hand to guide, direct, and if necessary to interfere. The writer observed recently a class in current events organized with a chairman, and with the teacher a mere onlooker, who was supposed in no way to interfere. This class spent the entire period of forty minutes in discussing the spelling of Serbia, developing a heated controversy of the most trivial nature, and ending in no very definite conclusion. This was a period wasted. No teacher can afford to conduct a class of this sort.

One of the most important sentiments developed through the maturing of the coöperative and socializing tendencies of adoles-

cence is that of loyalty mentioned above. This loyalty is specific. It is group loyalty. There is no more important human ideal than that of loyalty, and although it may seem to be too narrowly expressed, it should be carefully nurtured. The pupil should never be encouraged to be a tale-bearer. The tell-tale is neither loyal to his fellows, the teacher, nor the school. He is generally seeking his own advantage, or is a prig. The discipline of a school that rests on tale-bearers is likely to be a failure. Only under the most extreme conditions where the fundamental welfare of the school is at stake should a boy or girl be encouraged, or even allowed, to "tell on his fellows." We must remember that if the adolescent fails to be loyal to the group, to "his group," he is likely never to be loyal to anybody or anything.

While it is not wise to encourage tale-bearing, it is possible to control the members of the group through appealing to the group to safeguard its best interests. If the group can be impressed with the necessity of holding to strict accountability all individuals who commit offences that work injury to the group, if a class or school can be made to realize the importance of protecting itself against those members who are likely to bring it into disrepute, this social sentiment will accomplish wonders in discipline, and the teacher need rarely to interfere.

It often happens that such offences as dishonesty can be dealt with adequately by making the group see and feel that a cheat is an injury to its good name; that he destroys coöperation between teacher and class, creating an attitude of suspicion and distrust that work to the harm of all.[1] Indeed it is generally impossible to deal effectively with classroom dishonesty by any other method than by arousing the resentment of the pupils as a body toward it. This matter will be more fully discussed in Chapter VI.

(a) *Youth is a period of intense, though often conflicting and fluctuating interests.*—Closely associated with the maturing in-

[1] See Chapter VI., p. 123.

stincts discussed above are various adolescent interests that from time to time express themselves with great force, often in exaggerated, intense, and contradictory forms. To these interests the teacher may appeal with great advantage at times; he can never safely ignore them or thwart them.

At this time, particularly with boys, the *vocational interest* looms large. These young people are beginning to think about careers, and they wish to see a connection between what they study and what they hope to do after they leave school. Teachers of the recognized vocational subjects have here a great advantage over those who have charge of the older "academic courses." A pupil can easily see how a course in stenography, book-keeping, or shop-practice may help him later on, but it is difficult to make him feel that Latin, geometry, or even history is likely to play any considerable part in his adult life. Fortunately there are interests other than those centering around narrowly practical ideals that can be appealed to by teachers of these latter subjects. It is often possible, however, to make the most academic topic take a practical bearing, and whenever this can be done without injuring in any essential way the development of the course or the lesson, it should be attempted.

One of the greatest faults of our teaching is that it is not closely enough related to life as the pupil understands it and knows it. It is a vicious educational theory which holds that a subject in high school or college is deprived of its cultural and disciplinary values when the pupil selects it because he believes that it is to be of some definite use to him and because he sees in it some application to the world about him. Any subject or course of study is vivified and vitalized when the learner believes that it has for him a definite value. In America we have carried the notion of culture and discipline divorced from use to an extreme unknown in any other system of education in the western world.

As a rule the best teachers of such subjects as language, literature, history, and mathematics take pains to make a direct application whenever it fits. Even Latin has its practical side. It stimulates the interest of the pupil when the teacher shows him the connection between Latin words and their English derivatives or the place of Latin in modern literature. In French and German the practical and human sides are even more obvious, and Spanish is now being introduced in the high school curriculum almost entirely because of commercial reasons. While the teaching of English composition is being approached more and more from the standpoint of social and business correspondence, and newspaper writing, there is still too much formalism in the ordinary high school theme. The teacher should keep in mind that the function of written discourse is to express ideas, and he should aim to make his subject connect itself with ideas that the pupils have and desire to express. The teacher of English literature or of history must strive at every point to make his subject seem "real" to the class, and to make it a reality he must bring it into some definite relation with their lives. This does not mean that he must demonstrate its narrow utilitarian value, but it does mean that he must impress upon his pupils the sense that the facts and ideas that they find in their text-books or that are brought out in the classroom have something in common with their own experience. In United States history and in civics the applications are on every hand, and a teacher who presents these subjects merely as text-book and recitation courses has failed to avail himself of a splendid opportunity. Teachers of high school mathematics and natural science are attempting in many instances to get away from a merely theoretical and logical presentation of their subjects and to give problems whenever possible that are in the practical field.[1]

Although vocational interests loom large in the early adolescent years there are other and less practical motives that are equally intense. It is one of the paradoxes of this period of life that while the adolescent is often most narrowly utilitarian, and is inclined to ask the use of the studies that he pursues, he

[1] See Chapter XII., p. 270.

is on many occasions broadly idealistic. When he is in the mood he is far less practical than the child in the grades or the man in adult life. Big ideals often sway him. Among the non-practical interests his *intellectual ideals* stand out strongly. He often has a burning desire to know, he is genuinely curious, he loves to argue and debate, he sometimes is filled with a passion for reading, and his linguistic interests are apt to be strong. He is less prone than formerly to follow the ideas of others; and mere memory cram is often distasteful and generally profitless. At this stage of the pupil's development the teacher should particularly strive to state the school work as far as possible in the form of problems, of course problems that are real problems for him; problems that awaken his curiosity and urge him toward their solution. Appeal to his originality and inventiveness in terms of his genuine interests should be made whenever possible. Every proper incentive should be given the pupil to read and to read the best things; he should have opportunity under wise supervision and direction to present his own reasons for his opinions and beliefs, and his linguistic interests should be appealed to through direct methods of language teaching, whenever such methods are possible.

The teachers of science sometimes miss golden opportunities to appeal to the curiosity of the pupil and to stimulate his self-activity in the solution of problems in physics, chemistry, and biology. The laboratory exercises are often quite formal, the pupil has no genuine desire to discover new facts or principles, and he goes through a series of careful instructions contained in a laboratory manual in a mechanical way. He may be interested in the manipulation of his materials, but a genuine scientific curiosity is for the most part lacking. Whenever it is possible, the teacher of the natural sciences should aim in the class period preceding a laboratory exercise to develop the subject to the point where the class are eager to know what follows or happens next.[1] They should see the problem and try to state it

[1] See Chapter XIV., p. 307.

themselves. The teacher should merely guide and direct them toward its formulation. Then he should send them into the laboratory, furnished with a sufficient amount of instruction as to the technique and method of solution to prevent unnecessary errors, waste, and loss of time, but he should not give them minute instructions as to every detail of their experiment. As supervisor of the laboratory period he can help those who need help when the necessity arises, but he must see to it that this help is given only when there is an actual need. The self-activity of the pupil should be appealed to as much as possible.

In a similar way the teacher of geometry should lead his pupils to see certain spatial relationships without telling them that these relations exist. The pupil should state the problem himself and attempt to solve it by the aid of the teacher, rather than learn it as a mere memory exercise in the formal and logical manner of the text-book. This should be used as a supplement of the work rather than as the chief source of instruction.[1]

To stimulate reading interests is one of the chief aims of culture. The teacher of literature is generally given this task, yet it should not be confined to him alone. There is no subject in the curriculum that does not lead the pupil to books, if the subject is so presented as to arouse further desire for information. As far as possible collateral reading by high school pupils should not be made too formal. A pupil who wishes to know more about something should be referred to some book or article that will tell what he wishes to know in a simple and direct manner. Later the pupil should briefly tell to the class the essential facts that he has discovered in his reading. The teacher of literature who is striving to give his pupils a taste for the best things should have a care not to kill their reading interests at the outset by assigning them literary masterpieces that they cannot comprehend or enjoy. It is better to cultivate a desire to read by sending the pupil to the *Saturday Evening Post* than to kill that desire by offering him *Paradise Lost* when he is not capable of becoming interested in it.

One of the most successful methods of stimulating literary interests that the writer has observed was in a class in English that was

[1] See Chapter XIII., p. 281 and Appendix C., p. 422.

given as a text, a book containing extracts from writings of excellence, selected with the definite attempt of making an appeal to the pupils. The teacher told enough of the story to lead up to the extract read by the class, but he never told the sequel. The demand for the books containing the whole story became so great that the public library in the city could not supply it. There was not a pupil in the class that did not want to know how some story "came out," and most of the class wanted to know how the majority of the stories ended. In another instance a teacher of literature varied this method by requiring the pupils to write how they thought the story ended and read their compositions to the class.

The *aesthetic, moral and religious interests* of adolescence are without doubt in part connected with the physical development and the maturing of instincts that characterize this period. An impersonal love for beauty and for nature seems to be more prominent at this time than ever before. The little child is attracted by bright colors, is extremely sensitive to rhythm, and shows at times considerable creative ability, particularly in his drawings. He has the capacity to learn the technique of various arts, but he is lacking in genuine appreciation of music, painting, sculpture, and literature. With youth this is not so. He often shows a veritable passion for the beautiful, his appreciation for the products of art, though generally crude is sincere, and he is nearer to creative genius than at any other time in his life. It is a fact to be regretted that our high schools for the most part offer little that is distinctly calculated to stimulate and develop genuine artistic interest. Most courses in art are formal and technical, and of these the number offered is few. Of the subjects ordinarily included in the high school curriculum the courses in English offer the best opportunity of teaching artistic appreciation and stimulating creative ability. This aspect of the teaching of English should not be subordinated to the grammatical, technical, and historical phases of the subject, as is too often the case.

Moral ideals and religious enthusiasms first appear in their strength during the high school period. As a rule there is little definite attempt made to give direct moral and religious instruction, but there are many occasions when the teacher can appeal to the finest and best in the thoughts and feelings of his pupils through indirect means. Noble purposes, high ideals, love of truth, attitudes of respect for authority and a reverence for the best things in human life, these and many other high aspirations from time to time touch the lives of the youth with vital force. Here lie the teacher's opportunity and his clear duty.

The Enrollment in our American High Schools Includes Pupils of Varying Social Status and Marked Difference in Abilities.—High school pupils in America, as we saw in the discussion in our first chapter, do not come from a narrowly selected group. It has been shown that the economic condition of the parents has relatively little influence on whether the boy or the girl continues a course of study beyond the elementary school. The social condition of the parents is also not a very important factor. Poor and unlettered parents who have a genuine desire to give their children an education generally manage to do so through the medium of the public high school.

A study made by J. K. Van Denberg of a thousand boys and girls picked at random, who entered the New York City high schools in February, 1906, showed that among the fathers of these children there are "as many compositors as there are doctors, lawyers, clergymen, and teachers combined. There are nearly twice as many 'tailors,'—that is workers on garments. There are as many waiters as there are architects; as many barbers as there are civil and electrical engineers; as many janitors as there are dentists and editors together. The policemen, carpenters, masons, plumbers, metal workers, painters, compositors, and firemen outnumber the doctors, lawyers, clergymen, and teachers five to one. Coachmen, street cleaners, elevator men, Turkish-bath attendants, watchmen, and laundry workers send

sons to the high school. Coachmen, elevator men, and watchmen send as many as clergymen and teachers." [1] Van Denberg's investigation further shows that nearly three-quarters of the families whose home conditions were investigated were paying ten to twenty-five dollars monthly rental and that over a third of the total were paying fifteen dollars, and a considerable number only ten dollars. Such a rental in New York city means a three or four-room tenement in the cheapest quarter of Manhattan or Brooklyn, according to Strayer and Thorndike.

While these conditions refer to New York City primarily, there is no reason to think that they do not offer a substantially true picture of conditions as they exist in most of our American cities of considerable size, and they are probably to an extent true of many small communities, particularly where there is a considerable proportion of families of foreign birth or extraction.

Strayer, in a study of the economic status of high school pupils,[2] gives the following table, showing the vocation of the parents of these pupils:

Students whose fathers are professional men	10%
Students whose fathers operate a farm with over $5,000	21%
Students whose fathers operate a farm with less than $5,000	15%
Students whose fathers make more than $2,000 a year in trade or commerce	10%
Students whose fathers make between $1,000 and $2,000 in trade or commerce	14%
Students whose fathers are skilled artisans making $1,500 a year or more	14%
Students whose fathers are unskilled laborers	16%

"These figures," says the writer, "indicate the thoroughly democratic character of our public high schools. In any community one may expect to find children from the families of professional people along with the children of day laborers."

[1] Quoted from Strayer and Thorndike, *Educational Administration*, pp. 69, 70 (1913).

[2] Report of U. S. Commissioner of Education for 1910, Vol. II., p. xxv.

The ability of a pupil as shown by his record in the elementary school is a factor of considerable importance in determining whether he shall go on to the high school. The very poorest pupils are eliminated before they finish the grammar grades. The intellectually unfit are not as likely to enter the high school as are those of better ability. Yet this elimination through lack of ability is not thoroughgoing, and many pupils start out on a high school course who are incapable of doing work of academic nature.

If the pupil regards a high school course as definitely connected with his future career he is more likely to enter and to remain than if he goes with no very definite object in view. However, a large number of children annually enter our high schools with no clear notion of why they are continuing their education; generally the parents of these children are likewise confused in their notions as to what the high school is likely to do for the pupil. It is desirable as soon as possible that these pupils and their parents come to some conclusion as to what is to be definitely gained through a high school course of study.

The high school teacher should keep all of these facts in mind in dealing with his pupils. He should remember that the boys and girls in his classes often come with no background of culture or refinement, that sometimes the parents are very poor and many times illiterate, that home conditions of study are seldom ideal, and that they are often very bad. He should also remember that many of his pupils have no great ability, that a considerable number come to the high school for no definite reason, and that these generally do not have a strong motive to do good work. If he keeps these facts in mind he will not expect too much at the outset; he will attempt in striving to stimulate his pupils to do better work to find out something about their home conditions, their general abilities, and the reasons that they have for coming to the school and for selecting a certain course of study. This individual inquiry is necessary if the teacher hopes

to be a guide and a help to his pupils in anything more than an external and a formal way.

The Elimination of High School Pupils is Marked.— According to one extensive investigation, out of one hundred pupils entering the first primary grade twenty-seven survive until the first high school grade, seventeen until the second, twelve until the third, and eight until the fourth.[1] While the proportion of pupils entering and graduating from the high school varies widely in different localities the above cited investigation gives a fair indication of the rate at which pupils dropped out of the high school a decade ago. During the last few years conditions have improved somewhat, but elimination is still marked. The reasons for such elimination are various. One has already been mentioned, a lack of a definite purpose on entering high school. Among other causes that are important is age at entrance, over-age pupils tending to leave school more often than normal age or under-age pupils. Ability, industry and success in school work are also deciding factors. School marks during the first few months give a strong indication as to whether the pupil is likely to remain in school. The pupils that receive high grades will probably continue to the end of the course, those who receive grades of fifty or under are likely to drop out before the end of the year. Low grades are closely correlated with early elimination from the high school for two reasons. In the first place, low grades generally indicate poor ability, and pupils of poor ability do not as a rule remain long at intellectual tasks. In the second place, lack of initial success often tends to discourage the pupil, and he generally takes the first opportunity to leave school unless he has some strong motive for desiring to complete the course, or is compelled by his parents to stay.

It is generally held by those interested in public education that it is desirable to keep most pupils who enter high school in the school as long as possible. The ideal is to make the school

[1] E. L. Thorndike, *U. S. Bureau of Education, Bulletin No. 4* (1907).

serve all classes and minister to all degrees and kinds of ability and not to perform the function of selecting the best for survival, and eliminating as rapidly as possible those who are not up to the standard. The American high school teacher must accept this aim, and not proceed on the theory that the high school is primarily an agency for the elimination of the unfit. The teacher must therefore do all in his power to give the pupils a genuine motive for doing their work, and wishing to complete the course; he must consider it his duty to work with pupils of poor ability in order to bring them up to a passing standard; he must make the work of the first few weeks and months of such a nature that those of average ability and reasonable industry can do it. Above all, he never should pride himself on the fact that a large number of his pupils have failed to pass an examination, or have fallen below grade in a course. This does not mean that he shall discard standards, or make his work easy in the wrong sense of the term; but it does mean that he must strive in every legitimate way to adapt his instruction to the capacities and interests of his pupils.

CHAPTER III

THE HIGH SCHOOL TEACHER

The American High School Teacher Does not Conform to any One Type.—Who teach our boys and girls in our high schools? This question can be answered in only a most general way, because there is no one class or type of high school teachers. They vary in social position, general education, special preparation, and in nationality. As a rule they come from families of moderate means, families of the better middle class. The salaries they receive vary widely, ranging from a minimum of four or five hundred dollars a year to a maximum of several thousand. In preparation there is a similar lack of uniformity, some high school teachers having had but one or two years' education beyond the elementary school, and others having had eight, nine or even ten years. Although there is no typical high school teacher, it is safe to say that the "average" high school teacher, using the term average in the sense of the teacher most frequently found, is a young man or woman (more often a woman) with six, seven or eight years of preparation beyond the grades and receiving a salary of from six hundred to a thousand dollars annually. These facts will be discussed more in detail in the following pages.

The Preparation of the American High School Teacher is Inadequate.—Measured by the standards of other professions the amount of special preparation that the American high school teacher receives for his work is as a rule inadequate. Considered in the light of the training that the European teacher obtains it is slight. Judged from the point of view of the im-

portance of the teaching profession to the nation it is far from ideal.

(a) *The European secondary school teacher is trained for a life profession.*—In Europe the teacher in the secondary school is as thoroughly prepared for his work as are the lawyer, the doctor, the clergyman, and the army officer for their callings. There is no short cut to becoming a teacher, hence teaching is never thought of as a make-shift or as a temporary occupation, as is too often the case in America.

The *Oberlehrer* (regular teacher) in the boys' high schools in Germany must have completed his elementary and secondary education, which he generally does at about his eighteenth year, must have spent at least three full years in a university, must have passed a rigorous state examination and then must spend two additional years in special study and practice teaching before he becomes a qualified teacher. A similar preparation for an American high school teacher would require a college course followed by several years of graduate study, and accompanied or followed by a year of practice teaching in a standard high school under careful supervision.

In France the preparation required for the teachers of boys in the *lycées* and communal colleges (the secondary schools of that country) is no less rigorous than that of Germany. The teachers (*professeurs*) in the *lycées* must have received the degree of *agrégé*, which is given only after the completion of an elementary and secondary course of study covering twelve years, followed by several years of study in preparation for a competitive examination for admission to a higher normal school, and by a course of three or four years in this school, at the end of which is a rigorous competitive examination for the *agrégé* degree. "The agregation is a title, a kind of diploma, which not only stands for a high degree of scholarship, but also indicates that the holder is one of the ten or dozen best men in his subject in France that year, as proved by the fact that he has come out toward the

head of a list in a national competitive examination." [1] The teachers in the communal colleges are not required to pass the competitive examination, though in other respects their training is the same.

From this it may be seen that the German or French secondary school teacher must be a person of superior ability, since the strict and extended course of study and the rigorous examinations eliminate the weak; he must be a specialist in his subject with a knowledge as extensive and exact as that demanded of the average college professor in America; he must know well the theory and the art of teaching, and finally he must have demonstrated his ability as a teacher in actual practice. He is never called upon to teach anything but his "subject;" the "exigencies of the program" do not determine his work, as too often is the case with the American teacher; he is not called upon to do independent teaching until he has demonstrated his ability to do so; he is familiar with the best theories and the best methods of instruction in his own field, and he has a professional attitude and professional ideals. In comparison with such preparation, that of our own high school teachers is in striking contrast.

(b) *The American high school teacher receives but a small amount of special preparation for his work.*—As has already been said the American high school teacher is inadequately prepared for his work. He sometimes lacks in general academic training; he frequently knows little about the theory and practice of teaching, and he has had as a rule no supervised experience in teaching before entering upon his duties. He learns for the most part the skill of his art by the trial and error method, and too frequently it is blind trial and error, in which he is unconscious of his mistakes, or if conscious of them does not know how to correct them. Occasionally he receives suggestions from his principal or other supervising authorities, but if he can keep

[1] Quoted from F. E. Farrington, *Monroe's Principles of Secondary Education*, p. 89 (1914).

reasonably good order he is generally left to a large extent to his own devices. As a result of this inadequate preparation there is as yet scarcely a profession of secondary teaching in America. The minimum requirements are few, and men and women of mediocre ability, little knowledge, and no definite aims or ambitions find it possible to secure positions, at least in the smaller and weaker high schools. The situation, while at present not satisfactory, is nevertheless encouraging in many respects. More and more an adequate training for high school teachers is being recognized as desirable, and standards of local communities and of states are being fixed and made more exacting.

The preparation usually demanded in our better private and public secondary schools is graduation from a college of good standing. As a rule the demand is not much more specific. High specialization in the subject taught is not always insisted on. Indeed it is frequently the custom to assign a teacher to any subject in the curriculum on the theory that the teacher can keep ahead of the class. Instances are by no means uncommon of giving a teacher a subject that he has never taken in college, possibly never taken in the high school. Not only is specialization in subject-matter not always insisted on, but knowledge of the theoretical and practical phases of education is often considered unimportant. It is not unusual that a student fresh from college is engaged to teach although he has never taken a course in education and knows nothing about the high school, its methods, aims and present tendencies. High school teachers at times not only have little professional knowledge of their field, but sometimes hold in contempt such knowledge. Conditions in these respects are, however, definitely improving.

This Lack of Preparation Due to Various Causes.—One element in the situation is that for many years no special schools were provided for training the secondary teacher, on the assumption that a college degree was a sufficient warrant for

entering the field of high school instruction. For a long time our higher institutions of learning never took up the matter of training teachers seriously. Indeed at the present time, it is not infrequently held that all a teacher needs to know is his subject; it is likewise claimed that "teachers are born and not made;" and not a few assert that teaching is an art that cannot be taught.

The fallacies contained in these statements are too obvious to require extended comment. It is a matter of common experience that teachers with considerable familiarity with their subject and sometimes with a scholarly knowledge of a particular field may fail to impart that knowledge in a satisfactory manner to their pupils. It is evident that native ability is an important asset in teaching, but so it is in any profession or calling in life. We are in part born, but we must likewise be made, whether we are lawyers, doctors, business men, or teachers. To hold that teaching as an art cannot be taught is to place it in a category by itself. To assert that a teacher can learn only by teaching is on the same plane as to assert that a doctor can learn only by practicing medicine, or a lawyer learn only by engaging in law. We value practical experience in all callings in life, but in most instances we have found it the part of wisdom to prepare in advance as far as possible for such experience, and to instruct the novice, rather than to permit him to blunder along greatly to his own injury and that of the community. The fact that teachers on the average remain in their vocation but a relatively brief time as compared with men and women in other professions makes it all the more imperative that the preliminary period of learning be reduced to a minimum and that the teacher acquire in advance of actual teaching adequate knowledge of methods, to prevent him from unnecessary blunders at the expense of his pupils.

While a lack of preparation of secondary teachers is partly the fault of the colleges they are not entirely to blame. Superintendents, principals, and boards of education have not sufficiently insisted on adequate training either in subject-matter or in professional knowledge and skill. In so far as the appoint-

ing power is in the hands of a school committee, composed for the most part of men and women without professional knowledge of the field of education, little improvement in this respect can be expected. However, in so far as the appointing power is possessed by the supervising authorities, and in so far as they are in accord with the highest ideals of the teaching profession, the quality of the teacher both in knowledge and in skill is likely to be raised. It is an encouraging sign of the times that the selection of the teaching staff is being given over more and more to superintendent and principals, and that among this body of men and women there is a growing conviction of the necessity of a thorough preparation of the high school teacher, as well as of the primary and grammar school teacher.

Existing Agencies for Training Secondary Teachers.—Notwithstanding the fact that many secondary teachers have no distinct preparation for their work the proportion of untrained teachers is each year growing less. This is due in part to the fact already referred to, that states, cities and even smaller communities are setting up higher standards of teaching proficiency, and in part to the circumstance that existing agencies for adequately preparing secondary teachers are rapidly growing in number and increasing in efficiency. In some instances we find normal schools developing into normal colleges by the extension of their professional and academic work. Though the chief function of these schools is to train elementary teachers, the better schools by expanding their course to cover a period of four years beyond the secondary school are enabled to give training to high school teachers. Thus are being developed higher normal schools, the most notable example of which is Teachers College of Columbia University, which has now become a graduate school for the training of teachers, supervisors and educational experts, and which for a large proportion of its work requires as a prerequisite college graduation.

During the last decade a great growth has been witnessed in

our colleges and universities in the organization and development of departments of education, and in many instances these departments have grown into schools and colleges of education. In these institutions the training of the high school teacher is particularly emphasized, as is also the preparation of others for work in the field of education. A notable example of a highly organized and equipped school of education is found at the University of Chicago. Many of the important State Universities, as well as a considerable number of our larger endowed institutions of higher learning are also developing departments and schools of education that are seriously undertaking the problem of the adequate equipment of the teacher for his work.

In the various colleges and schools of education that now exist in America the training of teachers to teach through actual experience in conducting classes under supervision occupies an important place. There are two general methods in vogue. The older method is to give the student-teacher his experience by assigning him to a local high school to teach a certain number of periods a week under the direction of a critic teacher. More recently there have been developed in connection with schools and colleges of education in our universities, "practice" or "model" high schools under the control of the university authorities. To classes in these schools, student-teachers are assigned to give instruction under competent supervision.

Both of these methods accomplish much in the preparation of the novice; each has certain merits of its own, and each has certain defects. The student-teacher who receives practice in a local high school is likely to encounter the problems of teaching as they exist somewhat more directly and in a more typical manner than the student-teacher who is trained in the model high school controlled by the university. On the other hand, when the high school is directly under the control of the university, it may be used more definitely as a training school for prospective teachers than can the high school that is independent of the university and whose purpose can be only in a very limited degree the training of teachers.

One of the best examples of the plan for training teachers through coöperation of the city high schools with a higher institution of learning is to be found in Providence, Rhode Island. For many years graduate students in the department of education at Brown University have been permitted to teach in the high schools of the city under joint supervision by the university authorities and by expert teachers in the high schools, who act as critics. The results have been uniformly excellent. Plans similar to this are in operation in a considerable number of our Eastern colleges and universities at the present time. On the other hand the higher institutions of the Middle-West favor the plan of student training through a model school. In some instances the organization of the model school is worked out with a large amount of detail and elaboration, as is the case at the University of Chicago.

The Salary of the High School Teacher is Comparatively Small.—Judged by the standards of all other professions except the ministry the salary of the high school teacher is small. As has already been pointed out the range is wide, some teachers receiving but a few hundred dollars, while others obtain several thousand. These are extreme cases, however. In the case of men "if one were compelled to choose one amount as the most likely to be received by a teacher or principal . . . the amount would be $700. Their median salary is $900; that is, of men engaged in public high school work there are as many who receive less than $900 as there are receiving more than $900." In the case of women, . . . "the median salary is $650." [1]

These amounts represent high schools in general and the salaries paid some years ago. Today conditions are somewhat better. Further, these statistics refer to teachers of various kinds of equipment and with widely different capacities. In a comparison made by Strayer [2] of thirty cities, he found that

[1] Quoted from E. L. Thorndike in Strayer and Thorndike, *op. cit.*

[2] City School Expenditures, Teachers College, Columbia University, *Contributions to Education, No. 5* (1905).

the lowest average salary of high school teachers reported by any city was $558 and the highest was $1,332.80. In the first of these cities the average daily wage of bricklayers was $3.75 and of carpenters $3.00, and in the second the corresponding figures were $4.65 and $3.50. From this it can be seen, assuming that the bricklayers and carpenters had reasonably continuous employment throughout the year, that their economic status would be at least equal to that of the average high school teacher in these two communities. In all of these cities the average daily wage received by these skilled workmen was not markedly inferior to that received by high school teachers. In some instances a skilled workman with steady employment would on the average receive a greater income during the year than the average high school teacher.[1]

While the money rewards of the high school teacher can be seen from the above statement to be inadequate in many ways, it should be remembered that the well-equipped and capable teacher is likely to receive a compensation considerably above the sum that these figures indicate. During the first years of his professional career the high school teacher will on the average receive more money than will the young doctor or lawyer, and while the ultimate money rewards are not so great for the successful high school instructor as they are for the successful physician or attorney they are sufficient for reasonable needs. There are, too, compensations other than money that make the teaching profession desirable. It affords opportunities for genuine service, it is attended by dignity and reasonable leisure. But to obtain the highest rewards demands an adequate preparation. The college graduate who enters upon high school teaching as the first thing at hand, as a temporary expedient or a make-shift, who is not willing to give years of thought and

[1] Since this investigation was made the average wage of skilled and unskilled labor has increased materially, while teachers' salaries have advanced, but not in the same proportion.

preparation for a serious calling in life, is not likely to find either pleasure or profit in teaching. Not only does such a teacher suffer because of his unstable purpose and his insufficient preparation, but the community as a whole suffers, and above all those who can least afford it suffer the most,—the boys and girls intrusted to his care.

The Success of the High School Teacher Depends on Various Factors.—What are the conditions that contribute principally to success in high school teaching? This is a question of great interest to the prospective teacher and to the school system. While it cannot be answered in a few words, it may be said in general that there is no one cause, or even a relatively few causes that determine success completely. However, there are a number of factors that clearly are of great significance. The most important of these will be discussed in the next few pages. Before we can adequately answer the question, however, we must find some method of measuring teaching efficiency.

(a) *Success as measured by salary received.*—Thorndike [1] has used the salaries received by teachers in private schools in the same city under free competition as to some extent a measure of success in teaching, and from the data studied by him he concludes that length of experience is not an important factor after the first few years. He says, "So far as the data go, they support the hypothesis that the full effect of experience in teaching on the efficiency in the work of a private secondary school is reached in three years." He finds, on the other hand, that salaries in public high schools show a relatively uniform increase over a period of twenty-five years, but he attributes the increase after the first few years to the practice of cities of paying teachers higher salaries in terms of service rather than on a basis of actual merit. If it is true that experience in teaching after the initial years of service does not tend to increase teaching efficiency, this must be due to some adverse cause. The most probable

[1] *Bulletin of U. S. Bureau of Education, No. 4* (1909).

reason for lack of continued improvement is to be found in the teacher himself. If he is eager to advance, if he has an open mind, if he has the spirit of an inquirer and learner, he should grow indefinitely in teaching ability, year by year.

Thorndike further concludes by studying the reports from the public high schools of Ohio, Illinois, and Wisconsin that preparation is a factor of weight in determining success. Both men and women with a superior preparation are not only paid more at the start but show large differences after years of experience over those poorly equipped. From this it may be concluded that while experience alone is not a very important element in success in teaching after the first few years, experience combined with an adequate preparation is a cause of considerable potency. "It is evident that school authorities reward the kind of a man or woman who has secured a thorough education," he believes.

Thorndike is of the opinion that the chief factors in achieving success are native ability, and quality of education. A person to be a good teacher must have general qualities of intellectual and moral excellence and certain specific aptitudes that particularly fit him to be an instructor of youth, and he must further have an education that is of a high grade of excellence.

L. D. Coffman [1] in a study of the efficiency of elementary and of some secondary teachers on the basis of salaries received, concludes that a premium is placed upon advanced academic and professional training. "No doubt such training selects those who have inborn capacity to profit by it the most, but this extra training is their best means of advertising to the world their peculiar native strength."

In this connection it should be said that not only does there seem to be a relation between success and training, but there is an evident

[1] The Social Composition of the Teaching Population, Teachers College, Columbia University, *Contributions to Education, No. 41* (1911).

relation between college grades and subsequent teaching ability. The college record of a student, both in general academic subjects and in subjects particularly related to the profession of teaching, are a reasonable indication of what his success as a teacher is likely to be. These grades throw some light on whether he is a person of superior, medium, or inferior ability by nature, and also upon the question of how far he has profited by his college course. They are scanned with a good deal of care by those who are asked to recommend a college graduate for a position in a public or private secondary school, and with a considerable degree of justice.

(b) *Success as measured by the judgment of supervising officers.*—A number of attempts have been made to determine the qualities of merit that enter into successful teaching by using the judgment of superintendents, principals and other supervising officers in regard to the abilities of the teachers under their direction. The first study made of high school teachers from this point of view was undertaken by A. C. Boyce.[1] Superintendents and principals in thirty-eight different towns and cities, mostly in the North Central and Middle Atlantic States were asked to rate their high school teachers in order, according to general excellence, placing the best teacher first, the next second, and so on to the poorest, and they were further asked to rank them according to certain specific qualities such as instructional skill, general appearance, health, disciplinary ability, success with pupils, adaptability, sympathy and a sense of humor. The amount of preparation and experience of each teacher was also recorded, and the subjects which were taught by the various teachers. The chief conclusions arrived at were that the specific qualities of merit in a high school teacher that contribute the most toward his success are instructional skill, securing results, stimulation of individuals, intellectual capacity, and ability to maintain discipline. Factors of relatively little

[1] Qualities of Merit in Secondary School Teachers, *Journal of Educational Psychology*, Vol. III., pp. 144–157 (1912).

importance were general appearance and health. A later study [1] by the same investigator confirmed in general these earlier results.

It should be kept in mind that most of the qualities here listed are relatively complex. For example, instructional skill is composed of various elements. Boyce lists them under the technique of teaching as follows:—Definiteness and clearness of aim, skill in habit formation, skill in stimulating thought, skill in teaching how to study, skill in questioning, choice of subject-matter, organization of subject-matter, skill and care in assignment, skill in motivating work, attention to individual needs. Likewise discipline is a matter that has many different aspects. The immediately following chapters will take up in detail the subject of discipline, and a number of subsequent chapters will be devoted to the question of the technique of teaching.

Boyce further concluded that the best teachers are found in the oldest subjects, Latin and mathematics. He finds evidence that experience, while contributing to success in teaching, is not so important a factor as has often been supposed, and that advanced work in college or university and professional training are definitely related to success in high school teaching.

The term "personality" is often vaguely used to indicate a quality highly essential to the success of the teacher. F. L. Clapp [2] attempted to give this term a more specific meaning by securing from one hundred experienced superintendents and principals lists of ten specific qualities which entered into the personality of the teacher. These qualities, in the order of their importance, were found to be,—address, personal appearance, optimism, reserve, enthusiasm, fairness, sincerity, sympathy, vitality, scholarship.

The negative side of the question of what constitutes a successful high school teacher has been worked out by several in-

[1] See *Fourteenth Yearbook of the National Society for the Study of Education*, part II., pp. 66–67 (1915).

[2] See Bagley, *School Discipline*, pp. 30–35 (1915).

vestigators by securing data from superintendents and principals, as to the causes of failure of members of the teaching staff. These in general point to conclusions similar to those obtained from approaching the question of excellence from the positive side, and show the great importance of discipline, instructional skill, and a strong personality.

Cleda Moses [1] places poor instruction as the chief cause of failure among secondary teachers. She finds further that a weak personality coupled with poor discipline were important elements contributing to failure. Lack of sympathy, nervousness, deficiency in social qualities and deceitfulness were also causes.

Henry Buellesfield [2] gives the chief causes of failure among teachers of all grades in the order of their importance as follows:—Weakness in discipline, lack of judgment, deficiency of scholarship, poor instructional methods, insufficiency of daily preparation, lack of industry, lack of sympathy, nervousness and deficiency in social qualities. A number of such factors as unprofessional attitudes, disloyalty, deceit, personal immorality and the like when grouped together indicate that moral attitudes and practices are to be considered as playing a rôle in success or failure. The fact that no more teachers failed for these reasons indicates that in the sterling elements of character teachers are as a rule a selected group. Buellesfield found also that initial experience was significant in determining whether a teacher failed or succeeded. Forty-two per cent. of the failures among high school teachers occurred during their first year of service, and ninety-four per cent. during the first four years. It is evident that these first years of service are the critical years during which the constitutionally unfit and the poorly prepared teachers are eliminated. Had these unsuccessful teachers had a year of practice teaching under proper supervision it would have been better for them, their pupils, and the community. Doubtless some of these then would have entered upon teaching with sufficient preliminary training to have succeeded, while the evidently incapable would never have secured appointments.

[1] *School and Home Education*, January, 1914.

[2] *Educational Administration and Supervision*, September, 1915.

Considering the teachers who failed in reference to the subjects taught by them Buellesfield discovered that "by far the most failures occur among teachers of English; science, mathematics, history, Latin, manual training, domestic science, and German follow in the order given, more than one-fourth of all the failures in the high school being charged to English." This is to be explained from the fact that there are more teachers of English than of other high school subjects; that there are peculiar difficulties in instruction in English that are not found to the same extent in other subjects, and that a thorough preparation is not demanded of English teachers, it being too often assumed that any college graduate can teach the mother tongue.

(c) *Success as measured by the opinion of pupils.*—The success of the teacher is determined in no small measure by the opinion of his pupils in regard to him. The teacher who is well liked and respected has better discipline and larger opportunities of obtaining results than has the teacher who is out of sympathy with his pupils. W. F. Book [1] obtained statements from several hundred high school students as to the kind of teacher that they liked best. The best and most helpful teachers were described as "pleasant, cheerful, optimistic, enthusiastic, young, etc." These teachers were helpful, guiding and directing their pupils; they were reasonable, considerate of a pupil's feelings, fair, just, patient and kind; never nervous, irritable, over-particular, cranky, sarcastic, or thoughtless.

In a recent study made by Grace E. Bird [2] results similar to those secured by Book were obtained. Miss Bird asked three hundred and ninety-two pupils to state the qualities that they liked best in their high school teachers. The two hundred and fifty-three boys replying mentioned most frequently in the order named the following qualities:—Fairness, kindness, disciplinary control, patience, humor, good

[1] The high school teacher from the pupil's point of view. *Ped. Sem.*, Vol. XII., pp. 239–288 (1905).

[2] This study was made in connection with the Seminary of Experimental Education at Brown University. See Pupils' Estimates of Teachers, *Journal of Ed. Psych.*, Jan., 1917.

temper, social ability, knowledge of subject, clearness of explanation and neatness. The order of preference for the girls replying was kindness, disciplinary control, patience, humor, fairness, clearness of explanation, neatness, good temper, and sociability. One of the striking results of the study was the fact that nearly two-thirds of the girls replying mentioned kindness as a quality to be found in an ideal teacher. The boys did not agree with any such unanimity in regard to any single quality, about one-quarter of them mentioning fairness, and a little over one-fifth kindness. If kindness, patience, good temper, humor and sociability are combined, we find these qualities mentioned by nearly half of the boys, and by all of the girls, clearly showing that the kind, social and good-natured teacher is generally liked. Those qualities that are related to instructional skill—knowledge of subject, clearness of explanation, and neatness are regarded as important by both boys and girls, but are mentioned more frequently by the latter, about one-sixth of the boys and over one-half of the girls referring to these requirements. On the whole the study shows a high correlation between the judgment of boys and girls as to what constitutes a good teacher. Expressed by the Pearson coefficient it is .8.

Professional Attitudes and Ideals are Important Factors in the Success of the Teacher.—No matter what general and special abilities the teacher possesses, no matter what preparation the teacher has received, he cannot hope to realize his highest possibilities unless he has the right attitude toward his calling. Professional ideals determine to a considerable degree whether he is to be a success or a failure.

Chief among these ideals is that of *service*. The teacher should regard himself as a public servant, and like the physician should be ready to respond to the call of duty whenever it may come. He must have a real desire to help his pupils and to advance the educational interests of the community in which he lives. While teachers may organize to promote their higher professional interests, they cannot consistently combine to advance their narrowly selfish aims.

The ideal of *loyalty* is closely connected with that of service. The teacher must be loyal to his profession, his colleagues, and those placed in authority above him. While he has a right to express his honest opinions in regard to matters of educational policies, and while often it is his duty to do so, he must refrain from all carping and secret criticism of school-boards, principals and supervising officers. When he cannot coöperate honestly and sincerely with his co-workers his usefulness in the community is generally at an end.

No teacher can reach his highest efficiency without *high standards of attainment.* He must seek by every legitimate means to advance his professional standing. He must be ambitious to increase his scholarly knowledge, his general culture, and his technical ability. He must continue to be a learner. Whenever possible he should visit other schools, attend teachers' gatherings, extension courses, and summer sessions. He should under any circumstance be a subscriber to at least one journal in the field of secondary education and to a second in his special field of instruction. He should read the best books appearing each year in the field of educational theory and practice, and should be himself an occasional contributor to educational literature. The teacher who has the attitude that his college course has provided him with all of the knowledge and most of the skill necessary for his professional career, can never achieve genuine success.

Summary of the Foregoing Discussion.—From the foregoing discussion it is possible to give a fairly accurate picture of the ideal secondary teacher. This composite photograph would be that of a man (or woman) possessing the following abilities and characteristics:—

He would be a man of sterling character, superior intelligence, and some special aptitude for teaching; he would have an adequate preparation both in general and special subject-matter and in professional studies, including practice teaching, taken

if possible during a year of special advanced study following the completion of a four-year course in a standard college; he would also have had several years of successful experience as a teacher, and would have acquired instructional skill and disciplinary control; he would possess an energetic personality, vital yet well balanced; he would have a genuine interest in his pupils, a disposition patient, sympathetic, genial and good-natured, yet with poise, dignity and reserve; he would possess optimism and capacity for inspiring enthusiasm; he would be absolutely fair in his treatment of all, and he would not only be fair, but he would have the ability of making his pupils realize that he is fair; he would be consistent in attitude, frank and open, free from subterfuge and deceit, his whole personality would be tempered by a genuine sense of humor and an appreciation of life, especially life as his pupils see it and live it; finally he would be inspired with the highest personal and professional ideals of conduct and attainment. Probably no teacher ever possessed all of these qualities in their fullest strength, but certainly no teacher ever made a marked success in his calling who did not have in his make-up a considerable number of these excellences and at least a few of them in a superior degree.

CHAPTER IV

DISCIPLINE IN THE HIGH SCHOOL.—INDIRECT CONTROL

The Problem of Discipline is of Primary Importance for the American High School Teacher.—It has been pointed out in the discussions of the preceding chapter that ability to control the class is one of the chief qualities of merit in the high school teacher, while lack of this ability is among the foremost causes of failure among teachers. The problem of class control is important for every teacher and in every grade of instruction. Unless the class is reasonably attentive and docile, nothing worth while can be accomplished, no matter how efficient in other respects the teacher may be. However, the question of discipline is a more pressing problem for the American than for the European secondary teacher. The reasons for this contrast are to be found largely in the essential difference between our conception of the scope and purpose of secondary education and that of Europe, and this raises one of the gravest problems in regard to the future of our high schools.

As a Rule the Pupil in our High Schools Lacks a Compelling Motive.—In our eagerness to make secondary education universal, in our desire to appeal to all varieties of interests and all grades of ability, in our over-emphasis of the value of spontaneity as a dynamic force in learning, we have neglected to emphasize high standards and rigorous requirements. The great majority of high school pupils can secure a passing grade with a minimum of study. Hard work is not a necessity for them. They have time to be inattentive and disorderly if they are so inclined. On the other hand, the pupils in the secondary schools of Germany and France must work if they succeed; and

hard, honest work is a compelling motive in the classroom that makes serious disorder well nigh an impossibility. In addition to this, success or failure in the school career means vastly more to the European secondary pupil than it does to the American boy or girl. Failure in the high school is often a mere incident of trivial significance; failure in the *Gymnasium* or *Lysée* is a tragedy. If the obtaining of a passing grade signified as much to our high school pupils as it does to a West Point cadet the disciplinary problems of our secondary schools would largely disappear.

In far too Many Cases the Attitude of the Home and the Community Toward the Work of the Pupil Lacks Seriousness.—Not only do the high schools themselves fail to insist on hard work and high standards, but also the parents and friends of the pupils adopt the same indulgent attitude toward the boys and girls under their direction and control. Indeed, many teachers find to their sorrow that when they attempt to insist on thorough work from their pupils, they receive in their endeavors no support from the home. The social attitude toward the work of the pupil in the secondary school of Europe is different. There the pupil finds no sympathy for delinquencies. It is there the fashion [1] to do good work, it is the fashion to be respectful, docile, and industrious.

The High School Teacher Must of his own Initiative Attempt to Create the Proper Attitude Towards School Work.—Because of these reasons it becomes necessary for the high school teacher often to make determined efforts to secure the reasonable attention and proper behavior on the part of the members of his class that he cannot assume in advance

[1] W. C. Bagley in his book on *School Discipline* (1915), defines the well-disciplined school as "one in which the 'fashion' or 'mode' of good order, courteous behavior, and aggressive industry has been firmly established." This fashion cannot be set up by the school alone; it must be supported and supplemented by a corresponding sentiment in the home.

exists. Thus it frequently happens that good order, which should be merely the incident and condition of good teaching, is forced upon the instructor of our American boys and girls as the chief problem in the conduct of his classes. No teacher can safely ignore this problem, least of all the novice in teaching who will often find a disposition to "try him out" on the part of the class, simply because he is a new and inexperienced teacher.

The importance of the problem of discipline should, however, not be over-emphasized to the point of making the new teacher feel that it is the one overwhelming consideration that confronts him. As he progresses in his acquaintance with his pupils and in the skill of his instruction, disciplinary questions will not be largely in the focus of his attention, and even at the beginning of his career he should have no serious trouble in a school that on the whole has the right attitude, if he possesses vigor, courage, and common-sense. During the past five years the writer has visited hundreds of classes in many different high schools and academies, and he has found the poorly disciplined class exceptional. Especially in the schools that have wise and capable principals, the novice in secondary teaching need have no fear, if he does his share, that he will fail because of the poor discipline of his classes.

In the Best Controlled Class the Problem of Discipline is not Obvious.—It is a frequent comment made by observers of classes in the high school that they can say nothing about discipline because there is no evidence of discipline. They report that the pupils seem attentive and interested and that there is no problem of order to engage the teacher and distract him from his work with the class. However, when the engine is running smoothly, without noise and friction, it is because the engineer has inspected, adjusted, and oiled his machinery in advance. A smoothly running class is no more of an accident than is a smoothly running machine. "It is a paradox of the well-disciplined school," says Bagley,[1] "that discipline 'is con-

[1] *Op. cit.*, p. 1.

spicuous by its absence.'" However, it is no longer a paradox when we examine beneath the surface, and discover the causes that have brought about order, attention, and studiousness. Good discipline is never a matter of chance. It is prepared for, either consciously or unconsciously, by the teacher in advance of the class situation. This feature of class management may be called indirect discipline, discipline that is in a sense a by-product, discipline that exists not because it has been demanded or directly enforced, but because other classroom and school conditions exist that make the opportunities for inattention and misbehavior slight. The teacher who secures this indirect discipline has the best disciplined class. It will be worth our while to inquire into some of the causes that contribute to this most desirable result.

(a) *The smoothly-running class is the class in which all of the pupils are doing rigorous mental work.*—In our previous discussion we have said that one compelling motive that makes for good order is an attitude of serious work on the part of the class. The teacher who wishes to secure good order will do all in his power to keep the individuals mentally alert; he will see to it that they have few idle moments during the class period. How to secure this mental alertness is a question worthy of discussion.

Here we may put down as the first law or maxim,—"Begin each class exercise with vigor and promptness." [1] Impress upon the pupils at the start that no time is to be lost, that for both teacher and pupil it is to be a working hour. For this reason the teacher should have some method of taking the class-roll promptly; he should have all materials that are necessary to begin the work at hand; books, papers, writing tablets and the like should be on the pupils' desks, materials for presentation on the blackboard should, as far as possible, be placed there in advance. If something is to be written on the board at the beginning of the hour it is better to ask one or more members

[1] See Chapter XVII., p. 375.

of the class to do this than to have the teacher take this time himself. The beginning of the hour should not be used for the purpose of consulting with individual members of the class. Above all the teacher should always know just where the day's assignment begins, he should never turn over the pages of the text-book in an attempt to locate the lesson, or be compelled to ask the class where they stopped at the end of the preceding recitation.

It has been the writer's experience that many classes in laboratory science are woefully slow in getting started. It is the practice of some instructors to require the pupils to spend from ten to fifteen minutes at the beginning of the hour in reading their manual, and in getting together their materials. The result is that they generally enter upon their laboratory work in anything but an aggressive spirit. One of the worst classes that I have ever observed both from the standpoint of order and of effective instruction was a class of this type. The pupils on entering the laboratory spent from ten to twenty minutes in finding out what they were expected to do; they then spent even a greater amount of time in finding their apparatus, setting it up, and getting it to work. Needless to say that the brief time that remained for actually doing the work was spent in dawdling and shilly-shally when it was not devoted to positive disorder. The total (double) period of eighty minutes was cut short at the end by the requirement of writing up the note-books during the laboratory period. This reduced the working time by a further fifteen minutes, so that it actually happened that a considerable number of the pupils did not spend a half-hour in actually doing the work of experimentation for which an hour and twenty minutes was supposed to be devoted. The waste involved in the laboratory exercise of this type will be discussed more at length in a following chapter.[1]

In striking contrast to the laboratory exercise just described is one recently observed by the writer in which the entire double period was spent in genuine experimentation. The subject was physics, and the recitation preceding the laboratory exercise had been employed

[1] See Chapter VII., p. 132.

by the instructor in definite preparation for the experimental work. When the pupils assembled in the laboratory they found all of the necessary materials for the experiment at hand. They began at once to set up their apparatus and in less than five minutes all were busily engaged in working on their experiment. The period was so supervised by the instructor and two "student foremen" that the entire class was kept busy for the whole period. A few of the more intelligent and skilful pupils finished the required exercise in about sixty minutes, and these were given additional work. Three pupils failed to complete the work at the end of the period, but they were required to use the next free period at their disposal for this purpose. Brief notes were taken by the pupils during the course of the experimentation, and these notes were amplified and carefully written up during a subsequent period of supervised study.

The second maxim reads,—"Strive to keep each member of the class busy during the entire period." There should be no pauses of length during the recitation. What has already been said about having materials at hand when necessary, about time spent on writing on the blackboard, about conversations with individual pupils, should be observed here. It frequently happens that a teacher stops the more rigorous routine of the class work to discuss at some length some matter of passing interest or to comment on the work of a single pupil. At such times there is an obvious letting up of the attention, and not only is the time employed by the teacher in making these comments largely wasted, but also there is a distinct waste in again adapting the attention to the more strenuous work of the hour. In the case of the able teacher, who has his class under control, the loss is merely that of the time spent; but for the teacher who is at all weak in discipline such periods are fraught with grave dangers.

There are various devices of a specific nature that the teacher may legitimately use to keep the class alert, particularly since they are not merely of value in securing good order, but they are likewise to

be often recommended from the standpoint of correct method. These will be but briefly mentioned here, as they are to be discussed more in detail in later portions of this book.

Written work is one of the most important of these. It is a common experience to observe a class that is inattentive and at times in positive disorder totally change its attitude when a brief test or some other form of written exercise is demanded. Indeed with an unruly class it is at times the only potent method of quelling disorder. Written work has a value over oral work for other reasons, and these will be considered in their proper place.

It is generally desirable in assigning written work to the class to give a sufficient quantity to keep all of the pupils busy all of the time. For example, in a written exercise in algebra enough problems and examples should be given so that the more rapid pupils will not finish ahead of the time devoted to the exercise. The usual practice is to give to the class a definite number of such exercises, as a rule no more than the pupil of medium ability can work out. As a result a considerable number of the class finish perhaps from one to five minutes ahead of the slower pupils, and thus have a considerable period unoccupied. It is a better practice to assign to the class an ample amount of work for all, with the instructions to work as rapidly and as accurately as possible.

Rapid questioning is also important in securing the proper sort of attention. Seldom should one pupil be asked a series of questions for any length of time, and every member of the class should be accustomed to pay such attention at all points in the recitation that he can take up the work where the one who is reciting has left off. It is likewise advantageous to ask the question of the whole class, later designating the particular pupil who is to reply. The writer has recently suggested to a teacher of Latin a procedure based on this principle, and it seems to have worked well. The Latin to be translated is first read carefully by the teacher with the attention of the entire class directed toward it, then there is a pause of from ten to fifteen seconds in which the individual members of the class are engaged in silent translation, and at the conclusion of this period one member of the class is called upon to read the sentence, with the understanding that if he does not do so with reasonable fluency, another

pupil will be asked to take his place. The result has been a better translation, better general attention, and no loss in the total time consumed for this part of the work. In connection with the question of the technique of this phase of the class work it need hardly be said that it is not a proper practice to spend time in attempting to drag statements from pupils when they have neither the knowledge nor thinking ability to answer them in a reasonable time. It is likewise obviously an error to call upon pupils in any regular order, or to have any general rule about the number of questions that shall be asked a single pupil when reciting.[1]

Holding all members of the class responsible for the errors made by pupils reciting is another method of securing attention. It is generally desirable to do this, but it should not be carried to the extent of developing a spirit of criticism on the part of the class toward the pupil who is reciting, or of encouraging many trivial criticisms. This method is sometimes employed—the pupils who have noted an error in a recitation stand up or raise their hands to correct such errors at the conclusion of the recitation. Under such conditions the over-critical spirit is in danger of being developed. The writer has observed this fault particularly in the elementary school, where the practice is common.

In many classes it is possible advantageously to develop the practice of silent reading in connection with later writing down or stating orally the ideas obtained from this reading. This is often one of the best ways of developing a new lesson in history, particularly in connection with teaching the pupils how to study history. It is also applicable to a considerable amount of the work in English literature. It is often a good practice to have the members of a class read over a problem in mathematics, an experiment in science, or a paragraph in a foreign language in order to get the proper orientation before starting on more detailed work. Clearly, when pupils are working in this way they are likely to give a fairly high grade of attention and to engage in no positive disorder.[2]

It should be said finally that the teacher has a right to expect and demand reasonable attention on the part of his pupils. He cannot,

[1] See Chapter XV., p. 315.

[2] See Chapter XVII., p. 377.

however energetic his personality and however great his instructional skill, keep the interest of all of his pupils all of the time on the subject-matter of instruction. If they have not acquired the habit of giving active attention there will be many lapses of considerable length. While it is his duty to make every recitation as vital as possible, the teacher is not to be considered as primarily an entertainer. From the very beginning he should assume the attitude of expecting the undivided attention of the class during the entire recitation period, and he should insist constantly that such attention be given. If he initiates the proper attitudes and the right habits at the start he will find that he has solved many of his difficulties.

Closely connected with the question of securing mental alertness during the entire class period is a third maxim which reads, —"Have some system of holding every member of the class responsible for all that takes place during the class period." Impress upon the class that the recitation is for them in a large measure a study period; make the pupils feel that here they have the opportunity to acquire new knowledge and skill and to perfect themselves in knowledge and skill already partly acquired. It is for the interests of all that the class become accustomed to the idea that a class period is not primarily for the purpose of discovering what the individual pupils have previously learned, but that its chief function is to add something to what they already have acquired. The teacher should strive in every way possible to make the pupils realize that it is to their great advantage to give undivided attention during the period.

One method of securing this result is to have at the end of each recitation a written quiz of from five to ten minutes in length in which the pupils are examined on some of the more important matters that have been brought out during the period.[1] To make this quiz effective it should be comprehensive and fair in its nature and should be carefully marked by the teacher. Further, pupils who fail on the quiz

[1] See Chapter VIII., p. 172.

should be required to make up the work outside of regular school hours. If the class work is of the nature of a demonstration the pupils should be required to write a brief description of what has happened and tell its significance. If the teacher uses the lecture method, he should insist on accurate notes carefully written up and reconstructed in terms of the pupil's own thinking and in his own language. It would be possible to correlate some of the work of this nature with the theme requirement of the English courses. In some instances attention has been stimulated by calling upon several pupils at the end of the class period to ask questions of their mates based on what has been developed during the recitation. The chief objection to using this method generally is that the questioners are not apt to frame their questions with sufficient skill, and often fail to emphasize the most important parts of the lesson. In some classes in the elementary school, pupils are asked to write out questions during the class period concerning matters that are then being discussed. Some minutes at the end of the period are used in having the pupils put the questions. A pupil rises, reads a question and calls upon a particular member of the class to answer it. If the answer is correctly given, the pupil replying is then permitted to ask a question that he has prepared.

The fourth maxim for securing and holding the attention of the class may be stated thus,—"The teacher must hear all and see all that is happening in the class all of the time." The teacher who hopes to hold attention and maintain discipline must be alert. An experienced teacher in a small class may relax at times with safety, but the young teacher must always be vigilant. It is not safe to make universally binding rules in regard to classroom practices, but the beginning teacher will be less likely to get into disciplinary difficulties if he makes it a practice to stand when teaching. He should also move about freely, and although he should keep in front of the class when he is directing it, he may at such times as pupils are reciting to the class or demonstrating at the board move about between the seats or even stand at the rear of the room.

It hardly needs to be added that the teacher must not only see all and hear all, but that he should actively interfere when there is need. While it is true that as a rule a pupil will give better attention when he finds the teacher observing him than when he believes that he is not noticed, if he finds that nothing happens on such occasions he will soon disregard the teacher on all occasions. The principle of watchful waiting is not likely to succeed in school discipline. Here, however, we are touching on the positive side of the problem of class control, and this we must consider in a later chapter.

(b) *In the smoothly running class the pupils are interested in their work.*—The teacher who makes his subject interesting has as a rule few disciplinary problems to solve. This is almost a truism. All educational reformers have emphasized the importance of interest in the work of the school if the best results are to be secured. However, to insist that school work shall be made interesting is in itself of little value from the simple fact that this demand at the same time means so much and so little. It means much in the sense that adequately to work out a system of instruction on the basis of the doctrine of interest would require not only a most profound educational philosophy but also an acquaintance of the most intimate character with the pupil and the subject-matter of every grade of instruction, coupled with a practical insight of unusual penetration. It means little in the sense that as merely stated it is the most unprofitable of educational platitudes. It savors of the "dark ages" in education and of the days when appeal was made to a psychology that was at the same time common-place and inadequate. In the brief limits of this chapter the writer cannot hope to give a systematic or extended treatment of this important question. The aim will be merely in the first place to attempt to clear up a few fundamental misunderstandings in regard to interest and then to suggest briefly some of the means by which a legitimate interest may be secured.

At the outset of the discussion I wish to make this point def-

inite and clear, namely,—*Interest is not mere entertainment.* Many teachers have thought that when they were urged to interest their pupils they were expected to amuse them. Now this is an extremely difficult thing to do in the first place; again if it were possible it would mean resorting to devices that lower the quality of the instruction, and the value of the subject-matter, and finally the teacher would be compelled constantly to intensify the nature of the appeals made to the pupils for their entertainment. The original efforts to amuse, successful at first, would soon lose their potency. In the end the pupils would become *blasé*, and incapable of obtaining real pleasure from any of the methods that the ingenuity of a "soft pedagogy" would be able to devise. The teacher must remember that his first duty is to teach. He cannot hope to rival the "movies" or the circus, and it is not his business to do this if he could.

No single factor has brought the profession of education into greater distrust, amounting at times to contempt, than this false conception of the doctrine of interest, and few conceptions have done it more practical harm in classroom procedure. A short time ago I observed a class in general science in which the teacher was evidently working on the theory that it was his business to amuse the class rather than to give them important and useful knowledge in regard to the world about them. He said a great deal about the spectacular features of aeronautics, particularly the uses of aeroplanes in the Great War, but he gave no hint of any scientific principles in their construction. It appeared that the general topic for consideration was the air, and later he told about great storms and other remarkable happenings. His general principle of procedure seemed to be to select as many spectacular facts as he could gather in regard to air and things that happened in the air, but he had no conception of a scientific treatment of this topic. The class seemed moderately interested in the discussion, but I have seen far greater interest in classes where the teacher thought only about the subject and its clear and adequate presentation. Indeed, on the same day I chanced to visit an advanced class in Greek in one of those few high schools that continue to emphasize

the subject, and here I witnessed real enthusiasm in the translation at sight of a reasonably difficult passage from Plato. There was here no attempt to amuse or entertain, only to instruct, but there was intense interest in the work and it was hard work, too, demanding concentration of a high order.

Again it should be remembered that *interest is not opposed to effort.* On the contrary, the highest grades of interest are accompanied by an expenditure of strenuous effort. Both mental and physical work may be interesting. Further, work may not only be accompanied by interest, but wholesome work usually engenders interest. The teacher who constantly strives to make his subject easy will in the end destroy a vital interest in that subject. For this reason every pupil should be given a real task, something that is a challenge to his ability, that calls forth genuine endeavor.

It is a common experience that school subjects that require an honest mental reaction are preferred by pupils of good or fair ability to those that make no demands on the learner. "Snap courses" may be at times selected, but they are seldom favorite subjects of study. In this connection I recall two courses in English literature. In one the pupils did little more than absorb. They were asked to read a certain number of books outside of the class, and to make brief and prefunctory reports on their reading. The class work needed practically no preparation, and the discussion in the class demanded no mental effort on the part of the pupils. The teacher was aiming to inculcate in the minds of his pupils an appreciation of literature, and it was his theory that appreciation could be gained only through indirect means. It was his belief that if he directed the activities of the class, and required them definitely to do anything, the æsthetic value of the subject-matter would be destroyed. As a result he gained neither appreciation nor interest.

In the second class the teacher aimed likewise to create in his pupils a real love of English, but he had concrete aims as to how this should be accomplished. He not only required his pupils to read but he re-

quired them to react in a definite way to what they read. The assignments included the answering of specific questions in regard to what they read. These questions were framed so as to arouse thought, promote discernment, and stimulate curiosity. Each lesson required, on the average, an hour's preparation outside of the class period, and during the recitation the pupils were stimulated to mental activity for a large part of the time. The interest in this class was very evident. The pupils according to their other school records possessed no greater ability than the pupils in the first course discussed, but they responded eagerly to a subject that required them to do sustained mental work.

When we consider the topic of interest from the point of view of circumstances that condition it, we find many legitimate appeals that may be made by teachers of every subject in the curriculum, appeals that do not destroy the value of the subject as such, and which generally enhance its worth to the pupil. We need not here discuss in detail the various ways in which interest may be aroused, but we can point out in passing some of the more obvious aspects of the question.

In Chapter II. several important instincts that show themselves with particular force during the adolescent period were considered, particularly in their relation to the problems of instruction and discipline. We saw that the sex instinct emphasizes grave questions in regard to mental hygiene and moral training; that the "migratory instinct" must be met by making school conditions attractive; that the "social instinct" in its various forms must be satisfied in the school life in general and considered in classroom instruction; that the tendency to explore, to pry into and to question, the so-called "instinct of curiosity," must be so directed in connection with the various subjects of instruction that it becomes a valuable stimulus in learning; that the impulse to manipulate can be aroused in such courses as manual training. This latter tendency develops under

proper guidance into what Veblen [1] has termed the "instinct of workmanship" and the desire for excellence.

Another original tendency of significance in learning is the impulse to hoard and collect. This is an important aspect of the desire for possession, "the property instinct." The original forms of behavior that show themselves in attempts to excel and master, roughly termed the "instinct of rivalry" are of great importance in motivating school work. Thorndike [2] lists among the important human tendencies the "satisfyingness of mental control," as he terms it. "To do something and have something happen as a consequence is," he affirms, "other things being equal, instinctively satisfying." He relates this tendency to what Lindley [3] has called "the general impulse or instinct to exercise the intelligence as such." In this original tendency we find the reason for the pleasure that comes in playing an intellectual game when once it is mastered. In other words a habit of intellectual skill has been formed, and it is a law of original nature that the exercise of a habit in and of itself is pleasurable. This may be termed the *propensity of habit.*

The instinct of joy in intellectual mastery, of pleasure in playing the game when once you know how, has great significance in the motivation of school work. It is clear that pupils as a rule like to use their minds when they can use them well, and they find happiness in mental work when once they have become masters of it. School tasks are a drudgery only when they are inefficiently performed. Observe a class in mental arithmetic in the elementary school. They enter into the rapid drill with a zest that is genuine. The most abstract subject may become fascinating to those who have a real knowledge and comprehension of what it signifies. Greek when thoroughly taught may arouse as much interest as manual training or stenog-

[1] *The Theory of the Leisure Class* (1899).

[2] E. L. Thorndike, *Educational Psychology*, Vol. I. (1913).

[3] E. H. Lindley, A study of puzzles, *American Journal of Psychology*, Vol. VIII., pp. 434–493 (1897).

raphy, algebra may be as pleasurable as cooking, and formal grammar as entertaining as stories of adventure. If a school subject is worth while it must be taught well, and the teacher must do all in his power to see that the pupils master the first stages of the work, in order that they may acquire that fundamental skill and knowledge that is absolutely requisite for subsequent interest and enjoyment.

The pleasure that is derived from manipulation, construction, and excellence in workmanship is closely allied to the satisfyingness of mental activity. It may be thought of as the motor aspect of intellectual skill. We have already spoken of its gratification in courses in the manual arts, which are favorite school subjects for a large number of boys. However, there are other subjects in the high school that afford an opportunity for the expression of this tendency. The most obvious of these are the courses in household arts for the girls. Drawing, painting, and those aspects of laboratory science that involve the construction and manipulation of apparatus, give opportunity likewise for the expression of this tendency. It is further possible to appeal to the constructive instinct in subjects that at the first glance seem to demand little more than intellectual skill. Pupils may be required to model in clay in courses in biological science in order that they may work out in three dimensions those forms of embryology and anatomy that are difficult to grasp through drawings or other methods of presentation in two-dimensional space. Work of this type has been developed in the biological laboratory at Brown University with most satisfactory results, and it could easily be adapted to instruction in similar courses in the high school. In many subjects it is possible to require the pupils to construct charts, diagrams, and other graphic representations that aid in the comprehension of facts and principles, in themselves formal and abstract. In geometry, there is a splendid opportunity for developing its constructional features; map drawing may be made an important adjunct to the teaching of history; distribution graphs and similar devices aid in the understanding of social and economic questions; even a well-kept note-book in courses in literature may give an added pleasure in, as well as a better comprehension of, much of the work done.[1]

The "hoarding and collecting instinct" and the desire to possess

[1] See Chapter XII., p. 249.

have been appealed to, particularly in elementary education, in such subjects as nature study, in which the making of collections is an important part of the work. These instincts can likewise furnish motives for work in many fields of high school instruction as well. Closely connected with the tendency to collect and hoard is the desire to possess. This impulse may be appealed to in various ways. For example, it is generally considered desirable in courses in the manual arts to require pupils to make articles for themselves or their friends; in the domestic arts, girls often make their own dresses and hats. In courses in agriculture, pupils are required in connection with the practical work to cultivate their own gardens and plots of land. This principle may be extended to the "academic courses." In physics, pupils may construct scientific apparatus for their own use, or for the use of the class or the school. One of the most enthusiastic classes in this subject that the writer has observed, partly made and entirely installed an outfit in wireless telegraphy. In some high schools pupils write and print a school paper; at times they construct scenery for dramatic representations; in some instances, as we have already seen, they have used the expert skill, developed through vocational courses, to run a cafeteria, or improve the athletic ground.

Of the remaining original tendencies spoken of above, the instinct to surpass others, to excel, to be a leader, is probably the most compelling. Many pupils hold themselves down to disagreeable intellectual tasks in order to get high marks, to improve their previous records, or to stand above their fellows. This innate impulse toward rivalry when expressed in moderation is wholesome and should be encouraged. If it leads to hard feelings, unfair methods, and unsportsmanlike conduct, it needs to be checked. Marks are the objective expression of school attainment, and it is natural and desirable that the pupil should be interested in his class standing. Marks are an important means of motivating school work.

In Chapter II. we discussed in connection with the tendencies of adolescence less directly associated with instinct, the vocational interests, and pointed out their great importance in the motivation of school work. We further saw that intellectual interests of various sorts may make a strong appeal. Among

these were discussed the problem interest, the reading interest, and the interests in beauty, morality, and religion. In further elaboration of the question of interest in connection with the activities of the classroom we may add the following considerations:—

First, *interest is more readily aroused when the attention of the learner is concentrated on the thing to be accomplished than when it is occupied with the details that lead to the accomplishment.* For example, it is more interesting in playing golf to pay attention to the point toward which you wish to drive the ball than it is to consider the proper method of holding and manipulating the driving iron. Likewise, the learner on the piano finds more pleasure in rendering his first piece of music than in the technical exercises that have preceded it. In a similar way the student of a language enjoys actual conversation and reading in the language more than he does the study of grammar and the learning of the vocabulary. In other words, we are more interested in the thing that we do, than the motions that we go through in the doing.

In this connection, we are brought face to face with the problem of the logical versus the psychological method of teaching. In the logical method, the learner starts with what are considered the elements of a science, the fundamental facts of civics, the basal principles of English composition, the rudimentary forms of skill requisite for subsequent proficiency in wood-work, shop-practice, or dress-making. In the pyschological method, the learner from the very start is concerned with those large facts, principles, and activities that to him are interesting in themselves. In biology, he does not begin with the single cell, but with some living form well known to him; in science, he does not first consider the elementary principles, but something with which he is acquainted in the world in which he lives, perhaps a sewing machine, an automobile, aeroplane, an industrial plant, or a street railway system; in civics, he is directly introduced to community activities, and learns through them the forces at work in the social and economic life of his day; in writing English,

he does not begin by learning a large number of rules, and their applications, but he writes from the start and learns the principles as he progresses; in the manual and domestic arts, he makes some useful object as soon as possible, and spends the minimum of time necessary on learning how to make these objects before actually undertaking them. In a preceding chapter, we have discussed this principle in connection with the direct method of teaching foreign languages which emphasizes conversation and translation from the start. In the teaching of all subjects, the pupil should be introduced as soon as possible to those forms of accomplishment and to those kinds of knowledge that are interesting to him, and the elements of these subjects should be taught in connection with the knowing and the doing rather than as prior to them and leading up to them.

In the second place, *interest centers more in the concrete than in the abstract.* One of the greatest faults in our methods of instruction, shared by teachers and text-books alike, is the fault of generalization without specific and definite examples illustrating the abstract principles set forth. The average teacher finds it extremely difficult to give to the class clear and simple illustrations of the facts discussed.[1] If every teacher would definitely plan before entering the classroom the means by which he may best vivify and make concrete the subject-matter of the day's lesson the quality of instruction would be greatly improved.

In the past few years the writer has had under his direction a considerable number of "cadet teachers," preparing under supervision for positions as high school teachers. In their lesson plans these students are required to state the illustrations that they purpose to use in their daily teaching. This for many is the most difficult part of the entire plan. They seem to be able to think in the abstract, but not in the concrete. Has the world of books divorced the student from life; has it put him out of touch with the vital realities about him; has it weakened his imagination, and befogged his thinking? Not only is the novice in teaching at fault in this particular aspect

[1] This important principle of teaching is discussed at length in Chapter XII.

of the class work; the experienced teacher often fails here as well. How many times is some fact of great human importance and interest in history, science, literature, and art treated as a mere abstraction and left as a ghostly generality, devoid of life and meaning.

In the third place, *interest is dependent not merely on presenting facts but on the interpretation of them in terms of their meanings.*— We must illustrate, we must make concrete, but we must have something of general import to illustrate, we must make the concrete significant. The adolescent years are years of thought as well as of action, years in which the boy and the girl are striving not merely to come into contact with reality but to comprehend it. We all love to philosophize, to see in the particular fact or incident something of general meaning, but never is this interest keener than in the middle and later years of youth. It grows with each succeeding year in the pupil's course in the high school. No teacher of high school subjects can afford to deal with mere facts. He must find the universal in the particular.[1]

It has been the writer's experience that many teachers seem quite content to present facts, or to assign to pupils selections from text-books to be conned and repeated in a subsequent recitation. How many dreary exercises in history, how many profitless periods in English, in science, and even in mathematics are passed with nothing of meaning given to the subject-matter under consideration. The teacher seems quite satisfied if the pupils know the events in the life of Napoleon, the story in the Vision of Sir Launfal, the routine of an experiment in chemistry, the demonstration of a proposition in geometry. What these details mean, what larger facts and principles they represent, are often totally ignored. Yet these are the significant, the important, the interesting aspects of the lesson or the course.

In the fourth place, *interest is stimulated to the extent that the learner is also a doer.* It is a basal principle of educational

[1] See Chapter XIII., p. 288.

psychology that there is no learning without self-activity. The pupil must respond to what he reads or hears. He cannot be merely passive. He must use his mind and his hands if he is to acquire knowledge and skill. The most learned and capable teacher cannot give his knowledge and his skill to his pupils; all he can do is to stimulate them to learn and to direct them in their learning. Self-activity is not only the most interesting method of learning; it is the only successful method of learning.

Many teachers seem surprised that pupils do not improve through repetition. They make no progress week in and week out. They show the same faults, the same lack of comprehension, the same imperfections in skill, although they have been told and told again the true facts, the proper methods of work, the correct technique. The difficulty is that they have merely been told. They have really done nothing themselves. To read a page, even to commit it to memory, is not to master it. The meaning must be thought out and in some way applied. There are four stages in learning,—first, general reading of the material for orientation; second, passive study of the facts and ideas; third, active direction of the mind in the selection of and emphasis on the significant facts, and fourth, reconstruction of the materials studied in terms of the learner's own thinking. Unfortunately many pupils never progress beyond the second stage, and many teachers have not sufficient understanding of the problem and skill in instructing their pupils to show them the proper methods of study.

In the fifth place, *interest in the last analysis is a personal matter*. The pupil is interested only in those things that concern him in some way, either from a purely selfish point of view, or from that of his wider sympathies and understandings. If he sees the bearings of a course of study on what he wishes to do either immediately or in the near future, it becomes of value for him. This interest need not be narrowly practical. It may be an interest in his own intellectual improvement. He may study an uninteresting subject because he needs to master it in order

to study something else that he desires to know, or because he believes that it will cultivate his mind. He will further be interested in those matters that concern others in so far as he is able to put himself in the place of those concerned. He will never be interested in something that lacks for him narrowly personal, or more broadly human values.

It is a perfectly proper question for the pupils to ask, "What good will this subject do me?" If the teacher believes that a subject is worth while, he should be able and willing to tell the pupil why it is worth while for him. Further than this the teacher should have in mind in teaching his subject the needs of the pupil, rather than the logic of the subject. No subject can be taught merely as a subject; it must be taught to someone, and in terms of the needs of the learner.

As we have already said, teachers often make a mistake, particularly young teachers fresh from college, of thinking of the content of their subject as the great thing. In a conversation with a teacher of physics I once asked, "Why do you teach this course entirely from the standpoint of the college entrance requirements, when the majority of your pupils do not go to college, and when there are many things that they would be interested to know, and which would be helpful for them that you cannot touch upon when you follow out in detail the college requirements?" And this was the reply,—"I believe that the only way to teach physics is from the standpoint of its scientific development, as worked out in the college entrance requirements. I cannot sacrifice the subject to suit the needs of these pupils. Let the few who can benefit by it as it should be taught get the benefit; I do not feel responsible for the others." Such a reply as this makes me feel that what we need in our schools is less worship of the subject and a broader humanism.

(c) *In the smoothly running class the teacher is the master.*— In the preceding pages we have considered the well-disciplined class from the standpoint of the pupils' activities and interests. These center around the teacher as the controlling and dominating influence. The teacher controls not by physical force,

but by what is vaguely called his personality. What this personality consists in from the standpoint of the pupil we have pointed out. The pupil has a rather definite notion of the teacher that he likes; an equally clear notion of the teacher that he dislikes. We have seen that the well-liked teacher must have "good-nature;" he must be cheerful, pleasant, enthusiastic, sympathetic, patient, and possessed of a sense of humor. But to be good-natured is not enough. These qualities alone do not constitute an ideal teacher from the point of view of the pupil. He must be absolutely fair, and administer strict justice. Further than this he must know his subject and have some skill in teaching it; and he must at all times be the master of the situation. Every teacher should strive to be liked by his pupils, for if he is liked by them he will have little trouble in discipline. There will be no positive and intentional disorder. Inattention and minor disorders will be checked by a look or a word. If the pupils know what the teacher wishes they will try to do it. There are a few general principles that every teacher who wishes to be well liked by his pupils should keep in mind. Some of these are as follows:—

Cultivate a genuine sympathy with your pupils, don't try to assume it. In this you cannot successfully make believe. If you have no real interest in your pupils, they will soon detect the fact. You cannot fool them, even if you fool yourself. To gain this sympathy you must strive to understand the nature of boys and girls, if you have forgotten yourself what that nature is. You must try to find out how their minds work; what they think and feel; what their hopes and ambitions are. Talk with them individually when you have an opportunity. If they fail in their work, try to find out the reason, and seek to help them. By striving to understand them and to help them they will come to understand you, and in this way a mutual sympathy will be created, a sympathy that will be genuine and lasting.

Do not let your sympathy run away with you. If a pupil has

been delinquent in his work or in his conduct, hold him accountable. The kind teacher is looked up to; the "easy teacher" is generally despised. Do not let a pupil unjustly appeal to your good nature or fool you. The teacher who is hoaxed and cajoled is held in contempt.

Do not attempt to gain favor by being undignified. You cannot be on the same level with your pupils, neither do they wish you to be. You may be their adviser and their model, you cannot be their chum. Resist the impulse to use slang, to talk as they talk, to act as they act. In their social functions you must be with them, but in a very true sense you cannot be "of them;" on the athletic field you may be an interested spectator, but you cannot be a contestant or a leader in the cheering; in the classroom you should always be good-natured, but you cannot laugh whenever your pupils laugh, just to show your sense of humor, for much of their laughter is silly.

Be patient but not procrastinating. You should not always restrain yourself. You must sympathize with stupidity and folly, but you must do what you can to remove them.

Cultivate initiative on the part of the class, but do not surrender your control. Let your pupils know what you think, and what you believe to be right. When there is doubt be frank to admit it, but be sure of those things that you ought to know. Be positive.

Finally, have courage. Meet every situation resolutely, with a firm voice and a vigorous manner. Youth admires courage, respects action, reverences mastery. When you have once determined what to do never hesitate. Be master of yourself and you will be master of the class.

CHAPTER V

DISCIPLINE IN THE HIGH SCHOOL.—DIRECT CONTROL

The Problem of Direct Disciplinary Control is Likely to Arise at Times even under the most Favorable Conditions.—Although the efficient teacher as a rule governs his class for the most part by indirect means, there are occasions when the question of direct disciplinary control may arise, even under the most favorable conditions. The fact has already been commented on that many pupils enter the high school and continue for some time, often to the end of their course, without an earnest and serious purpose. This makes it impossible for the teacher to exact from all the high quality of work that insures industry and studious attention. For this reason the American high school teacher must at times make special and determined effort to secure reasonable attention and proper behavior. On such occasions it happens that good order, which should be merely the incident of good teaching, is forced upon the teacher as the chief problem that he has to face in the conduct of his class. Not infrequently the novice in teaching, finds that the question of the control of his class is a matter of vital importance, and his success or failure may largely depend on how well he can keep his pupils in hand.

Types of Disciplinary Problems.—(a) *The incipiently disorderly class.*—The form of disorder most often met with is that of the generally restless and inattentive class. Here there is no positive attempt at disorder. The attitude of the pupils is negative, there is considerable restlessness and some whispering. Under such circumstances the quality of work done is invariably inferior. There is also always the danger that such a class will

soon reach the point where it will be entirely beyond the control of the teacher.

A concrete example of a class of this sort will make more evident the serious character of the situation. The instance is taken from a class in English history in a city high school of a thousand pupils. The observer reports,—"In this class the discipline was poor. In the first place it seemed to me that the seating of the pupils had a good deal to do with the disorder. They were spread out over a large room making concentration of attention extremely difficult, if not impossible. Where two boys were seated near each other they laughed, paying no heed to what was going on in the way of the lesson, at least. When the pupils were separated, they busied themselves for the most part with something outside of the class work, often reading books and newspapers, and sometimes idly marking on sheets of paper, or looking out of the window, apparently into vacant space. There were four girls in the class. These laughed and talked occasionally across the aisle while someone else was reciting. Usually the teacher devoted too long a time to the pupil whom she was questioning. The rest of the class derived no benefit from this, as far as I was able to perceive, spending the time in moving about in their seats, smiling, raising desk covers, etc. The single effort to check this sort of a thing occurred when the teacher waited until one boy stopped whispering to his neighbor. The only purpose this served was to arouse the laughter of the rest of the class. In less than a minute he had resumed his general inattentive and indifferent attitude."

(b) *The actively disorderly class.*—A class that begins with incipient disorder as a rule soon becomes consciously and actively disorderly. Laughing and talking are likely to continue for most of the hour; there are passing of notes, kicking and punching of one's neighbors and other varieties of "horse play."

An observer of a class in French writes,—"There were twenty in the class, eleven boys and nine girls,—and the boys spent practically the whole recitation period in what seemed to be a more or less de-

liberate attempt to make trouble for their mates and for the teacher. There were loud whispering, shuffling of chairs, and 'fooling,' none of which Miss ——— seemed to have the courage even to try to stop, although I believe she must have seen most of what was going on; she must have, it was so obvious. Her attitude seemed to invite disorder. She sat at her desk for the most of the hour; her voice was poor, and she spoke fast and rather indistinctly. Her manner was listless and spiritless. She asked her questions solely to the pupil reciting, ignoring the rest of the class completely, even to the extent of apparently not noticing the pranks of two boys on the opposite side of the room. She seemed to be entirely out of touch with her pupils; resorted continually to mild sarcasm, and seemed to have no conception of her office beyond that of merely 'hearing' individual pupils recite. There was practically nothing taught during the entire period. The class seemed outside of the pale of her interest and control."

(c) *The aggressively disorderly class.*—Under extreme conditions the class is not only in active disorder, but it is aggressively organized to antagonize and "break up" the teacher. There are all sorts of disturbance, shuffling and stamping of feet, cat-calls, groans, throwing of chalk and erasers, scuffling, banging of desk covers, and the like. Here is displayed not merely a spirit of restlessness, and carelessness, but an attitude of positive antagonism toward the teacher. Such a class has passed completely beyond the control of the teacher, who is helpless under the circumstances and who cannot hope to do anything of value until order has been reëstablished.

An observer of wide experience describes such a class in a medium-sized high school in which in general the discipline was good. The trouble was confined to a large class taught by an inexperienced teacher. The observer says,—"It was a first year class in English, numbering forty-two pupils. The instructor was a young man who had specialized as a graduate student in the subject he was teaching, and had taken advanced courses in the department of education at

one of our leading universities, but had had no practical courses in the art of teaching, and had had no previous experience. He lacked tact, vigor and courage. He apparently had no comprehension of the pupils' point of view, or any conception of how to make the subject interesting or vital. There was no attempt to stimulate thought, or to bring out anything in the lesson except a few of the dryest facts supposed to have been conned by rote for the day's assignment.

"The result of such a combination was easy to foresee. Given a lesson that had in itself a little interest, an instructor who had no conception of how to awaken any interest that might possibly be found, who had a decidedly weak personality, no apparent conception of instructional skill, and finally an excessively large class of young people, who were seeking some outlet for their unutilized energies, and there could be but one ultimate outcome. The pupils could not be said to whisper; they talked aloud, and they talked most of the time. There were added to this the shuffling of feet, the banging of books on the desks, frequent cat-calls, and occasional groans, varied by the throwing of paper wads and chalk, and at least in one instance, an eraser. Pupils who were called upon to recite did so with evident reluctance. They replied to most of the questions with a 'don't know,' and in two instances pupils when called upon refused to rise from their seats, simply saying that they were not prepared. No urging on the part of the teacher could induce them to stand or answer questions put to them. One boy was absolutely insolent. When told by the teacher that he should remember a rule of grammar that he constantly violated he replied with a sneer, that he couldn't keep such stuff in his mind; he had other things to think of.

"Thus the period of forty-five minutes dragged its slow length along and finally came to an end. It had been absolutely wasted; worse than wasted, for not only had nothing of positive value been taught, but much of negative worth had been learned. What a training in disorder, and disrespect for authority that one period furnished; what a menace to the orderly control of the entire school; what danger for the future of those young people who were soon to arrive at the years of full responsibility and assume the duties of American citizenship. It is to be hoped that in this instance there was slight transfer of practice effects, and that the training in disorder was chiefly con-

fined to this one class and that it will not spread to disorder in the school, in the home, and in the future lives of the pupils."

(d) *The disorderly pupil.*—Problems of discipline are very largely class problems, problems that concern groups of individuals rather than single pupils. When a class as a whole is well disposed and has the fashion of docility established, individual pupils are not likely to give much annoyance. However, at times it happens that there are pupils who seem to be little influenced by the group attitude and who constitute individual problems, to be dealt with as isolated and special cases. The least serious of these specific cases is the disorderly pupil. Such cases range in degree from the pupil with wandering attention, through the restless, the careless, the over-zealous pupil to the giggling girl, the egoistic pupil (the "smart Alec," who likes to show off) and the mischievous pupil. Each one of these types constitutes a distinct problem. Perhaps the most common is the over-zealous pupil who is always eager to take part in the recitation; who is constantly raising his hand, speaking out when a question is asked or another pupil is reciting, and often making comments to his neighbors concerning the matter under consideration. Such a pupil has an excellent attitude as a rule. He is thoroughly interested in his work, and his attention is on the topic before the class. However, his interruptions are a disturbance to the orderly progress of the recitation, and sooner or later are likely to cause disciplinary troubles from other members of the class.

"The chief trouble that I have experienced in my discipline this year," writes a beginning teacher, "is from pupils who are always breaking in when I am asking questions, or when others are reciting. These pupils are interested in the work, and they are among the brightest in the class, but I must constantly keep them in check, if I am to get on with the lesson. I thought at first that it would be wrong to check their enthusiasm, but I soon found that the work was

not progressing as it should, and that I could not cover my lesson as planned. Further than this, the interruptions were often resented by the pupils who were reciting, and also certain members of the class who were not so eager about the work as were the pupils who originally started the fashion of making comments when not called upon, took advantage of the situation to speak out, as far as I could judge merely for the 'fun of it.' I soon found that my control of the class was being lost, and I had no alternative but to require in general that pupils should not speak unless they had received permission from me to do so. I have not quite eliminated the tendency, but it is under reasonable control at present, and the discipline has greatly improved in consequence."

The egoistic pupil generally gives trouble in two ways. At times, like the over-zealous pupil, he breaks into the orderly conduct of the recitation. In his case, however, it is done with a conscious attempt to show what he knows, or to correct some mistake of a fellow pupil, or if possible, of the teacher. He is not so much interested in the work as he is in himself. The egoistic pupil becomes a more serious source of trouble when he tries to "show off" in the class, and to thus get the approval of his mates. One favorite method is to make ludicrous statements, and to assume comical attitudes. Such a pupil is never really happy unless he gets a laugh from the class.

"I never realized what a problem in discipline really was," writes a teacher of experience, "until Jim came. He was a lanky, over-grown, red-headed boy of fifteen, a natural comedian, and greatly admired by his mates. He loved to show off, but he didn't really need to make a serious effort. The tones of his voice, the attitudes that he struck, the grimaces that he made, were all good comedy. Jim's natural talents in this direction were so great that he has since gone on the stage, and has made a success. Perhaps the worst thing about the whole situation was that Jim was always good-natured, and I did not have it in my heart to be severe with him, especially when he did something that made me want to laugh, just as heartily as the class

did, and this happened not infrequently. Nevertheless, I found that I had to call a halt on Jim's pranks; if I had not I should soon have had the worst disciplined class in the school. I never had another case just like Jim's. I have had boys who wanted to show off and tried to be funny, but these were as a rule inartistic in their attempts to raise a laugh. I had little difficulty in putting them in their proper place."

The mischievous pupil tries to make trouble on the sly. He delights in doing things when the teacher is not looking, and often develops an exasperating degree of cunning. When detected, or called to account, he generally assumes an air of injured innocence.

The writer recently observed a typical case of this sort in a class in geometry which he was visiting. The boy in question sat in the rear of the room. He was a meek, pale, and inoffensive looking youth, and when the eye of the teacher was on him he was a model of good behavior and attention, but when the teacher turned away her gaze, then he was instantly on the alert to make some kind of disturbance. A favorite device was to begin a low humming, which he ingeniously controlled in such a way that the teacher did not seem to be able to detect its source. At times he would drum on the underside of his desk, occasionally he would flick bits of paper at other pupils, with an astonishing accuracy of aim, and on one occasion he used a small pocket lens to focus a ray of sunlight on the back of the neck of the girl in front of him. The teacher for the most part seemed to be entirely ignorant that a disturbance was going on, but the class were well aware of what the boy was doing, and they gave much more attention to him than to the lesson.

The giggling girl is a common source of disturbance in classes composed of pupils of the high school age. There is generally no positive attempt on the part of such pupils to create disorder. They are at the "silly age," and giggling is a spontaneous expression that is extremely difficult to control. Generally it does not develop into a serious disciplinary problem when there are

but one or two pupils in the class who are of this type. However, four or five tittering girls together may seriously menace the orderly conduct of any class.

The careless pupil is at times the source of much annoyance to the teacher. He walks heavily down the aisle, jostling against pupils, brushing books from desks, and making a great clatter. He slams down his desk cover, drops his books, is awkward and naïvely comical. Usually he is boorish, and lacking in good manners.

"I believe I spent more time in attempting to teach Walter how to walk quietly about the room," a teacher recently said to me, "than I did in teaching the class German. Whenever he went to the board he moved as ponderously as an elephant, with much more noise, and with much less grace. Before the term was over, I had learned never to ask him to leave his seat except under extreme necessity. But he could not be quiet, even when seated. He piled his books on the top of his desk in a most disorderly fashion, and generally knocked all of them on the floor a half-dozen times, during the recitation. At length I made it a rule that he must never have more than one book on his desk at a time. There were other ways, however, in which he could make a disturbance when seated, such as leaning so heavily against the back of his chair that he broke it, letting his desk cover fall on all possible occasions, taking out the ink well and upsetting the ink, and to cap the climax lolling about in his seat until he actually fell out. Fortunately, this made him just a little ashamed, and from that time on he began to show some improvement, but he is still my big single problem in discipline. I do not think that he intends to be in disorder. He is naturally clumsy."

(e) *The pupil in rebellion.*– The pupil who has tendencies toward disorder is to be found in most schools and in the majority of classes, though in the well-disciplined school he has no opportunity to give vent to these tendencies and he remains docile and reasonably attentive on most occasions. The pupil in open or in hidden rebellion against school authority and class

discipline is an exception. He often goes to school under compulsion; he has no interest in his work; he not infrequently has a grudge against the principal or some teacher. His attitude is hostile, and is often due to improper home training, bad companions, or harsh and unsympathetic teachers. He is at times sulky and obstinate, less often openly unruly and wilfully disobedient, occasionally impudent, insulting and defiant. One of the least disturbing forms of incipient or open rebellion against school authority as far as the teacher is concerned, but one which demands vigorous treatment on the part of the principal is truancy. A boy who detests his school work, or who finds the outside world particularly attractive, is likely to turn his back on school tasks and seek every opportunity to escape them.

Quite often truancy is a phase of the "gang" spirit. Boys go off in groups on "expeditions." Some principals find that this is closely connected with cigarette smoking and even more pronounced and dangerous forms of viciousness. At times we find the isolated truant, the one who habitually absents himself from school, but goes alone, as in the following example:—"My dear Mr. ———, At your request I am writing this letter telling of my truancy. Monday, October 25th, I started out to school on my wheel. When I was a little further than the race tracks on Broad Street the front tire blew out. I walked home with the wheel and it being late and I having no excuse decided to stay out just for the day. I went down city to the Nickel and the Bijou. There was no one with me all day. I then came home. Tuesday, October 26th, I went to the Empire. I stayed down city the rest of the day. There was no one with me all day. I was afraid to tell my father that I stayed out and I didn't want to write my own excuse. Wednesday, October 27th, I went down town and stayed there until two o'clock. Then I came home and went to the Palace Theatre which is right at the head of our street. No one was with me. Thursday and Friday was teachers' institute. Monday, November 1st, I had a bad cold and was told to stay home in the house which I did. Tuesday, I went to the city and then to the Empire. I stayed down town until about three o'clock and then

came home. There was no one with me. Wednesday, November 3rd I went to the Bijou and the Nickel. There was no one with me. I then came home. Thursday, November 4th, I went to the Nickel. I loafed around and then came home. There was no one with me. Friday, November 5th, I went to the city and loafed around till two o'clock then I came home, and went to the Palace. There was no one with me. Respectfully yours, ———"

The defiant and insulting pupil is a source of great danger and is a constant menace to the discipline of the teacher. Fortunately such a pupil is rare. One instance of this type is that of a spoiled boy who has a very high opinion of himself, and who holds the school and its teachers in almost open contempt. In the classroom he laughs, talks, and does as he pleases. He commits all sorts of petty infractions of discipline, and when reprimanded he assumes a bold attitude. He is the leader of a gang, and takes great pleasure in showing that he is superior to the ordinary rules of classroom conduct. In the corridors he makes unnecessary noise, and openly tries to annoy the teachers in charge. On one occasion, when threatened with expulsion by a teacher, he said,—"No one dares to put me out of this school; my father has influence on the school committee, and I will see that you lose your job if you attempt to have me removed." Constant reprimands and punishments have had very little effect in controlling this pupil. On one occasion he was suspended for several months, but he came back again, with the same rebellious and defiant attitude. The essence of the trouble in his case lies to a considerable extent in the fact that he was never taught in the home to assume an attitude of subordination and proper respect for authority.

Another pupil in the same school who was openly defiant and rebellious finally stated that the reason for his attitude was that he was compelled by his father to go to school. What he wished to do was to work, and he thought that he might finally be expelled if he continued in disobedience. Another pupil, a girl, was hostile, not to the school as a whole, but to one teacher, for the reason that she felt that this teacher had dealt with her in an unfair way. As she expressed her feelings to the principal, she "had it in" for that particular teacher, and intended to cause all the trouble that she dared to in his classes.

The writer has investigated a considerable number of cases of pupils who are clearly at odds with the school and has found all to fall under one of the three above types. The fault is due either to an extremely egoistic nature, developed and accentuated by a faulty home training, to total lack of interest in the school work and a positive desire to leave school, or to unwise treatment on the part of some teacher or principal, treatment that seems to the pupil arbitrary, harsh, and unjust.

(f) *The vicious pupil.*—In this class are found pupils with various kinds of bad habits (of whom the habitual cigarette smokers are the most numerous), thieves, petty gamblers, liars, deliberate and wilful cheats, and obscene and sexually immoral pupils. The most drastic punishment is visited on pupils of this last-named type, because of the great social danger of their presence. The cheat is, as a rule, not dealt with in a sufficiently severe manner. In fact cheating is in some instances looked upon as so trivial a fault that many pupils do not recognize that certain minor forms of dishonesty are wrong. For this reason, it is perhaps unfair to class the dishonest pupil as vicious, although his conduct as such may warrant this characterization.

The most common form of dishonesty is that of handing in work as original on which the pupil has received assistance. This ranges from getting help from parents and school-mates to the actual copying of themes and similar written work. Cheating in examination is also common. Most pupils feel that they have a right to cheat, if they are in danger of not passing the test, and few pupils consider that they are doing wrong when they help another to get through. Indeed, it is a point of honor with pupils to give aid to others when they are asked, even if they would not receive aid themselves. The extent to which these forms of cheating occur is so great that it calls for vigorous measures to suppress the practice. The schools as a rule have not taken any positive stand in the matter, and punishments are either not administered at all, or are of such a mild character as to have little effect. Occasionally the habitual and confirmed cheat is dealt

with in a more rigorous manner, as shown by the following disciplinary report, which is typical,—"This girl cheated or attempted it twice in arithmetic and had to repeat the course. She cheated in shorthand and was given zero for that test. Her mother was called. She has cheated again in arithmetic. She seems incorrigible in this respect." This girl was finally sent to the office of the superintendent.

Types of Disciplinary Control.—The question of indirect disciplinary control has already been discussed at length in the preceding chapter. As has been seen, it consists in so conducting the school and the class that disorder and disobedience do not have a chance to develop. Obviously some of the methods suggested as means of indirect control can be used with effect when actual disciplinary problems arise. These methods, however, will not be discussed again at this time. Among the types of direct control the following are the most important:—

(a) *Control through discussion.*—It is generally agreed by teachers and disciplinary officers that in dealing with individual offenders the first thing to be done is to talk matters over with the pupil. This serves several purposes. In the first place the pupil's point of view is obtained, misunderstandings are sometimes cleared up, and the real nature of the offence is better understood by both the pupil and the officer. Further than this the frank statement of a fault is often in itself a wholesome corrective. We have here an illustration of the "psychology of confession."

Again discussions between teachers and pupils at times bring about mutual understandings and establish personal friendships. The pupil hesitates to antagonize the teacher when he is made to feel that his instructor is not a mere task-master but a real human being.

An example of this method of treatment that brought satisfactory results is the case of a girl in the freshman class of a city high school

who was stubborn and negative in her entire attitude toward her work. When called upon she was surly, and even when she seemed to know the topic for recitation she would reply to questions only in the briefest way. Often she refused to recite at all. The teacher of general science overheard the girl saying that the subject meant nothing to her and that she did not intend to prepare her lessons. The teacher talked with the girl in private, tried to explain to her what the subject signified, found that the girl had interests that linked themselves up with certain aspects of the subject, and in the end helped to make clear to the girl many of the difficulties that she had found in the study. There was a decided improvement in this pupil's work from this time on, not only in the subject of general science, but in her other studies also. Later in her course, the girl did well. She said that the reason for her change of attitude was due to the fact that she found someone who seemed to take a genuine interest in her and who really wanted to help her.

Another example of the value of establishing personal relations and finding common interests is of a boy who had been disorderly in the class on various occasions. The teacher tried the usual method of keeping the offender after school, but without any permanent result. On one occasion, however, he took the opportunity to talk with the boy about his life outside of school, and discovered that the boy was greatly interested in boating and fishing, sports in which the teacher himself happened to be an expert. The older man told the youth some of his experiences, and in ten minutes a basis of good feeling and mutual understanding had been established that solved the entire disciplinary problem as far as this teacher and this pupil were concerned.

Teachers should not make the mistake of talking too much with pupils about their conduct. Above all, in these discussions there should not be prolonged argument or debate. Neither does it follow that nothing more should be done than to talk matters over. At times most vigorous measures must follow, although at other times all that is necessary is a frank understanding. The pupil often sees where he is at fault, and makes an honest attempt to correct his misconduct. When he takes this attitude

there is no immediate call for further measures. However, a repetition of the original offence cannot be permitted to pass without more positive action.

In some schools it is the practice of those in charge of the discipline to require that a pupil who has been sent to the disciplinary officer should make a careful statement in writing of the nature of his misconduct. This statement is to be submitted to the teacher who has reported the pupil, and it is then to be returned with the teacher's comments on the case. In this manner the issue involved is brought definitely to the attention of the pupil. Further, the statement can be put on file and used as a basis for later reference, if the offence is again committed, or any question concerning it arises. As a rule pupils do not care to have a record of their misconduct preserved in permanent form, and are not likely to consider it a trivial matter to be sent to the disciplinary officer under such circumstances.

While it is a rule than can safely be adhered to in general that disciplinary troubles with individual pupils should be dealt with, in part at least, through discussion, it is a question how far the teacher should discuss the problem of order before the class as a whole. It is certain that no teacher should "lecture" or scold his class. The teacher who always talks about discipline, and seldom acts is sure to fail. Most pupils respect the teacher whose words are relatively few, and whose deeds are certain. The teacher who constantly finds fault and nags his pupils likewise is sure to have poor discipline. In a short time a spirit of antagonism will be directed against him, and when this attitude exists his usefulness with his pupils is at an end. No teacher should make it a practice of telling the class what he intends to do, if the pupils misbehave. It is not wise to suggest the possibility of disorder in advance. Further, if a teacher is unwise enough to threaten his pupils, there are sure to be a few bold spirits who will "take the dare." There are occasions, however, when a straightforward discussion with the class about certain matters of general conduct is wholesome and desirable. In such dis-

cussions the teacher must appeal to the reason and the better sentiment of the class in such a way as to obtain its approval and sympathy.

One of the most effective instances of such an appeal that has come to the writer's attention was that made by a novice in an ungraded school in New Hampshire. The school was a building of one room with twenty pupils. On the first day all went well, but on the second there were signs that the pupils were beginning to try the teacher out. On the third day the evidences of disorder were on all sides. There were whispering, throwing of paper wads, passing of notes, and general inattention. The teacher saw that the school was rapidly getting beyond her control and resolved on positive action. At the close of the recess period, the pupils were told with great solemnity on taking their seats to put aside all their work. The teacher then said that she had something of great importance to say to them. She told them in detail what they had been doing, naming individual offenders and their specific acts, and added,—"Now I can be a pleasant teacher or a cross teacher. We can have a happy time this term, or we can have a miserable time; we can learn a great deal, or we can learn little. Which shall it be?" The teacher remained with the school for the entire year, but she never again was called upon to refer to the subject of disorder. From that time on she was in complete control of the situation.

Another instance of appeal to the class was even more radical, and came just in time to save a desperate situation. The class was large, thirty-five boys in the second year class of a technical high school. The teacher was a young man fresh from college, and his pupils considered him fair game. Before the end of the first week it had become a typically disorderly class of the aggressive type. The teacher was at his wit's end and when the disorder was at its worst he banged his book down on his desk, for in no other way could he secure attention, and said,—"Don't you think it is pretty mean of you fellows to treat me in this way? You know that I am a new teacher. I think you ought to be fair and give me a chance. Remember you are thirty-five to one." The appeal proved effective. There was no more serious disorder in that class.

(b) *Control through counter-attraction:*—This is a principle of great importance, not only in dealing with control of pupils in the school, but with various problems of social betterment and reform. An undesirable activity is prevented or removed by placing it in competition with an activity that is entirely harmless and at the same time extremely attractive. It is true that children and adults alike desire to do the thing that meets social approval, if it makes an appeal to their interests, habits, or instinctive tendencies. In the previous chapter many of the methods of indirect control that were discussed are based on this principle of the motivation of human conduct. Thus truancy may be checked by making school work attractive, or through an appeal to the vocational interest.

A striking instance of the complete reform of a disorderly class by an appeal to the fundamental interest that made the disorder stale and profitless is furnished me by a teacher of experience and thorough efficiency. He writes,—"During my second year of teaching, I was confronted with a very difficult problem in discipline that for the time threatened my undoing. I had lived through my first year as a high school teacher, and had in a mild way succeeded. I had experienced the usual troubles of a beginner, and among them I had had my share of questions of conduct and order, though none of them were serious. I fondly imagined at the beginning of my second year that all my troubles lay behind me, but, alas! this was far from the case. My real difficulties began when I was assigned a class in American history, composed principally of boys, most of them of a low grade of ability and nearly half of them repeaters. I used the ordinary recitation and text-book method, the old dry-as-dust procedure that still characterizes so much of our teaching. With a class of ability and intellectual interests I probably should have made a seeming success, though I am inclined to think that it would have been more apparent than real, but with this class there was not the slightest doubt that I was an utter, complete, and miserable failure. I taught the pupils practically nothing, they refused to be taught, and on the whole I think they were right in refusing the husks of mental pabulum that I of-

fered them. Even then I should have had no serious trouble (serious from the standpoint of the principal and most supervising authorities) had not my discipline gone to pieces. The class, having no interest in the work, sought to find some extrinsic form of entertainment, and they found it in creating disorder of a very serious nature. I might have ignored their indifference and their stupidity, but I could not ignore their behavior, and if I had, surely the school authorities would not have overlooked the matter. I realized before a week had passed that I had to do something, and do it soon. I tried some of the usual methods of punishment, but they were dismal failures. I was in a panic, and the class knew it.

"Then a thought came to me which finally saved the situation. It was radical, particularly in those days. It consisted simply in changing my entire method of teaching. I gave up hearing lessons, and set the class to work on matters of local history that I connected more or less definitely with the text. We were in the Colonial Period and the town in which I was teaching was an old New England city full of traditions, and possessing much of early historical significance. This was extremely fortunate for me, for it gave me a basis to work from. I began by organizing the class into groups as committees to investigate certain topics and make reports to their mates. I will not go into detail, but I soon got their interest and coöperation. In a short time I had most of the boys and all of the girls working like Trojans. They were eager to find out things for themselves, they took pride in telling to the class what they had found and they became really enthusiastic in the discussions that developed. I soon had a class in which the problem of discipline no longer existed. I also had a class of enthusiastic, efficient workers. Not one of the class, no, not a single repeater failed to pass the course. There was not one who did really poor work. I have taught many classes in history since, but never one that I enjoyed more than this class."

(c) *Control through regulation of the environment.*—This is the principle of so controlling the external conditions that an undesirable tendency does not have the opportunity to express itself. The environment is sterilized, so to speak, and the germs of disobedience have no chance to develop. Proceeding on this

theory, parents and social reformers seek to guard the young person from evil influence by removing temptations from his path, or by so supervising him that he does not have the opportunity to indulge in wrong doing. Under such conditions, bad habits have no chance to become established. However, there is no certainty that when conditions are changed and there are incentives and opportunities for wrong behavior, the individual will resist them. It is here that this method of control is most likely to fail. It develops no independence on the part of the young person, and is not conducive to "character building." In many instances, however, it is the most effective method of dealing with misconduct, and the wise teacher will employ it, but always with discretion.

Reference has already been made to the vice of dishonesty in school work and the desirability of holding it in check. It is difficult to create ideals of honesty; it is not safe to give pupils opportunities to cheat. Under such conditions this habit quickly becomes established. Pupils who if left to their own devices would never hand in work on which they had received improper assistance, soon find that their associates are cheating and reason that the teacher has no right to permit this sort of thing, if only a few have the advantage. In a short time all have caught the infection, and cheating becomes a class and a school habit. It is the duty of the teacher carefully to supervise tests and examinations; to make it difficult for the pupils to receive and give aid. The teacher should refuse to accept written work and exercises done outside of the class when there is clear evidence, as there often is, that this work is not original. When it is impossible for the work to be scrutinized and supervised it should not count for credit. The pupils should be made to understand that there is no advantage in dishonesty. For this reason tests should frequently be given to determine real ability and progress. If the exercises done outside of the class in language and in mathematics were considered merely as aids to the pupil in his learning and not as exercises to be marked; if class-standing and ability were measured entirely by work and tests done under the supervision of the teacher, there

would be no object on the part of the pupil in receiving improper assistance.[1]

The discipline of the classroom is largely dependent on the alertness of the teacher, who so controls the room that there are few opportunities for individuals to misbehave. It is generally true that the teacher who does not know what is going on has a disorderly room. On the other hand the teacher who sees what is taking place has created an environment where the opportunities for misconduct are few. Pupils as a rule will not misbehave when they know that the teacher is observing them.

(d) *Control through catharsis.*—This is the principle of allowing all tendencies of individuals to have expression. It is the theory of sowing wild oats. Some believe that the best way to get rid of an undesirable impulse is to give it full swing. In this way, it is urged, the individual will be purged of his wrong desires. If a boy longs to play truant, let him run away from school or home, and he will soon be glad to come back; if he is curious about cigarette smoking give him a chance to experiment with it, and perhaps he will find it less attractive than he had thought. It is argued that the best way to make an act desirable is to prohibit it.

It can be seen that this principle of control is exactly the opposite of the one previously discussed. The former says,—"Make the environment of such a nature that opportunities to do wrong are reduced to a minimum," while the latter urges,—"Arrange conditions so that the individual's tendencies shall not be checked unduly." Most will agree that while the principle of inhibition at times fails, that of catharsis seldom proves effective. Generally the surest way to make a boy a truant is to allow him to play truant. Cigarette smoking commonly ends in the establishment of a habit; not in the checking of an impulse. However, there is doubtless a certain modicum of truth in con-

[1] For a further discussion of this topic see Chapter VIII., p. 166 and Chapter XVII., p. 363.

tention, and the writer has known a few instances in which in a minor way this method of control has been used to some advantage.

A teacher reports that on several occasions when her class in English has been unusually silly she has found it possible to bring them back to a serious frame of mind by giving them an exercise in writing limericks and nonsense jingles. Another teacher has furnished me with the following instance:—He says,—"A boy gave me no end of trouble by trying to make a clown of himself in the class. Ordinary methods of discipline worked only temporary reforms. Finally, I asked him to stay after school one day and required him to rehearse his 'stunts' before me. I kept him at them until he got enough. He has shown little disposition to do them for the benefit of the class since."

It should be noted, however, that this second instance of discipline by the exercise of an undesirable activity is not a pure illustration of inhibition through catharsis. Doubtless the boy would have continued to show off before the class indefinitely if free rein had been given to him to exercise his inclinations there. When, however, he was required to perform before the teacher, this so changed conditions that his conduct seemed to him to be no longer desirable. It was not free expression of his tendencies that corrected them, but expression under new and undesirable conditions. The same is true of an instance cited by Bagley in his book on Class Discipline.[1] He writes,—"A schoolroom was so constructed that the ceiling was supported by iron pillars surmounted by Corinthian capitals. Once when the teacher was absent from the room for a few moments, a boy yielded to the impulse which had often possessed him, namely,—to 'shin up' one of the pillars. When the teacher returned, she found the boy perched at the summit with an arm and one leg over the corner of the capital. She remarked pleasantly upon his exploit and told him *to stay there.* It was fun for a few moments, but the unnatural posture quickly became uncomfortable, and it was not very long before the adventurous lad was longing for permission to come down. He saw,

[1] See p. 202.

however, that the joke was turned, and said nothing. Finally, when the teacher saw that the discomfort had approached agony, she relented and told the boy to take his seat. The climbing of pillars, it is hardly necessary to say, was not repeated."

(e) *Control through modification of behavior.* It is frequently possible to inhibit undesirable forms of conduct by turning the activities of the pupil into new and desirable channels. This is an important principle of social control, as well as of class management. The boy who desires to play truant may find his tendencies satisfied by field excursions, or other forms of school activities carried on out of doors. The girl who longs for romance may find a safe vent for her desires in writing romantic stories, or in reading the works of George Eliot. In this connection we find that it is the function of creative and appreciative art to provide through the imagination safe and desirable forms of behavior as substitutes for unsafe and unworthy kinds of conduct. There are numerous examples of the working out of this principle of disciplinary control in the school. A few will be sufficient to make definite its nature.

A class in history contained several pupils who were so eager to take part in the general discussions that the orderly progress of the class period was seriously hindered. The teacher did not wish to discourage interest, but he realized that something must be done to prevent the confusion that was resulting. He hit upon the plan of requiring the pupils to submit in writing questions and comments on the progress of the lesson. These were left in a question box at the end of the class period, and at the next recitation the most important were taken up and considered. This method was effectual in every way. When required to write out questions, the pupils framed them in a more thoughtful and careful manner, and the benefit derived from the discussion of the significant ones was one of the most important parts of the work. Further than this there grew up among the various members of the class a wholesome rivalry in the attempt of the pupils to write out questions that would be worth consideration.

Finally, while only a few individuals took part in the oral questions and comments, all shared in the written exercises.

The principal of a high school found a serious disciplinary problem on his hands because a few of the older boys with tendencies toward leadership had organized the younger members into a number of gangs that by their conduct threatened the good name of the school and the community. He solved the problem completely by interesting these same boys in legitimate school organizations. One, who had considerable athletic ability, developed a very creditable track team, another became the leader in a debating club, while a third helped in forming a school orchestra.

A teacher of chemistry found difficulty in controlling the behavior of two of the pupils in one of his laboratory sections until he hit upon the device of making them "class-foremen." They were capable and intelligent pupils and he assigned to them the duty of distributing and collecting the day's materials, and of showing some of the poorer pupils how to set up their apparatus and conduct their experiments. In this way he provided the boys with work that was well worth while for them, developed their initiative and self-control. At the same time he freed himself from certain routine duties, and found more time to supervise the work of the class. One of these boys has since specialized in chemistry in his college course. He states that he owed his original interest in the subject to this teacher who found for him a worth-while activity in a subject which up to that time had appealed to him only as an opportunity for boyish pranks.

CHAPTER VI

DISCIPLINE IN THE HIGH SCHOOL.—THE FUNCTION OF PUNISHMENT

Punishment, Although the Last Resort, is often a Necessary Means of Class Control.—It is agreed by most teachers and disciplinary officers that definite punishment as a method of securing good order should be avoided when it is possible to control the class by other means. Indeed, some have gone to the extreme of saying that punishment should be banished from the school, since, as they assert, all infractions of discipline are due to improper methods of treating the pupil. Under the right conditions, they affirm, the unruly, the rebellious, and the vicious pupil would be unknown. Such persons take the position held by certain social reformers that the delinquent pupil, like the criminal, is the product of his environment, and that the responsibility, as well as the means for correction, rests with society. In other words, the larger social group of the community and the smaller social group of the school should reform themselves rather than their individual members. While there is doubtless some truth in this contention, the position taken is extreme and impractical. The time has not as yet arrived when we can safely do away with jails, prisons, and houses of correction, neither has the time come when the teacher can secure from all pupils respect and obedience by the methods of conduct-controls discussed in the two preceding chapters. There are occasions when punishment, certain, swift, and severe is the only means of making the pupil realize that he must respect and obey the authority established over him through custom and by law.

It may be true that there are no bad boys in original nature, but the pupil with a defiant sneer on his face, with hidden and vicious cunning in his acts, with thieving and dishonest habits, and with obscene and immoral thoughts and conduct exists, whatever the cause; he must be dealt with, wisely to be sure, but energetically. No false sentimentality, no abstract educational or social theories, can be in these cases a substitute for action, and the teacher who hesitates to deal with such pupils with vigor is not doing the wise thing nor the right thing. Whatever else he may do, and should do, he must punish such offenders. There are many less serious cases, too, that require more than words of advice and admonition. As has already been pointed out, discussions should come first, but there must always be behind the advice and the warning a potential something that makes the words of the teacher more than mere words. Words that have no relation to acts have no power in themselves to change conduct. Words are mere symbols of reality.

Punishment is of Two Main Kinds, Natural and Artificial.—When we think of punishment we generally have in mind some unpleasant accompaniment of an act that is arbitrarily attached to this act by the will of some individual or set of individuals. This is artificial punishment. There is, however, another kind of punishment, some painful consequence of an occurrence that issues of necessity from it. This is natural punishment. When the child puts its hand on the hot stove there is the natural result, a burn, which is a punishment for the act. When the child takes the sweets from the pantry the natural result is the pleasure derived from the taste of the jam and the sugar. The pain that comes from the slap on the hands is an artificial punishment, having no necessary connection with the child's conduct, but arbitrarily attached to it by the mother.

(a) *Natural punishment has certain clear advantages over artificial punishment.* Rousseau, Spencer and other educational writers and reformers have recognized certain superior values in natural punishment as compared with artificial punishment, and

have advocated it as the chief, if not the only, means of correcting the child. Let the young person come in contact with the world and learn through bitter experience to avoid the dangerous and the evil. Hence, Emile was to be thrown among pickpockets and courtesans in order to find out for himself what is safe and right. It was seen by Rousseau and by all "naturalists" in education that in the last analysis what makes any act desirable or undesirable, right or wrong, is its consequences. If these be pleasurable on the whole and in the long run, then they stamp the act with approval, if these be unpleasant or painful they stamp it with disapproval, and it is consequently avoided. The fact that natural punishment is in and of itself genuine, gives it its chief value. Further, because it is genuine, it is accepted by the individual who receives it. When punished by nature we are apt to acknowledge our faults and strive to correct them, and with as good grace as possible. We attach to ourselves the blame for our ignorance, our folly, or our perversity. We do not blame the instrument that punishes us. It also follows, since natural punishment comes from the act that is punished, that it is regarded as inevitable. There is no chance to escape. The individual cannot trust to the caprice and ignorance of others to avoid his due. The child learns that sometimes the mother does not detect him when he invades the pantry, and again when he is caught his punishment may be quite perfunctory, if not altogether omitted. However, the child has also learned that when he touches the hot stove the burn will surely result. There is no chance of escaping this punishment. With the mother the child can take a chance, but never with the hot stove. *It is because natural punishment is unvarying, certain, and genuine that it has obvious advantages over artificial punishment which suffers in just these particulars.*

On the other hand natural punishment has such obvious disadvantages that practical common-sense at once shows us that it cannot be made to take the place of punishment that it attached

to an act by the fiat of human will. In the first place, natural punishment is often excessively severe, and in many instances absolutely destructive to the individual. When we play with fire the natural result is to be burned, but we may be consumed. It is here that artificial punishment steps in and prevents the foolish act that may have the most disastrous consequences. Again, natural punishment is often separated from the act that causes it by such a long period of time that the necessary connection between the initial behavior and the ultimate result is not clearly seen. Indeed, often it is not recognized as existing. The victim of general paresis is paying the full and awful penalty for acts now many years passed, and perhaps entirely forgotten; yet neither he nor his friends may even suspect the fact. The punishment for him accomplishes no apparent good. Surely, here nature is a poor schoolmaster. It is further to be remembered that natural punishment is not necessarily connected with the person who originally committed the offence. He may escape altogether, and in any case is likely to involve the innocent with him. Hence, natural punishment is not usually just in the sense of human justice. It punishes too excessively or too lightly; it punishes often in secret, and it punishes the guiltless. Nobody but the blindest worshipper of nature could set up natural punishment as a substitute for intelligent, artificial punishment.

(b) *Artificial punishment must strive to secure the advantages of natural punishment, and at the same time avoid its dangers and faults.*—We should not seek to do away with artificial punishment; we should, however, attempt to make it simulate natural punishment in certain particulars. *In the first place, artificial punishment should be freed from caprice.* It should have the same unvarying character that natural punishment possesses. In order that this may be accomplished the disciplinarian should, as far as possible, punish similar offences in a uniform manner and make no exceptions in his punishment. If the pupil finds

that he is punished today and tomorrow goes free, he looks upon the discipline as a matter of pure individual feeling on the part of the teacher. He blames that teacher for the punishment; he does not blame himself for the act. If the pupil finds that he is punished while some other offender escapes, then he believes that the teacher is "playing favorites," and he experiences resentment toward the teacher.

Artificial punishment should not only simulate natural punishment in appearing to be free from personal whim, it *should also appear as the inevitable consequence of a wrong act.* The teacher must be on the alert to detect the offender and make sure of his punishment. The pupil who is only occasionally caught in misbehavior is quite willing to take the chance. If he is reasonably sure of detection in wrong doing he will be careful of his conduct.

In order that artificial punishment may appear as an inevitable consequence of the act, it is sometimes wise to state in advance the punishment that is to be administered for offences that are sure to occur, and in any case it is desirable for the pupils to know what the consequences of these offences are to be.[1] In this way, these punishments assume the regularity and the necessity of a law of nature. If the pupil complains of the punishment the teacher can easily reply,—"You knew in advance what would happen if you did this. You have no one to blame but yourself." In petty matters of discipline this works out satisfactorily, as well as in more serious forms of misconduct, if the principle is properly administered. A concrete illustration of this is found in the case of a teacher who did not believe in rules and regulations for high school pupils. He finally discovered that the written work in English composition was being handed in with great and increasing irregularity. At first he at-

[1] This statement is not to be taken as in opposition to that made in Chapter V. There it was said that the teacher should not threaten or scold his pupils. It is evident that such a procedure does more harm than good. However, there are certain rules in respect to important aspects of conduct that may wisely be stated in advance of their infraction.

tempted to punish individual offenders when they were clearly shirking their work, but he failed to announce any general rule to apply to such cases. The result was that the pupils punished were resentful, and the discipline of his class was impaired. With a succeeding class at the beginning of the term he definitely announced his rules for handing in written work and stated clearly the penalties that would be exacted in case of failure to live up to them. He enforced these rules to the letter, with the result that the work was done punctually and that those who were punished accepted the discipline with good grace. It should be borne in mind in laying down general rules, that none should be made unless there is a clear necessity; further, such rules and the punishments for their infraction should be moderate and rational.

In artificial punishment, as in natural punishment, there should be an obvious relation between the act and the penalty. Too often the punishment imposed by the teacher seems to have no necessary connection with the offence. As has been urged by Bagley, punishing pupils by assigning them extra school tasks is a dangerous procedure. The pupil seeing no reason why he should do this work, begins to dislike the work, when he should be made to attach dislike to the offence. It is evident that when the pupil does his work in a satisfactory manner he should not be compelled to do more as a punishment. If, however, he has failed to accomplish his task properly, then the natural consequence is that he should be made to complete this work.

There are many examples of total or partial failure in discipline because of a failure of the teacher "to make the punishment fit the crime." One of the commonest instances of this failure is to be found in punishment for dishonesty. A pupil who cheats on an examination is given zero on the test, a pupil who hands in a composition not his own is made to rewrite it. Generally the punishment ends there. To an extent the punishment is a legitimate one, but it fails in the fact that it is inadequate. Dishonesty is a moral delinquency, but the punishment merely emphasizes the fact that the work done is in the nature of the case worthless. The dishonest pupil receives the same

punishment that befalls the pupil who fails to write the examination, or hand in the written work. Of course the work dishonestly done cannot be accepted, but to let the matter end here fails to distinguish between dishonesty and mere negligence or incompetency. The dishonest pupil must be made to understand that he has committed an offence that is social in its character and the legitimate punishment is some form of social ostracism. The pupil who has shown that he is a cheat should in some way be separated from the group for the time being at least. He should, for example, be compelled to do all of his written work under the direct supervision of a teacher.

(c) *Artificial punishment must be a real punishment, not a pretense at punishment.*—Not infrequently the punishment administered by the teacher fails to accomplish any purpose because it is a pseudo-punishment; it is a mere make-believe. Teachers often go through the form of punishing the offender. It is obvious that the discipline administered must be a punishment *for the pupil* if it is to accomplish its purpose.

Sending the offender out of the room is a practice quite generally followed by teachers in dealing with disciplinary problems. For many pupils this is no punishment at all. If no unpleasant consequences follow this dismissal; if the matter merely ends here, the dismissal may be just the thing that the pupil wishes. On the other hand, if dismissing pupils from the class is rare, and if pupils have a sense of pride, they may feel that this form of punishment is a disgrace, and the penalty under such conditions may be very severe. In this connection it should be remembered that the punishment objectively considered is not an adequate measure of its severity. For certain pupils a sarcastic remark by the teacher, though usually inadvisable, may be the severest of penalties; for other pupils it may have no significance.

(d) *Artificial punishment must follow the offence with as little delay as possible.*—In animal training the wrong act is penalized at once. If delayed more than a few seconds the punishment will probably fail to be associated with the act. It is also true

in the case of very young children that the discipline must be immediate. With older children and adults it is possible to separate offence and punishment by a considerable interval, but in general, punishment makes a greater impression the more quickly it follows misconduct. When punishment is long delayed it is more apt to be considered as arbitrary and unjust. The offence has "grown cold," so to speak.

There are some acts of misconduct that can be appropriately punished only on the spot. To delay punishment in these cases means to do away with adequate punishment. The pupil who is openly impudent in the classroom must be dealt with then and there. The teacher is compelled to act with vigor, and at once, for his authority over the class has been indirectly challenged. On the other hand it may be necessary to postpone dealing with a disciplinary situation at times, either because the teacher is not sure who the offenders are, or because he is not quite certain as to the best form of punishment. The desire to deal promptly with disorder should not cause the teacher to act rashly. The young teacher often fails in class control because he becomes excited, and "goes up in the air."

While it is generally true that punishment becomes less effective the longer it is delayed, there is an apparent exception to the rule. It has been found advantageous at times in dealing with serious acts of misconduct to keep the culprit in doubt as to just what is to be done with him. In this case, while the final punishment has been postponed, punishment in a very real way is already being administered. The offender knows that he has been detected, he knows that he cannot escape severe discipline, and in imagination he experiences in many forms the penalty that is to come.

(e) *In cases of school discipline, artificial punishment should usually be administered by the teacher against whom the offence is committed.*—As a rule teachers should seek to control the individuals in their classes themselves. They should not fall into the habit of sending their pupils to the disciplinary room or to the principal for every possible offence. The teacher who cannot

control his classes through his own personality, but who is forced to fall back on another for such control, is inevitably weak in discipline. However, when any trouble arises that is of such a serious nature that the teacher recognizes his inability to meet it effectively, he should call in a higher authority at once. Further than this, the teacher, particularly the novice, should not hesitate to consult with his superiors about matters of discipline, and obtain advice from those more experienced than he.

A teacher of long experience who has always maintained the best of order in his classes, has furnished me with the following instance in which he was forced to violate his unvarying rule of dealing with all personal matters of discipline directly: "On one occasion, when I was in charge of the boys in the basement during their lunch period, I noticed a big, burly fellow who had given no end of trouble to various teachers in the school, kicking a plate about the concrete floor. I stepped up to him and told him to 'stop,' but he replied with a contemptuous look and a sneer, that it was none of my business, and that he should do as he pleased. The boys in the vicinity stopped and gathered about to see what was going to happen. It was plainly imperative that I should act, and act at once. If I had followed my instincts, I should probably have used physical means of coercion. However, I was no match in strength for the boy, and besides corporal punishment in any and all forms was forbidden by the rules of the school committee. Happily, I remembered that this boy had only a few days before been removed from the school, and that he had no right there. In fact, he was a trespasser. I told him to leave the building at once, and on his refusal to do so, I spoke to the janitor who was close at hand and asked him to step to the telephone and call the police. As the station was only a block away, the boy knew that an officer would be on hand in a few minutes. He had thought to make capital out of the situation, and to pose in the minds of some of his fellows as a bold and forceful person. In reality he was a coward. When he heard me speak to the janitor, the color left his face; he picked up the plate and slunk away into the street, thoroughly discredited in the eyes even of his former admirers."

The Double Purpose of Punishment.—*Punishment may be either punitive or corrective.* In social evolution it arose largely through the desire of individuals to inflict harm and suffering on those who had injured them or their friends. The theory behind such punishment was that of "an eye for an eye" and "a tooth for a tooth." When punishment was taken over as a social affair and the individual element was largely eliminated, the punitive notion of justice still prevailed to a large extent. An individual was to suffer for his acts because they were wrong, because they called for punishment. Gradually, however, another notion of punishment grew up, namely,—that the justification for punishment was to be found in the fact that it restrained the evil doer and tended to reform him. Hence, today we have in our social philosophy the theory that punishment should be corrective in its nature. Our prisons should not be places where the evil doer suffers unnecessarily; they should be reformatory institutions. The criminal should be punished in order to give a warning to others and to protect society. He should also be punished in such a way that he may be reformed and made a useful member of society.

With this theory of the corrective nature of punishment, there can be no quarrel. However, those who advocate this theory in its most extreme form tend to remove from punishment all its moral significance. When the criminal is treated merely as a foolish man or a sick man, when no personal blame is attached to him for his deeds, both he and society tend to look upon wrong doing in a new light. In order to preserve the very necessary attitude of society toward the criminal, namely,—that he has done something which makes him deserve punishment, we must still attach to punishment a certain amount of the retributive sentiment.

What is true in regard to punishment as a general means of social control is likewise true of punishment as a means of enforcing discipline in the school. Obviously, the chief reason for

employing it as a means of controlling the conduct of the pupil is to correct the pupil and make him a desirable member of the school community. On the other hand, the teacher who treats all offences in a purely objective way, who does not on proper occasions enforce the moral aspects of the situation, has failed to emphasize the worth of right doing as such, and the meanness of wrong doing in and of itself.

The attitude in regard to the nature of the child advocated by the educational psychology of a former day has in some instances done harm in the control of the pupil. The "recapitulation theory" that found its early exposition in the writings of Rousseau and which has been one of the cardinal principles in the philosophy of Stanley Hall and his followers, saw in developing child nature much that harked back to the primitive impulses of barbarous and savage peoples. These native impulses were considered right because they were held to be natural. Hence the boy who stole, lied, and robbed orchards was simply manifesting those instincts which were sanctioned by countless ages of race experience. The teacher was told that such instincts were to be considered as essentially necessary to certain stages of development, and were not to be looked upon as manifestations of an evil nature. While there is an element of truth in this point of view (a truth, however, that has been greatly exaggerated), it by no means follows that undesirable behavior is to be looked upon by the teacher as without moral significance. It is well not to take too seriously the misconduct of youth; we should not consider the gravest offences as certain evidence of utter depravity. On the other hand, it is equally important to make the pupil feel when he has done a wrong deed that he has committed a real offence. The teacher may make necessary allowances for the weakness of child nature, and at the same time impress the child with the gravity of his offence. The criticism of the Child Study Movement made a generation ago by Münsterberg [1] was in part based upon the assertion that the teacher in assuming such an objective attitude in regard to the pupil impaired his practical attitude toward the child, a contention in which there is much truth.

[1] See *Psychology and Life*, pp. 101–144, particularly pp. 129–135 (1899).

Types of School Punishments.—Various methods of enforcing school discipline through punishment have been devised and practiced. Some of these are centuries old, while some are comparatively new. At present the kinds of punishment are not numerous and their severity is not great when compared with those of earlier times. The traditional schoolmaster of earlier days took pride in the variety and ingenuity of the penalties that he could inflict. He governed by fear, according to popular belief. However, there must have been many teachers in former generations of kindly nature, like Arnold of Rugby, who controlled those under them largely through a sympathetic and humane treatment.

(a) *Corporal punishment.*—Flogging at one time was the favorite method of controlling the unruly. According to tradition the school teacher must assert his mastery by "having it out" in physical combat with the big boys of the district. Today corporal punishment is a thing of the past. So seldom is it practiced that it may be left out of consideration as a means open to the teacher in the high school for enforcing order. While there are circumstances under which it might still prove salutary, the objections against it are so great and on the whole so well founded that we should not wish to bring it again into vogue, even if we could. It is a safe rule to lay down that no teacher should ever lay violent hands on a boy or a girl entrusted to his charge.

(b) *Keeping the pupil after school.*—Of all the punishments used at the present time this is the most common. All sorts of offences are penalized by requiring the pupil to report to the teacher at the end of the school day, and to remain for periods varying from a few minutes to hours. There is a good deal of diversity of opinion in regard to the value of this method of punishment. Some principals believe that it is an adequate means of dealing with most offences, indeed with all, except those of the gravest character, while others are of the opinion

that it is a mere makeshift and does not in any way get at the root of the matter. In the opinion of the writer, this form of punishment is relied on to an unwarranted extent in many instances. For many offences it is not the natural form of punishment. Its arbitrary character is so obvious to the pupil that it does not adequately impress him. Further than this, if constantly repeated it loses its effect because the pupil gets hardened to it and comes to expect it as a matter of course. There is some virtue in having a certain variety to punishment.

The writer has collected a hundred instances of discipline, chosen at random, in which keeping the pupil after school was used as the exclusive or principal punishment. In this hundred instances the following offences in the order of their frequency are included:—Poor and careless work, inattention, whispering, making a disturbance, throwing chalk and paper wads, impudence, giggling, refusing to recite, truancy, reading a newspaper or book during recitation, copying the work of a neighbor, falsehood, sticking a pin into the pupil sitting in front, signing parent's name to an excuse for absence. The noteworthy facts here are the wide range of offences punished in this way, and the varying gravity of the offences, ranging from simple carelessness in the class work to serious moral delinquencies such as dishonesty, truancy and falsehood. Obviously a punishment that is administered in this manner is seriously at fault in many instances. It is a well-established principle of criminal law that the severity of the punishment should bear a very close relation to the gravity of the crime, and that offences varying greatly in their nature should not be given identical punishment. It is further to be noted in regard to the cases here cited, that in a few instances the punishment seems to be the one best suited to the offence, but in the majority of instances the penalty bears no intrinsic relation to the misdemeanor. For example,—poor work in the class seems to demand preparation of the next day's lesson under the eyes of the teacher. The truant, too, should receive part of his punishment by being compelled to make up in school the hours that he has missed by his absence; refusing to recite in the class may demand that the pupil be required to

recite outside of the class at the convenience of the teacher. However, cheating, impudence, class disturbance and similar offences demand something more in the way of punishment than keeping the pupil after school. Doubtless the main reasons why keeping the pupil after school has become in most instances the chief form of discipline are that this punishment is relatively easy to administer and has the merit of being a real punishment for most boys and girls.

In considering the question of the proper ways to administer this penalty, the problem arises as to whether school tasks or other similar occupations should be assigned to pupils at this time. It seems to the writer that the question as to whether or not school work should be required of the pupil who is staying after school depends to a considerable extent on the reason why he is compelled to remain. Obviously if his offence has been something that directly or indirectly connects itself with the slighting of his work, then it is quite necessary that he should make up this work, and the appropriate time to do this is during the extended school session. On the other hand, if his misconduct in no way involves his work, then it is often best to make the punishment doubly severe by requiring the pupil to stay after school with no occupation to engage his attention.

(c) *Dismissal from the class.*—Probably the commonest form of punishment employed by most high school teachers next to requiring the pupil to remain after school is that of sending the offender out of the room. As has been said above, this punishment varies greatly in severity in accordance with the general attitude of the class in regard to it, in accordance with its frequency, and in accordance with what follows the dismissal. When used excessively it becomes so common-place that the pupils think little about it; when followed by no further consequences it is generally weak and at times worse than useless. Some teachers, while admitting its inadequacy, justify its use as a means of temporarily getting rid of a pupil who is disturbing the class. When employed for this purpose it is a confession of weakness on the part of the teacher, and cannot under ordinary circumstances be justified. It is a safe rule to follow to make

dismissal from the class a serious affair and to consider it as preliminary to further disciplinary measures. When the teacher takes this attitude toward it, dismissal from the class becomes one of the most impressive of all punishments.

Dismissal, like keeping the pupil after school, is used for a variety of offences. The most common cause, however, according to the experience of the writer is for cases of misconduct that involve class disturbance. In fifty cases in which this mode of punishment was recorded, forty-five were clearly of this nature. This fact would seem to indicate that the most compelling motive of the teacher in sending the pupil from the room was to get rid of him temporarily, and would justify the conclusion that this form of punishment is as a rule not well devised and thought out. In most cases in which it is employed it is probably a makeshift; often an unwise method of dealing with a troublesome situation.

(d) *Removal of privileges.*—Another common form of punishment employed by teachers is to deprive the offender of some privilege enjoyed by the pupils as a whole. In the elementary school, for example, it is the practice in some localities to close the afternoon session fifteen minutes earlier than the scheduled time, for those whose behavior has been satisfactory during the day. The pupils who have failed in some portion of their work or who have been disorderly are required to remain until the end of the day. While in a sense this is merely keeping the pupils requiring discipline after school, the emphasis is different, and many principals favor this punishment for minor offences. A common form of discipline in the high school is to refuse to those pupils who are low in their class standing or who are unsatisfactory in their conduct permission to play on athletic teams and participate in the activities of school organizations. In many instances this is an extremely effective method of punishment. In some instances teachers have removed privileges from entire classes because of the unsatisfactory conduct of certain members.

A case in point is that of a teacher of English who allowed the pupils in her classes in Shakespeare to dramatize in a simple manner various scenes from the plays that they were reading. This they enjoyed exceedingly. However, a few members of the class during the less interesting parts of the lesson were inattentive and in mild disorder. These pupils she failed to bring under satisfactory control, and at last she adopted the expedient of placing the correction of their offences in the hands of the class itself. She explained to the members that the progress of the work was being seriously hindered by a few who were not willing to keep proper order, and that in the future there would be no time for dramatization unless conditions were changed. She said that she would discontinue this phase of the work until the disorderly members of the class were willing heartily to coöperate with the majority and keep a proper attitude at all times. She added that it was in the power of the class to make all of its members conduct themselves as they should. The pupils were impressed. There was no further trouble, and in a few days the privilege was restored.

It should be pointed out in this connection that disciplining the class as a whole for the faults of a few must be done with extreme care and tact. When the offence is something that can be easily remedied by the class as a whole, and when the individual members of the class see the justice of the teacher's position, the effect is excellent, as in the instance just given. When, however, the class has the attitude that the acts of a few are not their immediate concern, and when further they have little influence in controlling the conduct of their mates, the innocent pupils are apt to feel that they are being unjustly treated, and under these conditions a spirit of resentment and antagonism toward the teacher is almost certain to arise.

(e) *Isolation of the offending pupil.*—A punishment that is closely related to that just discussed is the isolation of the offender. He is entirely removed from the group, as for example, when he is no longer allowed to attend the class, or he remains with his mates, but is treated in such a way that he is clearly set apart from them. The extreme forms of this punishment are suspension and expulsion. These radical measures are

used, however, only in a few cases when the misconduct is unusually grave or oft repeated. According to Dr. Montessori's social and educational philosophy, isolation is the chief, if not the sole method of control. The disobedient pupil in the "House of Childhood" is considered as the sick child who can no longer safely associate with the other children. Therefore, he must be removed from them until he is able to conduct himself as his fellows do. There is no doubt that this method of punishment is impressive. The average boy and girl have a strong social consciousness. In Chapter II. of this book, we have emphasized the strength of the group instinct and discussed its significance in the lives of adolescents.

There are various forms which punishment by isolation may take. They are most effective as a rule when the offender is still kept with the group, but is not permitted to take part in its activities in the ordinary way. He may be allowed to sit in the classroom, but he is placed in a seat removed from the rest of the pupils. Perhaps his punishment is that he may listen, but will not be called upon to recite or to participate in the discussions. The strength of the punishment in any case consists in the fact not merely that he is removed from others, but that he feels his isolation and that his companions recognize it. The following example of discipline by this method emphasizes this aspect of the punishment:—

In a large city high school the pupils are compelled to take their lunches in several different sections to prevent overcrowding. In each section a group of boys is provided with chairs and a table. The table they are required to leave in proper condition for the group that follows. Boys are assigned in turns to look out for the condition of the table at which they eat. One boy when the time came for him to serve refused, saying that he did not propose "to clean up after anybody but himself." The penalty for this refusal to coöperate with his fellows was to assign him a chair and a table apart from the others and require him to keep these in proper order. This he did for a few days, but before the end of the week he came to the principal's office and requested to be allowed to eat with the others. He

was told that the present arrangement was quite satisfactory, and that it could continue without difficulty throughout the year. However, the boy begged to be permitted to do as the rest did. He said,—"I can't stand it to be placed off there by myself and see the rest of the fellows looking over at me and grinning. I've got enough." The principal remitted the penalty, and the boy never again showed the slightest inclination not to coöperate with his companions.

(f) *Reproof.*—Reproof when administered under proper conditions is one of the most severe forms of punishment. In order that it may be effective, the offender must respect the authority of the person who gives the reproof and must desire his approbation. Otherwise it has little significance. The psychology of reproof is found in the social consciousness of the individual, which as we have seen, asserts itself in a striking manner during the high school age. If the pupil holds the teacher in small regard, however, he is not apt to care for his reprimand. Indeed, he may glory in it, particularly if his punishment in any way tends to make a hero of him in the eyes of his mates. Reproof takes various forms. It may be given in private by the disciplinary officer, or it may be given in the presence of the offender's classmates by the teacher. In this latter instance if it is mere fault-finding and scolding it is unwise. If, on the other hand it is done with impressiveness and dignity, and only when the occasion requires it, the reproof is given much greater weight by the fact that it is administered in public. So severe is it under these circumstances that it should not be employed for minor offences and trivial lapses in order. Concerning these latter it is better for the teacher to speak to the pupil after the class exercise.

When reproof carries with it the expressed or implied disapproval of the group to which the offender belongs it is capable of causing in its more pronounced forms the most severe mental suffering, suffering far greater than that arising from the objective punishment that may accompany it. The malefactor often

fears more the attitude of society toward him than he does the confinement of prison walls. On the other hand the political offender may go to the dungeon or to the scaffold with head erect and with joy in his heart, because he believes that he has the approval of those whose opinions he respects, those who are his real "social self," in the language of James.[1] The most adequate punishment for certain school offences is based on the disapproval by the group of the offences of its individual members. It is here that various forms of student self-government have their chief value. It is highly important that all school offences that are social in their character should receive this form of punishment whenever it is possible to administer it.

On various occasions reference has been made to dishonesty in school work and methods of adequately dealing with it. It has been pointed out that many of the punishments have little effect, largely because they are inadequate or not suited to the nature of the offence. The cheat should be looked upon as a social offender, one who injures the group, and should be made to suffer the contempt of the group toward him. If he could be made to feel that his fellows despise underhand methods and that they will know when he practices them, it would be relatively easy to bring about a reform in school honesty. An example in point is the following:—In a class in a girls' high school two examination papers were handed in that contained errors so similar that there could be no doubt that the pupils concerned had given and received aid from each other. The teacher called them before him and they admitted that they had cheated. They were told that a mere mark of zero on their examination would not be considered a sufficient punishment for what they had done since their misconduct was in reality an offence against the class as a whole. It was pointed out to them that they had taken an unfair advantage of their classmates whose work was original, and further they had to an extent destroyed the confidence of the teacher in the class, since he could no longer feel like trusting its members in the way in which he had previously done. The whole matter, he told

[1] See *Principles of Psychology*, Vol. I., pp. 293–296 (1890).

them, must be referred to the class, to whom they must make an adequate apology for what they had done. This method was employed. The circumstance was brought to the attention of the class through one of its leading members, and the class and the offending pupils wrote letters of apology to the instructor. This ended the incident, but it produced a profound impression on all. In some respects the punishment was drastic, but in dealing with the difficulty "at its source," it brought the seriousness of the whole practice to the attention of the school and aroused public sentiment against it, a most wholesome result. In the opinion of the writer, we need in school dishonesty as in community dishonesty the drastic corrective of "pitiless publicity."

(g) *Sarcasm and Contempt.*—A more severe form of punishment than reprimand and reproof, although closely related to it, is holding the offender up to ridicule or directing sarcasm against him. This method of discipline should not be employed without adequate justification. As a rule sarcasm is a most dangerous instrument. Ill-natured and repeated sarcasm should never be indulged in. Pupils resent being held in contempt, or being the butts of fun and ridicule. Nothing will arouse antagonism against the teacher more quickly. There is one type of offence, however, that is most appropriately dealt with in this way, namely, impudence and insolence. The impudent pupil assumes the attitude of superiority to the teacher, and contempt for him. This attitude can never be tolerated. It is absolutely destructive to class control and must always be met vigorously and quickly. The teacher who can by a sudden turn of wit put the bumptious pupil in his place, who can turn the tables on him and "show him up" before the class, is not likely to have further trouble with him. The average boy and girl shrink from appearing in a ridiculous light before others. Therefore, the teacher who knows how to use sarcasm discreetly, but with telling effect is not likely to have serious trouble from impudent pupils.

The following example of discipline illustrates how loath the average pupil is to appear in a ridiculous light before others:—A boy skipped a part of his shop period and went to the lunch room without permission. Here he was discovered by the principal eating a piece of cake. He was told to go immediately into the shop and show the half eaten cake to the teacher, and explain to him the cause of his absence. So ashamed was the boy to appear before the rest of the class in this ridiculous manner that he opened the door of the shop just far enough to thrust through his head and then called the instructor to come outside. Up to this time he had been a troublesome boy, but the discipline on this occasion proved so wholesome that he has given little annoyance since.

(h) *Appeal to Parents.*—It is the general practice in school discipline to call in the parents or guardians of a pupil whose conduct is such that it cannot be dealt with satisfactorily by teachers and principals. This is an effective punishment only when the disapproval of the parent is feared by the pupil. In many instances the pupil who is a serious disciplinary problem in school is the same sort of problem at home, and the father and mother are as little capable of controlling him as are his instructors. In those instances, however, in which the pupil respects parental authority, this method of punishment produces satisfactory results. Seldom do parents refuse to cooperate when called in. Too often, unfortunately, parents themselves fail in authority.

Important Maxims of Discipline.—In bringing to a conclusion the discussion of the preceding pages concerning discipline, it may be well to emphasize certain rules or maxims in regard to pupil-control that every teacher should keep in mind. Most of these have already been discussed at some length. They will be restated by way of summary. Others have not been explicitly mentioned but have been implied. A few have not been touched on in any form. These maxims are:—

(a) *The teacher should always strive to enforce the control of his*

classes by indirect means.—The existence of positive disorder is always an evidence of unsatisfactory conditions. These may be due to the attitude of individual pupils or of the class as a group. An undesirable attitude is best changed by indirect means.

(b) *If direct control is necessary, punishment should be avoided whenever results can be accomplished by other means.*—It must be remembered that punishment in itself is never desirable. It tends to produce unsatisfactory attitudes, at times causing surliness, revolt, and open rebellion.

(c) *When punishment is necessary it should be administered with vigor.*—While the principle of "frightfulness" is dangerous, punishment should be a reality, and not a pretense.

(d) *Artificial punishment should strive to combine in itself all of the advantages of natural punishment, at the same time avoiding its obvious defects.*—For this reason no teacher can afford to administer punishment in a haphazard, impulsive, or stereotyped manner. Effective punishments must be "thought out."

(e) *Punishment must impress the offender as having a moral implication.*—Whatever the views of the teacher in regard to its function, it must impress the pupil as a just and necessary consequence of a wrong act.

(f) *The teacher should administer his own discipline as far as possible.*—To ask outside aid is a confession of weakness. No teacher can succeed ultimately who does not rely on his own ability to control.

(g) *The teacher should frankly discuss his disciplinary problems with his superiors and colleagues, and ask for their advice.*—The teacher, particularly the novice, through fear of criticism often keeps silent in regard to classroom difficulties, when he should consult the principal, and older and more experienced teachers, not with the idea of giving over the control of the class to them, but for the purpose of obtaining their counsel and sympathetic criticism.

(h) *The most effective form of punishment is social in its char-*

acter.—The pupil shrinks from the disapproval of those whom he respects, particularly from the disapproval of his fellows. When disapproval takes the form of scorn or contempt it surpasses in severity the more objective forms of punishment.

(i) *In dealing with cases of discipline the teacher must act with decision and promptness, but must make sure that he has isolated the individual offenders and that he knows exactly the nature of the offence.*—It is not safe to punish in the dark. Nothing arouses the antagonism of the pupil more than to be punished unjustly. The pupil should recognize the seriousness of his delinquency, and the justice and necessity of his punishment. The high school pupil is sufficiently mature to understand the consequences of his acts. He should be enlightened by the teacher. However, mere enlightenment is not in and of itself sufficient to bring desirable results. Mere knowledge of results may not have the necessary strength to insure proper conduct. Remote consequences must be made vivid, real, and to an extent present. Reforms in the life of the individual and of society must appeal to more than reason; they must appeal to the desire to escape punishment, to ideals and to prejudices, to be effective.

(j) *As a rule it is not wise to punish the group for the misconduct of individuals.*—When, however, the group wilfully conceal the guilty individuals whose offences are of a serious nature, or when it is in their power to control and correct individual misconduct and they are unwilling to do so, then they are in a sense equally guilty, and should be made to realize their collective responsibility.

CHAPTER VII

ELIMINATING WASTE IN THE CLASSROOM

The Maximally Efficient Class should be the Ideal of the Teacher.—No teacher should be content with an average class, or a satisfactory class. He should strive to have each and every class working under conditions of maximal efficiency. He should constantly keep in mind the fact that *no class is doing its best unless all of its members are engaged during the entire recitation period in actively performing work that is distinctly worth while.* Such ideal conditions can probably never be completely realized, but they can be approximated. Few teachers seem to have distinctly before them the problem of eliminating waste. They are content to use uneconomical methods and to achieve mediocre results. Probably few classes in the high school are more than "fifty per cent. efficient." Pupils are not really at work more than half of the time. Occasionally the visitor finds a class in which every pupil appears busy from assembly to dismissal, but such classes are rare.

The writer has attempted to estimate in various high school classes that he has visited the amount of time that pupils are actively engaged in their school work, and he has found results that are indeed astonishing. In two hundred classes considered he found one in which each pupil was mentally active but two minutes of the total forty-five; five in which each pupil was active for approximately five minutes; nine for ten minutes; twenty-one for fifteen minutes; thirty-seven for twenty minutes; fifty-five for twenty-five minutes; thirty-eight for thirty minutes; twenty-two for thirty-five minutes; nine for forty minutes, and three for forty-two minutes. These observations seem to indicate that under ordinary classroom conditions in a large-sized

high school, half of the school day is wasted. While conditions vary greatly with various teachers, subjects, schools, and classes, it is probable that on the average the waste is no less than that found in the classes observed.

The Causes of Waste in the Classroom are Varied.— There is no one single cause for waste in the classroom. Many factors usually contribute to bring about the undesirable result. However, the various kinds of loss may be traced to a few main sources. In general, these resemble to a considerable degree the causes that are responsible for loss in the factory and business establishment. Hence in this respect a profitable comparison may be made between the school and the industries.

The main sources of waste in the industries are to be found in the unsatisfactory external conditions under which the work is done, unsatisfactory physical and mental conditions of the workers, and unsatisfactory methods used by the workmen in accomplishing their tasks. The external conditions relate to the building in which the work is done; the arrangement, routing, and distribution of tools, supplies and other materials; the placing of machines, supply-boxes, and receptacles, and the presence or the absence of chairs, stools, and other furniture. The physical condition of the workman involves the question of the length of rest periods, freedom from unnecessary strain, and the proper distribution of periods of rest. The mental condition of the workman is closely related to his attitude toward the work, his success in accomplishing his task, the reward which he receives for it, and the presence or absence of distractions, annoyance, and worry. The methods employed by the workman in accomplishing his task are either wasteful or economical in terms of the number of motions that are employed in obtaining a given result. The ideal is to eliminate all unnecessary and clumsy movements, and to accomplish this the workman must be properly supervised and taught to perform his task under uniform conditions. He must have constantly before him the knowledge of what a

desirable product is; he must be given careful instruction as how best to obtain this product; and a standard of achievement in the amount to be done in each day's work must be set.

In the Classroom the Physical Conditions must be such that the Work may be done under the Best Possible Circumstances.—These physical conditions are concerned with the following details of equipment and arrangement of the school building:—

(a) *The characteristics of the classroom.*—In order that the work of the class may be done under the best possible conditions the classroom must be suited to its purpose. It should be properly lighted, heated, and ventilated. No teacher should consider these details trivial. The temperature should not be above sixty-eight degrees Fahrenheit; the air should be in circulation and reasonably fresh; and the pupils should be able to see the work that they are doing at the seats or on the blackboards without effort or eye strain. As a rule the teacher has little to do with these conditions, but in so far as they are in any way under his control, he should strive to have them satisfactory. The teacher who refused to take readings of the thermometer because he did not propose to do the work of the janitor, had a small conception of his function.

Not only should the room be properly heated, lighted and ventilated, it should be of a size suited to the class. Not infrequently is it the case that a large class is crowded into a small room, or a small class assigned to a room large enough to hold four times its number. If a small class is assigned to a large room the teacher should aim to so arrange it that he can come in as close contact with the pupil as possible. He should not, as is sometimes the case, be seated on a raised platform behind a desk, with the pupils seated on one side of the room, and placed from the front to the rear. The teacher has an intimate relation to his class; he should be neither mentally nor physically remote. Often physical remoteness leads to mental remoteness.

The arrangement of the seats in most classes is unsatisfactory. The placing of desks in formal rows is a device but poorly suited to efficient teaching. As we have previously said the class should be seated in a semi-circle, with the teacher at the center. Under these conditions each pupil would look directly into the faces of his classmates and the teacher would have the position that would give him the most direct relation to the individual members of the class. It is a fact worth noting that we have the proper seating of pupils only at the extremes of the educational ladder, namely,—in the kindergarten and in the seminary courses in the university. As we progress through the grades, the high school and the college, the relation between teacher and pupil becomes more and more remote, reaching its culmination in large lecture classes where the instructor stands at his desk and gives a formal talk to his pupils for an entire period.

(b) *The position and arrangement of cabinets, supply closets, demonstration apparatus and other illustrative materials.*—It is important that all materials for classroom use should be so placed as to be readily accessible to the pupils. Here we have a question analogous to that of routing in the industries. A large amount of waste has been eliminated in shops, factories, and mercantile establishments by devising plans for furnishing the workmen with their materials in the most direct and rapid manner possible. One of the most remarkable features of the Ford plant in Detroit is the system by which the various parts that enter into the manufacture of an automobile are conveyed to the point at which they are to be used at the proper time. Any large industrial establishment that attempted to operate today without a carefully devised plan of routing would be a failure.

In the schoolroom we have a double problem of routing, namely,—that of bringing the necessary materials to the pupil on the one hand and bringing the pupil to the materials on the other. The distribution of papers, pencils and other tools of

school industry is an example of the former; the sending of pupils in groups to the blackboard is an illustration of the latter.

Many teachers waste several minutes each day in such mechanical operations as the distribution of corrected themes in English and other exercises. Some perhaps regard attention to such details as too trivial to be considered by a high school teacher. However, it should never be forgotten that it is no small matter to save for class instruction every minute possible. The mechanics of teaching should be reduced to a minimum. In most blackboard work unnecessary time is consumed not only in getting the pupils to the board, but in assigning them to the space at which they are to work. The whole procedure is often quite haphazard. The teacher who requires groups of pupils to work at the board should have a plan. Each pupil should be assigned to a definite place marked off and permanently set apart for him. It is well to have pupils who are to do board work pass directly to the board on entering the room at the beginning of the hour and start on their work at once. In one class in which this method was tried it was found that there was a saving over former practice of twenty minutes a week. In the school year this was the equivalent of adding approximately sixteen full recitation periods in this subject.

In the high school the problem of routing materials is most important in laboratory instruction in the sciences. Too often there is no arrangement and classification of supplies and apparatus to be used. They are placed in closets and cases in the manner that at the time seems most convenient. In only a few instances has the writer found a laboratory in which the arranging and routing of materials has been worked out in systematic detail. In one laboratory the apparatus for each experiment was arranged in separate boxes for the use of individual pupils, and was carefully filed according to a decimal system of classification, after the method used in the most advanced industrial establishments in their tool-rooms. Class-foremen were assigned the task of bringing out these materials when needed and placing them where the pupils could find them at hand. General supplies were arranged on a central table in such a manner that the pupils who were busy at the work tables could obtain them by merely

turning round. At the end of the period all materials were restored to their proper places. The whole operation required less than three minutes. In some laboratories the time consumed in the sorting and routing of materials is not infrequently one-tenth of the total ninety minutes.[1]

It is very important that illustrative materials [2] should be of such a nature that they can be seen; and they should be so placed that they can be seen. Teachers fail to consider sufficiently the question of clearly presenting to the pupils the essential objects that are to supplement oral instruction. Maps are few, poor, and often placed in remote and obscure places where their value is nil. Blackboard work is done in such a manner that it often seems a waste of time. The writing of many pupils is indistinct, sometimes so small that it cannot be read ten feet away, and not infrequently so spaced as to be easily confused with the writing of others. Further, the board is so lighted that it is seldom any one part of it can be seen by all of the members of the class; and there are often large portions that are not visible to a considerable part of the class.

(c) *The use of the blackboard.*—The foregoing discussion of the use of the blackboard leads us to a further consideration of this important topic. There is probably no one device employed in class instruction that is used with so little consideration and with so much waste. We have already seen that the problem of routing the pupils to the board and of placing them properly is by no means a trivial consideration, and that this is further complicated by the fact that the board is often so situated and the writing is so slovenly and indistinct that the written work can be seen only with difficulty, sometimes not at all. Added to these obvious abuses are others of an equally grave nature.

We can approach a more detailed consideration of this matter by asking what are the reasons for the use of the boards. The

[1] See Chapter IV., p. 63.

[2] See Chapter XII.

chief justification for work at the board is to bring to the attention of the class as a whole some fact or principle that needs visual presentation. Further, the board may at times be used as a means for enabling the teacher to see and correct most economically the mistakes of individual pupils. Some teachers assert that for this purpose this method is better than that of having the pupils do written work at their seats. Again, it is advantageous at times to send pupils to the board for the purpose of relieving the tedium of constant work at the desks. It is unfortunate that we cannot provide in our school equipment, desks at which pupils may do part of their work when standing, since the constant sitting posture is one of the chief causes for the weariness and tedium connected with school tasks.

If we assign blackboard work to pupils for purposes of general class instruction it is obvious that those parts of the board should be used that can best be seen by the entire class. Other things being equal, when only a portion of the blackboard space is to be utilized, the front board should be given the preference. Quite often this is not the case. Teachers as a rule seem to prefer to use the boards at the sides of the room. Not infrequently they use the boards at the rear.

The only justification for using the boards at the rear of the room is when all of the other boards are occupied, when the work placed there can more readily be seen than when it is written elsewhere, when those who are at their seats are doing similar work, and the teacher does not wish them to see the work on the board until they have finished their task. This sometimes happens, for example, in a drill exercise in stenography, when one pupil is sent to the board to write the outlines from the dictation of the teacher, and the members at the seats are required to do the same. At the end of the exercise the work of the class as a whole is compared with the work done by the pupil at the board for the purpose of rapid correction. While this procedure is justified, it is a better method to have the correct forms previously written on the board at the front of the room, and then concealed from view by a map until the time for their use arrives.

It is not desirable to place on the board errors that are peculiar and individual. There is no justification for calling to the attention of the class as a whole mistakes that only a few are apt to make. Not only is it a waste of time, but there is danger of impressing the class with the incorrect form and confusing it with the correct usage.

A considerable part of the blackboard work done in English, foreign languages, and mathematics is in direct violation of this principle, and for this reason cannot be too strongly condemned. It is a common practice in such a subject as Latin to assign the written composition prepared outside of the class to individuals to be placed on the board. All kinds of mistakes appear, some of them errors that are common, but many of them individual. There is little general advantage, and much waste in such procedure. A much better method is to assign to all the pupils work at their seats; to require this to be handed in to the teacher, who looks it over and corrects it, calling the attention of the pupil concerned to his individual mistakes and pointing out to the class as a whole the common errors. Of course the great objection to such a method lies in the fact that it requires an additional amount of work on the part of the teacher who is as a rule overburdened with school duties. This objection may in part be removed by requiring the pupils in class to write out only a part of their exercise. If this is a fair sampling, and if they do not know in advance what part of the work they will be called upon to write, the results will be not far different from those that would be obtained if they were assigned the entire exercise to be written in the class period.

When errors in blackboard work are corrected they should be so definitely emphasized that they are forced upon the attention of the class as a whole. There is practically no value in hurried and indistinct correction. Indeed at times such corrections may be worse than useless, the result being that the class becomes uncertain and confused as to what is right and what is wrong.

Far too much of the work done on the blackboard is of the stereotyped kind. In most instances instruction would be

greatly improved if it were omitted and some other form of written work employed. Often it is done without any clear purpose on the part of the teacher. It seems to be accepted as the proper thing to do because it is the tradition to do it. On the other hand most teachers do not use the board enough themselves. There are many matters that come up in the course of a recitation that could be clarified and vivified through visual presentation and which are left in the realm of abstractions. The board in front of the room is an excellent medium for teaching of this sort.

Let us compare two classes in geometry as we commonly find them in the average high school. In the first class the instruction is of the lesson-hearing type, and centers around class work on the board; in the second the instruction is of the development type and is constantly under the guidance of the teacher, who uses the blackboard to make emphatic and clear each step in the processes that are being presented. In the first class the pupils assemble, the teacher calls the roll, and then begins: "Master Smith, you may go to the board and write out the first proposition in today's lesson; Miss Johnson, you may write out the second; Miss Adams, the third; Master White, the fourth." Perhaps all of the pupils are sent to the board, several working on the same proposition, or perhaps some remain at their seats to do the work that others are doing on the board, or to be questioned about other parts of the lesson, often apparently to kill time until those at the board are ready to recite. Then the pupils are called on, one by one and they go through their proofs, often in a halting and indistinct way. Sometimes the teacher corrects the mistakes, sometimes calls upon the pupils at their seats to make corrections. The whole procedure is more or less hazy and obscure; it lacks the clear-cut incisiveness necessary to make a distinct impression on the minds of the learners. In this case the blackboard serves no purpose that might not be better accomplished by other means.

How different is the result in the second class. Here the pupils are given a brief written test on the assignment for the day. This is followed by the teacher's discussing with the class the chief errors

found in yesterday's test, and in other written work that the pupils have submitted. These common mistakes are made clear through a use of the board. Finally the lesson for the coming day is taken up. The teacher draws the necessary figures on the board, and discusses with the class the points essential in the statement of the new propositions and in their proof. Perhaps he may vary the procedure by sending one of the pupils to the board to work under his direction and in accordance with the suggestions of the class. In the first example cited, the entire board is used; much of the written work is indistinct, and some of the figures not properly constructed. The pupils must turn around in their seats to follow parts of the explanations. In the second instance, all of the work is directly before the class; but one figure is presented at a time; it is correctly and distinctly drawn, and every step is clearly brought out in orderly fashion. There can be no doubt as to which type of recitation is the better. While much of the superiority of the second class is due to the fact that it is primarily of the developing as distinguished from the lesson-hearing type, the proper use of the blackboard by the teacher contributes in no small degree to its excellence.

In further contrast to this class exercise in geometry of the profitless lesson-hearing type is the following recitation in commercial arithmetic. The subject under consideration is aliquot parts, and the aim of the lesson is to furnish the pupils with a knowledge of methods of procedure, to acquaint them with short cuts, and to give them skill in fundamental operations. The teacher stands at the board facing the class. Now and then he turns for a moment to write a part of a problem on the board and to develop it step by step with the coöperation of his pupils. At times he asks drill questions, rapidly, crisply, and emphatically, calling upon various pupils in irregular order. Again, he addresses the class as a whole with a question requiring judgment. At such times he leaves a moment for deliberation before he requests the answer. Pupils who reply to the questions are asked to speak distinctly so that all can hear. No member of the class is singled out and given individual drill, but the entire group is kept actively attentive during the class period. The "pupil-teacher" attitude is at no time in evidence. The board work is for the purpose of gaining the attention of all the pupils.

The recitation is characterized throughout by interest and mental alertness. Although this is primarily a lesson in drill, the pupils are actively using their minds, and are doing more real thinking than were the pupils in the first class in geometry considered above. And yet geometry is taught largely for its "disciplinary value," and commercial arithmetic almost exclusively for practical ends.

After witnessing these two class exercises and contrasting their methods and results, the observer finds this query rising in his mind, —After all, are there any subjects in and of themselves exclusively disciplinary, or cultural, or practical? Is there a magical potency in any study as such? Do not the teacher and his methods of instruction determine the essential values of the various parts of the curriculum? [1]

In the Conduct of the Class all Unnecessary Work on the part of the Pupils should be Eliminated.—Pupils are required to do many things that consume a large amount of time and which have a minimum of educative value. The chief sources of waste of this type are:—

(a) *Fruitless dictation exercises.*—Dictation is justified only when it is an end in itself, never when it is a means. It can be used to advantage in a foreign language when the teacher's aim is to establish an association between the spoken work and the written symbol. It cannot be defended when its purpose is merely to provide the pupil with materials that should be furnished to him in a more economical way. Much of the material that the pupil writes down in class should be given him in the form of mimeographic sheets. There are numerous illustrations of the waste that comes from dictation.

In a class in ancient history the teacher spent a large part of each hour in dictating word for word to the pupils an outline for the study of the next day's assignment. He did not realize that he was using twenty minutes each day for something that should at the most not have occupied more than five.

[1] For a further discussion of the evils of lesson-hearing see Chapter VIII., pp. 168–170.

In a class in general science the teacher read each day a lecture to the pupils, which they were required to write in their note-books as a basis for further study. This procedure the teacher justified on the ground that there was no adequate text in the course and that he wished to furnish the pupils with a definite set of facts, in order that the course might be on the same basis as the ordinary text-book courses. He further affirmed that there was no little value in having the pupils take down in written form oral discourse as a kind of training and discipline. If the teacher was convinced that an exact wording of the ideas he sought to present was necessary, then he should have found means to furnish the pupils with these in written form. However, a much better method would have been to give the pupils talks and demonstrations, requiring them to assimilate and preserve in written form the most important thoughts.

In a class in English the teacher read to the pupils incorrect expressions which they were required to copy in their note-books and subsequently correct. On the days when this exercise was assigned about a third of the entire period was used for the purpose. This amounted in the course of a year to a waste of nearly twenty hours.

(b) *Unnecessary copying of questions.*—While many teachers are not guilty of the gross disregard of time involved in the examples cited under the preceding topic, few seem to realize that they waste considerable time in the aggregate by requiring of their pupils kinds of written work that while not strictly of the nature of formal dictation, are essentially time-consuming and profitless. In connection with written tests and similar exercises it is not infrequently the practice to require the pupils to write out each question as well as its answer. When the question is definitely and clearly put, there can be no advantage to the pupil in having it reduced to a written form. If, however, this seems desirable, such questions should be mimeographed for the pupils, or written out in advance of the lesson on the board.

In a school in which it is the custom for the teacher to give a five-minute written test at the beginning of the period, it was discovered

that in a considerable number of cases three minutes of this time were spent in giving out the questions and only two minutes devoted to answering them. In other words, this valuable exercise was reduced by more than half simply because these teachers did not furnish the questions in advance. In another school a teacher of history spent several minutes daily in giving out questions to be answered in the following day's recitation. Out of fifty recitations recorded by the writer an average of three and one-half minutes was lost in requirements similar to these just described. In several instances ten minutes were used for such purposes.

The following instances illustrate economies in class procedure through cutting down unnecessary copying to the minimum:

In a class in history it was the teacher's custom to begin each class period with a brief written quiz. The questions were written on the board in advance of the lesson, each question being numbered. The pupils in answering the questions, did not copy them, but merely indicated the numbers.

In written exercises in geometry in which the construction of figures was not important, the teacher provided the pupils with sheets of paper on which the figures were hectographed. This work required on the part of the teacher but a few minutes for each exercise, but it saved during the course of the semester about five hours of the pupils' time, according to the instructor's estimate. This time was devoted to actual proof of the theorems involved.

In a class in German the teacher placed the exercises to be translated from German to English or *vice versa*, clearly written and appropriately spaced, on the board in advance of the recitation. The pupils wrote the correct translation underneath. In this way about a third of the time formerly spent at the board was saved.

(c) *Profitless requirements in written work.*—Not only should a pupil be freed from all unnecessary taking of dictation and all useless copying of questions, he should be exempt also from all profitless forms of written work. There is no merit in requiring a pupil to write down a long column of figures in order that he may place the correct answer at the bottom. The valuable mental process is the addition of the digits, and in this connection the

writing of the numbers is of no significance. It is clearly a waste of time to reply in written form with an entire sentence when one word is all that is needed to convey the thought desired. Of course, if the work involves drill in complete English expression this is another matter, but when it concerns itself merely with the statement of a single fact all additional words are of no value.

This principle is important to keep in mind in conducting rapid drill exercises and in giving brief written quizzes and tests. It is desirable to secure as much drill as possible in a given time, and everything that is superfluous should be eliminated. It would be a great advance in economy to provide every class in algebra, for example, with sets of printed exercises in the fundamental operations, and require the pupils as rapidly as possible to do the work indicated. The saving in the aggregate would be tremendous. Any teacher of this subject who can secure mimeographed materials for class use would do well to prepare such a series of exercises.

In brief quizzes it is often possible to construct the questions in the form of the completion tests of the psychologists, preparing sufficient copies for each member of the class. In these exercises single words or groups of words are omitted, and the test consists in supplying the right words. Historical facts, such as dates, names of important personages, and the location of cities could be brought out in this way. Such tests would have two distinct advantages. In the first place, as we have already said, they would economize the time of the pupil, and in the second place, they would greatly shorten the task of the teacher in his work of examination and correction. The chief objection to devices of this sort is the difficulty of providing the materials; yet the saving in such methods is obviously so great that teachers should make a determined effort to obtain these materials. At present the fault lies largely with the teachers, who are not alive to the problem of the elimination of waste.

(d) *Useless assignments.*—In connection with the discussion of wastes arising from demanding unnecessary work from the pupils the question of useless assignments properly belongs.

However, since this is a matter that relates directly to classroom methods, extensive consideration of the topic cannot be undertaken here. It may be said, however, that many teachers give to their pupils the task of looking up materials in connection with their work when a large amount of time is consumed in obtaining a very small result. In such cases it is far better to tell the pupil the fact or principle directly, in order that his time may be more profitably employed, unless it is desired to give him practice in investigation and research.

The Physical Condition of the Pupil is an Important Consideration from the Standpoint of Economy in Teaching.—We ordinarily regard the question of the health of the pupil as a matter in itself of prime importance. Considered alone it is a sufficient end. However, it is also important in connection with other matters, among which economy in instruction is not the least. It is a fact so obvious that it needs no discussion that the pupil, to work under the best mental conditions, must be in a satisfactory physical condition. To enter into the details of the hygiene of the schoolroom, of the course of study, and of the pupil is quite beyond the province of this present chapter. There are, however, matters that may be profitably touched on in passing. Among these are the self-evident facts that the pupil must have ordinary sensory acuity, that he must be free from disease and weakness, and that he must not be worked to the point of excessive fatigue. Of these various considerations the last named will be briefly considered at this point.

(a) *The problem of mental fatigue in relation to school work.*—There is no opportunity here to enter into a discussion of the nature of fatigue, or to draw a sharp distinction between muscular and nervous fatigue. However, it should be pointed out that mental fatigue as distinguished from physical is the fatigue that arises in connection with mental work, or work primarily mental, of which the ordinary school occupations are examples. Further,

the fact should be emphasized that much of the so-called mental fatigue of a school day is not fatigue in the sense of exhaustion to such a point that the work cannot be done with reasonable rapidity and accuracy. It is in reality distaste for the work, *ennui*, and the increasing desire to do other things that are more interesting.

There is abundant evidence from investigations in the psychology of learning that severe mental tasks can be carried on for hours with but slight falling off in the output, if only the subject will put forth all his attention and energy. Perhaps at the end of six hours of sustained work in addition his ability has fallen off less than ten per cent. It is doubtless the same in school work. The pupil who is really eager to do his task, or is determined to carry it through to the finish, can work long periods without showing evidences of fatigue.

Whatever the cause of fatigue, whatever its nature, its presence in any form is evidently wasteful. If the pupil does less work, and poorer work because he is tired of his task, then he is doing this work under relatively unsatisfactory conditions. These conditions must be removed if possible.

(b) *The question of the alternation of periods of work and rest.*— In the industries it has been discovered that the greatest output cannot be secured by requiring the operatives to work every minute of the day. It is advantageous to have frequent rest periods of a few minutes in length, and a few periods of rest of longer duration. Doubtless a similar plan would be advantageous in arranging the school program. While the optimal distribution of periods of work and of rest has not been more than superficially determined, and then only in individual instances, it is probably true that the arrangement of the school day in many of our high schools is extremely poor when considered from the standpoint of the reduction of mental fatigue to its lowest possible point. Some schools begin their session at half-past eight or nine and continue with only a brief recess until

the early hours of the afternoon. When this time schedule is in force teachers often report that the pupils seem to be too dull, tired, and uninterested in their work to accomplish anything worth while in the last school period. Doubtless a much better arrangement for the high school program would be to have both morning and afternoon sessions with reasonably frequent pauses between periods. Some high schools have recognized the desirability of this by having a ten-minute intermission between every two recitation periods.

In considering the question of rest periods in the school from the point of view of the value of such periods for the industries, it is well to remember that there are certain fundamental differences between the types of work done in the school and in the factory. In the first place, the work done in the factory is more largely physical than work done in the school. Since physical work is more rapidly fatiguing than is mental, periods of rest, particularly in the heavier operations, must be more frequent. In the second place, factory occupations as a rule have little diversity, and hence more quickly become monotonous than do those tasks that have a variety of aspects. Doubtless a girl whose business consists in folding handkerchiefs according to a uniform scheme for eight hours daily can find nothing in the work itself that is interesting. On the other hand a pupil who is working at an original in geometry may constantly get new points of view that keep his mind alert and his attention active. Finally, in the shop the task assigned is of such a simple nature that it can readily be taken up or dropped without any considerable adaptation of the attention. In a school task on the other hand it is obvious that many subjects demand a considerable time for merely getting started and oriented. Under such conditions frequent alternation between work and rest would be disadvantageous.

This may be made evident by an example. The girl who is folding handkerchiefs according to a method in which she is habituated can

perhaps profitably pause for two minutes out of ten. She can drop her work instantly and go back to it with practically no loss in attention. On the other hand a pupil who is working on a composition in English would find such an arrangement of work and rest periods decidedly to his disadvantage. He would just get into the swing of his work when he would be compelled to drop it. In school work the simple drill exercises approach most nearly the type of work done in many factories and shops. In such exercises there can profitably be frequent periods of rest. In the high school it is safe to say that no drill exercises should be carried on without a break for a period of over thirty minutes. There seems to be some evidence for this assertion not only from the findings of experience but also from those of educational psychology.[1] Therefore, few class periods should be devoted entirely to simple drill exercises.

Some of the conclusions that may reasonably be drawn from the above considerations are:—In a high school session containing six or seven periods of recitation and study, there should be at least one long recess period, together with two or three shorter rest periods. Perhaps these latter should be slightly increased in length as the day advances. In class exercises there should be sufficient variety in the work to relieve the monotony that is one of the chief causes of fatigue in some of the industrial occupations. When the class work is of the nature of drill, rest and change should come more frequently than when the work is less mechanical and in itself has more varied elements.

The Mental Attitude of the Worker has much to do with his Efficiency.—Investigators and workers in the field of "scientific management" in the industries have invariably found that no plan of waste-elimination is productive of results unless the attitude of the workman is satisfactory. The employee who has no "appetite for his job," whose sole interest is merely in "getting by" with as little effort as possible, who takes pride in

[1] See W. H. Pyle, Economical learning, *Jour. of Ed. Psychol.*, Vol. IV., pp. 148–158 (1913).

shirking when he can escape detection, who watches the clock more than he does his machine, will do a low grade of work under any system of management. Further, the workman who is worried, discouraged, or at odds with the foreman, is seldom efficient. For these reasons wise industrial managers have paid more attention to plans for making the workman's attitude toward his work energetic, eager, and cheerful than they have to methods of accounting, to schemes for systematizing supplies, stores, and tools, to devices for the proper routing of materials and the assembly of finished parts, and to details of correct workmanship. Clearly it is as essential for the pupil to have a proper attitude toward his task as it is for the employee in an industrial establishment.

(a) *The problem of the child's attitude toward his work is not merely a question of efficiency; it is likewise a matter that concerns mental hygiene.*—Attitudes that make work more efficient, that benefit behavior may be considered as essentially healthful, those that injure behavior, that make it uncertain, irregular, and lower its value are as truly unhygienic as are those physical conditions that lower the efficiency of the body. Some of the attitudes that are obviously unhygienic are worry, fear, discouragement, lack of self-confidence, and all forms of excessive excitement and undue depression. Obviously there is tremendous waste in all work done under such conditions, and the teacher must do all in his power to eliminate them, not only for the sake of the work, but also for the mental health of the pupil.

(b) *Dissatisfaction in the task is a serious menace to all efficient workmanship.*—This attitude is unfortunately extremely common in school work, but it is one difficult to describe accurately, and still more difficult to eliminate. The dissatisfaction is often due to the fact that the learner sees no significance in his task. It means nothing to him, either in itself or in its consequences. The healthful attitude of mind is to undertake one's work with

cheerfulness and zest, but this attitude cannot be present when the work is distasteful either in its immediate performance or in its results. In order that school tasks be performed without tremendous wastes, the teacher must in some way make the work seem worth while either in itself or in its relations to something else that appeals as distinctly worth while.

One of the greatest problems in education today is to make it appear valuable to those pursuing it. This applies to every stage of education from the primary grades of the elementary school through the college and university. This need is less in evidence in vocational and technical education than elsewhere, but it exists here. The college youth often seems to look upon the "general" and "cultural" courses in the curriculum as little short of a joke. "Student activities," so-called, are seldom studious activities; they are not scholarly or intellectual. The vast majority of youths who are pursuing academic education see little relationship between it and life. This attitude is surely abnormal. Often, perhaps always, the doing of something with no genuine purpose is worse than doing nothing at all. It surely is worse than doing anything that appeals to the learner from the positive standpoint. In earlier times this belief in the lack of a genuine value in a college education resulted in all sorts of irresponsible and even vicious forms of behavior among college students. Fortunately today athletics and social functions provide something that is seemingly worth while, and they are doubtless important factors in contributing to the sanity of college men and women. No one interested in education, however, can but regret the fact that often poise and intellectual soundness are not secured through college studies themselves, but rather through outside activities.

Similar conditions confront the pupil in the high school. In so far as the work lacks purpose for him, in so far as he thinks of it as a mere formal exercise, an unhealthy attitude of mind is created toward his work, except in those rare instances when the work is in and of itself pleasurable and is performed in the spirit of play. As a rule the desire of activity for activity's sake is woefully insufficient, especially when the pupil has reached the age when adult life-interests begin to develop.

(c) *There are various motives that may vitalize school work.*— Some of these have already been discussed in some detail, and others will be amplified later.[1] They will be but briefly referred to here. We have pointed out the fact that the vocational motive is compelling. Further, many pupils find a strong incentive in their desire to obtain high marks or other evidences of school achievement. However, marks are often ineffectual, and are always in danger of being over emphasized especially when the spirit of rivalry is excessively developed. There is, nevertheless, a means by which the school work can be made significant to most pupils and one that fortunately possesses no inherent dangers and is seldom carried to an extreme. This has been referred to at various times in our discussions, as the social, or coöperative motive in class work. Several examples have been given on previous pages.[2] One further will suffice here.

The writer recalls a fifth grade class in which the mental attitude of the pupils was thoroughly sound and healthful, and in which as a result the work was unusually good. To a great extent this attitude was secured because the teacher made it her aim to develop on the part of the pupils a spirit of coöperation in each and every lesson. It was her custom to send certain children to the public library to select books that were suitable for the class to use as collateral reading in American history. These pupils not only selected the books, but they told the class the reasons for their choice, and the most important points in the books as they related to class work. Other pupils brought to the school post-cards and magazine clippings for exhibition when the class was discussing foreign travel in connection with geography, or with daily happenings in their study of current events. Some of the children prepared questions in their various lessons to ask others. Some were sent to the board to do exercises in number work, and others went as critics and teachers, who watched for the mistakes of their mates and pointed them out and corrected them. Indeed, all of the class in some way, according to the individual

[1] See Chapter II., pp. 27, 28; Chapter IV., p. 72 f.

[2] See particularly Chapter II., p. 28.

ability of its members, were encouraged to do something to add to the lesson. The class was always eager and attentive. It could literally run itself with the teacher out of the room for a period of half an hour. The reason why the high degree of coöperation was possible was due to two facts. The teacher had studied the individual ability and interests of each pupil, and had found something that every member could do, and she had so mechanized the routine of the classroom that attention could be given to more important matters.

The method of attacking the school work which makes the pupil a contributor as well as a learner is one of the chief means by which the value of school tasks may be made to appear significant to the pupil. It is certain at least that unless this or some other method is devised for securing a proper attitude toward school occupations, work in all grades is destined to prove a sorry failure; and even worse than the failure of the work itself is the failure of the pupil to find anything worth while in his school activities. This can result only in a most unsound and dangerous mental attitude that is likely to be carried from the schoolroom into life itself, and which is sure to entail most serious consequences.

Methods of Instruction and of Learning may be Classified as Economical or Wasteful.—In comparing conditions in the school with those in the industries we find that there is a close resemblance in the question of waste-elimination not only from the standpoint of the physical conditions of the working place, the physical condition of the worker, and his attitude toward his work, but also from the point of view of the actual processes involved in doing the work. The pupil may have wasteful methods of learning, just as the workman has wasteful methods of doing his task; the teacher may have wasteful methods of instruction, just as the foreman and the boss have wasteful methods of supervision and direction. In the shop and the factory the problem of efficiency is in this respect, as we have previously seen, the problem of the elimination of wasteful

motions, primarily physical, and secondarily mental; in the classroom and study-hall the corresponding problem is likewise the elimination of wasteful motions, primarily mental, and secondarily physical. The consideration of this problem in relation to the schools might well be discussed here. However, in succeeding chapters on methods of instruction and on the economy of study it will be considered in detail. At the present we shall briefly mention some of the greatest sources of waste that arise from faulty methods of instruction.

Chief among these are uneconomical methods of testing the knowledge of the pupil, roundabout and unpsychological methods of drill, wasteful and unskilful methods of questioning, vague statements on the part of the teacher and the pupils, and often a total lack of any adequate lesson plan. These sources of waste together with others that primarily relate to methods of instruction will be treated under separate topics in later parts of this book.

CHAPTER VIII

THE METHODS OF THE CLASS PERIOD.—TESTING THE KNOWLEDGE OF THE PUPIL

The Three Fundamental Methods of Class Instruction.—There are three main methods of class instruction, namely,—to test the knowledge of the pupil and measure his progress in acts of skill; to drill and perfect the pupil in knowledge and skill that he has partly acquired, and to add to the knowledge and technical ability that he already possesses. Each of these three methods involves definite means for their attainment, and the entire problem of instruction in the high school may be definitely related to them. In so far as these methods are adequately and economically realized, instruction is a success; in so far as they are realized inadequately and by wasteful and incorrect means, instruction is a failure.

Reasons for Testing the Knowledge of the Pupil.—There are various reasons why it is necessary to test the knowledge of the pupil in class exercises. The most important are the following:—

(a) *The test for knowledge holds the pupil down to his tasks.*—It would be impossible to obtain any result from high school courses if the pupils were not compelled to show the teacher from time to time what their achievement is. Indeed, this is a compelling motive not only among high school pupils but among all classes of learners as well. It is generally true that advanced students who take courses not for credit, and who do not submit themselves to the required tests of proficiency, get comparatively little out of these courses. If this condition holds good among adults who bring a genuine interest to their tasks, how much

more true is it among boys and girls in the high school, who often have little interest in the courses as such, and no adequate conception of their value.

(b) *The test for knowledge enables the teacher to determine the progress of the pupil.*—The test for knowledge should reveal to the teacher the "content of his pupils' minds." It should show him how well the learner has mastered the essential facts, has comprehended the fundamental principles, and has acquired the requisite facility and skill. Unless the teacher can definitely know these things, he cannot adequately instruct his class as a group or as individuals. These tests as a rule should include more than the ordinary questions and quizzes that concern the day's recitation; they should aim to discover the general comprehension and skill of the pupil. In courses in foreign language, for example, there should be tests to measure the pupil's ability to translate at sight or with the aid of the dictionary; in courses in geometry, there should be tests to determine the pupil's facility in solving original propositions; in courses in literature and history, there should be some means of testing the pupil's range of information, and historical and literary appreciation. In fact in all subjects there should be "examinations for power."

It is likewise important that these tests should seek to discover the direction and the nature of the pupil's errors. Frequently the teacher knows that a pupil is not doing good work, but does not know the reason for his failure. Often the difficulty lies in the fact that the pupil employs some wrong process or has some misleading notion that prevents him from making progress. Studies in the psychology of learning frequently show that after weeks or months of initial advance most learners reach a point at which further progress stops for a time. These periods of slight improvement or total lack of improvement are called "plateaus" in the learning curve. There is, doubtless, a variety of causes for these plateaus, but in many instances they can be

traced to erroneous methods of doing work, to lack of understanding in regard to some fundamental fact or principle. The teacher should frame his tests to discover if possible why the pupil fails to make progress.

A teacher of algebra reports decided improvement in the work done by his class as a whole as well as by individuals since he began the practice of observing and recording carefully the kinds of mistakes that his pupils make in their written tests. He says,—"At first, this involved a large amount of extra work on my part, since I was obliged to read the papers much more carefully than when I read them merely for the purpose of assigning a mark, and since I was compelled to work out a method of recording against each individual the kinds of errors he made. However, after a time I gained such facility in knowing just where to direct my attention in reading these papers, and in recording the results that today I read these tests as rapidly as I did before I adopted my present method. The results, as far as they relate to better instruction on my part and to improvement in the work done by the class, are decided. Under the old method I worked more or less in the dark, though at the time I did not realize it. I did not know, for example, that many of my pupils were making no progress because they had not mastered such fundamental processes as the changing of the signs of quantities on removing a parenthesis when it is preceded by a minus sign. Of course in a vague way I sensed such facts, but I had to 'get down to cases' to have them properly emphasized. Now I know just where the weakness of each pupil lies, and where the class as a whole is having difficulty. As a result, I no longer make the mistake of spending time in the class to take up errors that but a few pupils make, or errors that are made occasionally. When individual pupils are at fault, I work with them separately; when the difficulty concerns a large number in the class, I try to clear it up during the recitation period. I have been amply repaid for the time and effort I have put into this matter."

A teacher of history has kept for some time a record of the mistakes made by pupils during the recitation. To accomplish this he has devised a classified table under which the common mistakes naturally fall, and without taking his attention from the recitation

he is able to check off these mistakes in connection with the individual pupils. Among the interesting facts that he has discovered in this way, facts that he never even suspected before, is that pupils tend to make the same general type of errors day after day. There are some, for example, whose difficulty obviously lies in the fact that they get parts of expressions from the text without clearly understanding their significance, and commit these imperfectly to memory. They constantly use this method of studying their lessons, and as a result make no real progress in their work. There are some pupils who have the habit of transposing the figures in a date, others who have a rapidly fading memory, others who can recall specific details, but who cannot retain generalities or abstractions, and so on throughout a somewhat long list. The knowledge that the teacher has acquired in the course of keeping this record he finds of considerable practical advantage in his teaching, and also of no small interest as a study in individual psychology. He feels that he has been repaid in every way for the additional time he has taken to devise and keep this record.

A teacher of English uses a box made up of several parts. Each part is devoted to some fundamental error that he finds in his pupils' compositions. When he has examined the written work of a pupil he places the pupil's name in the compartments that relate to the errors found. From time to time he takes the names out of the box and makes a permanent record of the difficulties that the various pupils have made, and the frequency with which they occur. As the work progresses, the teacher changes the kind of errors that he is observing, as he emphasizes now one aspect of the subject, now another.

(c) *The test for knowledge serves as a means for review.*—Not the least important of the functions of the test for knowledge as a classroom exercise is that it serves as a method of review. When quizzes and examinations are employed with this purpose in mind the following considerations are important:

A well-organized review lesson should emphasize the more essential points and disregard exceptions and minor details.—It is

obviously impossible for pupils to keep in mind all of the materials found in text-books or presented in class discussion. The test for knowledge as a review lesson should be a means of emphasizing the most important phases of the work and properly organizing it.

Review lessons should be carefully distributed according to a definite plan.—There is no fact more clearly demonstrated in the psychology of learning than that it is extremely essential to recall materials to be remembered not once, but over a considerable period of time. If it is possible to give an hour to the review of certain parts of the class work during a term, it yields much better results when this review is extended over several lessons than when it is concentrated in a single lesson at the end of the term. For this reason short quizzes frequently given are likely to be more satisfactory than occasional, long, and formal tests. While there is some advantage in giving set examinations, these should not be the only means of holding the pupil down to his work and testing his knowledge.

Reviews should be based on those details of subject-matter on which the pupils are known to be weak.—In making out written quizzes for the purpose of review exercises, the teacher should arrange his questions in such a way as to make emphatic those details of the work with which the class is finding difficulty. In this way he can make the pupils aware of their deficiences, and give them an incentive for removing them.

(d) *The test for knowledge serves as a basis for marking the pupil.*—In any school system, marks to indicate the attainment of the pupils are necessary. Marks serve three distinct purposes. In the first place, they are essential in the administration of the school. They serve as a basis for the promotion of individuals from grade to grade, class to class, and subject to subject. They further indicate to superintendents, principals, and other supervising authorities certain important facts in regard to the efficiency of methods of instruction, the ability of teachers, and

the attainments of groups of pupils.[1] In recent years they have become a very important element in an adequate "school survey."

In the second place, marks, if properly kept, give the teacher a permanent record for estimating the progress and ability of individual pupils, and for comparing the attainment of individuals and classes from year to year. This function of marks is important, but unfortunately most teachers do not sufficiently study their records with this thought in view. Further, marks in the form of proper school records should prove of value not only to the teacher who records them, but to all other teachers in the school system. It would be well if every teacher in the high school could study the scholastic records of the members of each new class that comes under his instruction. Again, in so far as the school seeks to determine particular aptitudes and general abilities of individual pupils, marks should be of no small assistance.[2] They should be entered on record cards and filed in such a way that they can be used by all who are concerned with them.

In the third place, as has been previously pointed out,[3] marks serve as incentives to pupils in their school work. They are objective indications of attainment. The pupil who is ambitious, who cares to excel, finds an immediate objective for his work in the grades that he receives.

The Necessity of a Properly Devised and Administered Marking System.—In recent years there has been a revolt

[1] In drawing conclusions from studying pupils' grades the investigator should make sure that these marks are derived from questions of the same relative degree of difficulty.

[2] It seems probable that in the near future one of the important functions of the high school, particularly of the "junior high school" will be that of vocational guidance. It will be the business of teachers and supervising officials to discover in advance what sort of career this boy and this girl are best suited by nature and training to enter upon. A carefully devised and faithfully recorded set of marks will be an important factor in determining the life occupations of these young people.

[3] Chapter IV., p. 75.

against much of the barren formalism that characterized many of the phases of education a generation ago, and in this revolt there has been harsh, and at times a just criticism of the "marking system" as it has been termed. There have been many critics, and few defenders. The obvious defects in marking have been so numerous, and so readily pointed out, that until recently the critics have had it very much their own way.

It has been urged, for example, that marks are arbitrary, and not real measures of attainment; that it is impossible to give accurate marks; that at best they are mere guesses by individuals, as shown by the fact that teachers when put to the test of marking certain definite forms of school work show no consistency of judgment; that they cultivate an unwholesome attitude on the part of the pupils toward their work; that they encourage undesirable competition among pupils; that they emphasize extrinsic rather than intrinsic interests in the subjects of the curriculum; that they cause the pupil unnecessary worry, and that consequently marking may lead to serious consequences, particularly in the case of ambitious pupils with nervous temperaments.

It should be noted, that the criticisms directed against marking, are not so much criticisms against marking as such as against improper methods of marking. In reality there has never been a marking system, but rather a marking practice that has been anything but systematic. It has grown up by chance rather than because of any foresight on the part of those who devised it, or who administer it. If we are willing to admit that marks in and of themselves are not an evil, but possess a positive value, and from this conclusion there seems no possibility of escape, then it is extremely important that our methods of marking shall be the best possible. That our present methods are entirely inadequate and unsatisfactory no one who knows the facts can doubt, but their inadequacy cannot be remedied by reducing marks to a minimum, by making them less exact and more fragmentary than they are at present, but by extending present

methods in the direction of greater exactness and completeness, and by devising new and more significant methods. There are certain obvious reforms that should be made in the marking system if it is to serve as a satisfactory incentive and measure of school achievement.

(a) *In the first place we must find, if possible, for most school subjects an objective scale by which the attainment of the pupil can be measured both absolutely and relatively.*—We must have definite grades of excellence from zero to a hundred and we must be able to place with tolerable accuracy any sample of school work in a given subject somewhere on this scale. Then a pupil, when he is given a grade of 40, 65, or 80, for example, will know just where he is in terms of his own progress and in terms of his relation to others who have secured higher or lower marks.

Many have doubted that such an objective scale is possible in any genuine sense. They have affirmed that intellectual attainment is in terms of mind and that mind cannot be measured. As to this objection, it may be pointed out that none of the scales so far devised for measuring school achievement seeks to measure a mental state as such; they measure results, they evaluate the objective achievement of the pupil, not a subtle, hidden something. The fact that an objective scale is possible in measuring school achievements has been clearly demonstrated by the Courtis tests in arithmetic, which have already proved of the greatest value to teachers and administrative officers. In a less measure the handwriting scales devised by Thorndike and Ayres have demonstrated their value. Scales in spelling, English composition, reading, algebra, and various other subjects have been worked out, or are in the process of being constructed. Some of these are still crude, but any one that is carefully devised by a competent investigator is sure to be better than no scale at all. The attempt to secure objective standards as a test of individual and group attainment is one of the most important fields of activity of the new experimental education.

(b) *It is not only important to devise carefully determined objective scales for marking pupils; it is likewise necessary that the*

teacher use such scales as conscientiously as possible.—At present many teachers, particularly those of high school grade, look upon marking as a necessary evil. They often mark in a perfunctory, and in a careless way. They consider marking a burden, and they slight this part of their school duties as much as possible. When a teacher does not consider it a part of his function to mark carefully and intelligently, the pupils under him soon discover the fact, and the whole situation reacts unfavorably for them. On the other hand, if pupils believe that their marks fairly represent their attainment they are sure to have a better attitude toward their work. Further, it should be kept in mind that if a pupil is kept in ignorance in regard to his real achievement, if he is not marked in such a way that he knows when he has failed and why he has failed, he is likely to stumble along in the dark, making no progress because he has no idea in what direction progress lies, and no knowledge whether he is advancing or falling back.

It is the custom of some teachers who have a large amount of written work to correct to do much of this in a perfunctory manner, with the result that the pupil has no conception of how he is progressing in this part of his school tasks. For example, a teacher of English composition in a large city high school makes it a practice to throw into the waste-paper basket the majority of the brief themes of his pupils, taking up a few at haphazard for comment and correction in the class. As a result, it is doubtful if this work in composition is of any material value to the pupils. It is a well-established principle of educational psychology that practice without knowledge of results is of little value. In contrast to this practice is that of a second English teacher who has in recent years cut down his requirements in writing by one half. He finds time at present to read carefully all of the compositions handed in to him, and to mark these in such a way that the pupils understand their errors. These errors are corrected by the pupils making them, and the compositions again submitted to the teacher. He is of the opinion that the revision of his former procedure has improved the quality of the written work of his pupils.

To test out the effect of such a procedure, a teacher of high school English, who was a student in the seminary of experimental education at Brown University, devised and conducted an experiment the results of which have not as yet been published. He divided a class in English into two sections of approximately equal ability as determined by previous tests. To one of these sections he gave ten minutes of practice in writing daily for half a year. The other section was not given this practice. The results of this daily practice were in no way marked or criticised. At the end of the practice, which amounted in all to approximately fifteen hours, the two sections were carefully tested again in regard to their ability in composition, and it was found that the section that had not received the daily practice showed slightly greater improvement than the section that had been given the drill distributed over fifteen hours, an amount which under ordinary conditions should have resulted in improvement.

(c) *Every teacher in the high school should familiarize himself with such scales as exist for measuring achievement in the subject which he teaches and should use these scales; when no such scales have been devised, the t acher should attempt to set up measures of his own that are as objective as possible.*—Scales for the measurement of achievement in high school subjects, even if inadequate, are better than no objective measures at all. The teacher should familiarize himself with and use such measures of attainment in English composition, as the Hillegas scale, or the Harvard-Newton scale.[1] When no objective measure has been devised, or when those which have been perfected are obviously inadequate for the purpose at hand, then the teacher should attempt to form some measure of his own that is more than his individual judgment. He could at least keep on file compositions that are representative of the work of his pupils, ranging from barely passing, poor, through medium, and good, to excellent and superior; and compare the written work of subse-

[1] This latter scale is devised to measure the attainment of pupils in the eighth grade of the elementary school, but may be used with first year high school pupils.

quent pupils with these. He could use a similar scheme for written work in mathematics, language, stenography, and the like. In the manual arts, he could have standard models for various types of achievement and so on. Never mind how imperfect such scales are, they are more likely to serve as a basis for a valid estimate of the pupils' work than are judgments based on passing impressions.

Teachers are aided in making their marking definite and objective by analyzing as far as possible the elements that enter into any complex achievement and assigning definite values to such elements. For example, in judging the merit of a theme in English it is not sufficient to mark it on the basis of general impressions, but on certain points, such as spelling, punctuation, grammatical correctness, sentence and paragraph structure, clearness of arrangement, and inventive ability. Further, the pupils should be acquainted with the method of marking, and from time to time different weight may be given to these various elements, as the teacher emphasizes now one aspect of the work and now another. Teachers, also, should have different standards of attainment for different grades and classes, not expecting the same performance from a pupil in the seventh, eighth, or ninth grades as in the higher grades of the secondary school. In this way, one of the chief deficiencies of many of the scales that have been devised for testing the ability of pupils will be done away with. Such tests as the Hillegas scale in English composition, for example, are based on general estimates of merit. This gives no indication in regard to particular merits or defects, and it is not devised to measure ability at any particular stage of advancement, but rather excellence in English composition in general. A point scale, that assigns definite values to different elements, and takes into consideration the age and grade of the pupil can be more definitely applied and used specifically to improve the work of the pupil just where improvement is most needed. In this respect the Harvard-Newton scale is superior to the Hillegas scale.

The Outcomes of Standardized Marking have great Educational Value.—When we have valid scales for marking

various high school subjects, and when teachers are as interested in properly grading each pupil as in imparting facts or stimulating enthusiasm, results of no small value to the pupil will be achieved, and marks will be valued more, for the simple reason that they will mean more to both pupil and teacher. Under such a system the pupil will have an incentive for beating his own record, because he can understand definitely just what progress he is making according to concrete and carefully graded standards. He can also be assured that if he does reasonably good work, as good as pupils in previous years have done or are doing in other classes, he will pass the course. A relative marking system does not insure this. Some instructors consider it their duty to fail a certain proportion of their class. They think that they are lax if too large a proportion of their pupils receive a passing grade. Pupils should not be graded in this comparative way. It would be impossible to do so if we had an absolute scale of measurements.

When an objective scheme of marking has been finally achieved, unfairness, or the suspicion of unfairness in the marking of a pupil, will be a thing of the past. What is more, the well-intentioned teacher, and practically all teachers have good intentions in marking, will know whether he has marked accurately or not; still better he will be able to show the pupil why a mark that has been given is justified. One of the most unpleasant features of the present inexact scheme of marking arises from the fact that it is very difficult to point out to the pupil just why a certain grade has been assigned to him rather than another.

If the pupils of a class were told to draw from memory a line three inches long, and were further informed that a line of less than two inches or more than four was to be considered of zero merit, and that a line of exactly three inches was to be marked as perfect, or one hundred per cent. correct; while lines between were to be graded up to a hundred, each hundredth of an inch from two inches up to three and from four inches down to three counting as one point

on the scale, each pupil could be graded in absolute accuracy in terms of his performance. There would then be no question as to where any pupil belonged on the scale, and he could be shown at once that he had been assigned the correct position. Further than this the teacher's personal equation would be entirely eliminated.

Such a condition of affairs would react greatly to the advantage of the pupil. He would be stimulated to do better work, when he knew that his poor work had been really measured and determined. Misunderstandings between pupils and teachers would to a great extent be eliminated. "Easy teachers" and "snap courses" would be largely a thing of the past. In this way the entire *esprit de corps* of the school would be raised and studying for marks would be the perfectly natural and justifiable thing to do.

Standards of Marking Cannot all be Framed with Equal Exactness and Objectivity.—In our previous discussion of the desirability of securing objective measures for school achievements, we have emphasized the importance of devising scales that are as exact and minute as possible, in order that every kind and degree of achievement may be definitely measured and determined. Although this is true of all school subjects, and of all varieties of accomplishment, still the fact should be kept in mind that there are certain very desirable results that cannot be measured in more than a very rough way, and that further there are varying kinds of attainment that must be measured from varying standpoints. Obviously it is easier to form a scale for determining ability in algebra than in history; a more simple matter to measure excellence in English composition than in literary interpretation. Likewise we do not wish to measure merely the amount and quality of work done; at times it is equally desirable to measure the progress made, or the interest shown. Progress made is often a better criterion of excellence than the correctness of the result, in and of itself considered. There should be a place in our marking system to record this

important fact. If we have well-devised scales, it is a simple matter to measure and record improvement in school work. It is a much more difficult matter to measure interest, and it will doubtless be a long time before we have more than the roughest scales for such a determination. Interest, however, can be determined indirectly by the amount attempted, and the result obtained.

The teacher should not fall into the error of doing away with all attempts at objective standards because in some instances they are crude and difficult to secure. He should not consider it a merit, as he sometimes does, that he has no rule by which to measure results; he should not pose as the inspired one, the true bearer of the torch of learning, the leader and prophet to whom it is given to see the promised land from the mountain tops, the exponent of the spirit that cannot be reduced to definite form, although it can be felt and in a sense comprehended. It is easy to appeal to the spirit, to declare that insight and inspiration are the great things and to denounce all that partakes of exactness and rigor. It should be remembered always that the real leader must know where he is leading others, that enthusiasm and inspiration are worth nothing unless they are directed toward things worth while. The teacher above all persons must know the way along which he seeks to direct others. This means he must have objectives, ends as definite and as clear as they can possibly be made.

The question of the desirability of definite measures of achievement is most clearly emphasized when we consider the teaching of the so-called appreciative subjects, such as art, literature, and certain aspects of history, science, and the manual arts. The appreciative subjects are carefully distinguished by some from those subjects that are primarily of the knowledge-acquiring and habit-forming type. Snedden [1] has expressed the distinction that he would make between

[1] David Snedden, An address delivered before the Department of Superintendents of the National Educational Association, Detroit, Feb. 23, 1916.

these two types of studies as follows: "In teaching spelling, the outcome expected on the part of the pupil is a certain quite definite and easily recognized ability to do, to *execute*, to *express in action*. On the other hand the learning achieved in hearing a recital or witnessing a dramatic performance can be subjected to no profitable test of *expression*, of *doing*. We expect absorption, assimilation, growth, as results, but the final outcome is so remote from the original stimulus that we do not, ordinarily, seek to trace connections." It is not denied that studies of the appreciative type have results; we simply do not know what the results are, and consequently we must trust to chance as to what is likely to happen. We must "expose the pupil to the influences of such studies," trusting that the exposure will "take," and that the results will be beneficial to the learner. It is easy to measure progress in algebra, or Latin. On the other hand, who shall evaluate the results that come to the pupil in his reading of the *Ancient Mariner* or of *Treasure Island?* Here the learner must go his own way without let or hindrance. To hedge appreciation about by rules, to measure it or to direct it, is to kill it. It flourishes only in the spirit of pure play.

Such is Snedden's contention in the main. It is not difficult to sympathize with this point of view; yet we must remember the important fact that undirected and undetermined interest never gets us anywhere. Enthusiasms that have no goal, spontaneity that is uncontrolled, are as likely to go wrong as right. Appreciation is not a matter of personal whim; it cannot be left entirely to chance and individual preference. If our teaching is to have any definiteness and point, the outcomes of those studies that emphasize the appreciative functions must be measured and their main aims determined. If they are left entirely to chance, they cannot be taught and are no concern of the school in any grade of instruction.

Important Considerations in Regard to the Test for Knowledge.—Tests for knowledge may take various forms according to the purpose for which they are employed. Under this head the most important considerations are the following:—

(a) *The test for knowledge as a rule should be given as a class exercise.*—It would be an obvious saving of time for instruction

if tests for knowledge could be given chiefly outside of the recitation period. This, however, is impracticable because of the fact that little value can be attached to the written work prepared outside of the class.[1] Some teachers regard exercises in the various high school subjects that are done at home and handed in as practically worthless, as far as they indicate any real knowledge or ability on the part of those who submit them. In many instances these exercises are not the work of those whose names they bear. Often unwise parents do most of the work for their children, quite generally the less industrious and capable pupils receive assistance from the few who are willing to work and who have the ability to do accurate work. For these reasons it is a common practice for teachers merely to record the fact that the pupils have handed in the required work or not, but to give no further credit for school exercises of this character.[2]

The writer recently visited a class in physics in which all of the pupils handed in all of the problems of the day's lesson correctly done. The teacher sent a number of the class to the board to do these problems without the assistance of their papers. There were several of these problems that not a single member of the class could do correctly when they were tested under the eye of the teacher. In a second class, in French, many of the pupils handed in composition work correctly done, but were unable to explain the grammatical principles involved in their writing. These two examples are instances taken at random from hundreds that might be cited to show how futile is much of the written work done outside of the classroom.

(b) *The written test is generally more economical than the oral test.*—As far as practical, tests for knowledge should be written rather than oral. The reason for this is that in the written test all of the pupils are mentally active during the entire period of

[1] As will be pointed out in Chapter XVII., the supervised study period will partly solve this difficulty.

[2] See also in this connection Chapter V., p. 100 and Chapter XVII., p. 363.

the test, while in the oral test only one pupil is necessarily engaged at a given time. Further than this, by use of the written quiz the teacher can test the knowledge and the skill of all of the members of his class much more extensively than he can by the oral test. There are various reasons why the oral test is used more frequently than the written test in class work. One reason is that in the oral test the teacher can check up the errors of individuals on the spot, while in the written test correcting of papers outside of the class period is involved. Again in the oral test the whole assignment can be covered, while in the written test this is difficult, and teachers feel that they must go over the entire lesson in the class period.

However, the written test can be used in many ways with a great saving. Compare the value of sending individual pupils to the board to write out and demonstrate orally proofs in geometry with that of having all of the class write out at their seats all of the advanced propositions. In the former case, as a rule, but one pupil is giving concentrated attention to the proposition that is being worked out at the board; in the latter instance, all of the members of the class are mentally active on all of the work done. If too much time is taken from other phases of the class work by the written exercises done by the pupils at their seats, then only a part of the advanced lesson may be thus treated. Clearly it is more desirable for all of the pupils to give their entire attention to half of the work, than for all of the class to give sporadic attention to all of the work, which usually is the case when work on the board is presented by individual pupils, or when the pupil recites from his seat.[1]

What is true of the work in geometry is equally true of the work in other high school subjects in which the test for knowledge is either oral work of the individual pupils at their seats or written work at the board. There is no good reason why the written test should not be used in translating foreign languages,

[1] See Chapter VII., p. 136.

in summarizing important facts in history, in explaining principles in science, and indeed in setting forth facts in any subject in which the ordinary recitation method is now used. *The recitation method as it is commonly employed is largely a failure when it is directed toward testing the pupil's knowledge.* In the high school it has become largely "lesson-hearing," the lowest and most inefficient aspect of teaching. How profitless this method of conducting class exercises often is, the following examples, quoted in the words of the observers, will serve to illustrate.[1]

"As soon as the pupils were seated, the teacher sent five members of the class to the blackboard to write out synopses of verbs which had been assigned the previous day. While the writing on the blackboard was in progress, the remaining pupils recited the assigned lesson from an elementary Latin book. As the teacher called a name, a pupil rose from his seat, translated a Latin sentence into English, and received a mark for his recitation. Then another pupil was called and the process repeated. Many of the pupils, particularly the brighter ones, translated with great rapidity, and sometimes almost inaudibly, while the poorer pupils stumbled over their work and left a most confused impression. The pupils were manifestly reciting to the desk, and for the sole benefit of the teacher. When the translation was ended, then the work on the board was taken up and corrected. In this part of the recitation, too, the teacher seemed satisfied when she had received the right form from the pupil who was presenting the work, and took no pains to emphasize the work for the benefit of the class as a whole. The only general comment on this phase of the recitation was a concluding remark from the teacher,—'This work shows that the verbs need studying up.' The pupils looked as if they had heard this observation before.

"After the board work the class began with *Gallia est omnis divisa*, etc., pursuing the conventional routine of rising, reciting, sitting down, and receiving a mark, which procedure might have been justified as a purely review exercise, but was entirely out of place in an advanced

[1] See also Chapter VII., p. 136.

lesson where the difficulties of the class needed to be searched out and definitely cleared up. So the hour dragged along, and at length the bell rang, whereupon the teacher announced in a hurried manner that the lesson for tomorrow would go to line ——. On the board had been written a synopsis of the verbs to be studied for the next day, and as the class was passing out the teacher called attention to them. And so the lesson ended, as doubtless many previous lessons had ended, and many subsequent lessons would end. The result attained was the realization of the aim,—to get through the lesson."

"The class in English history numbered twenty-eight pupils, sixteen girls and twelve boys. After the calling of the roll, the teacher took out of his desk a pack of cards on which the names of the individual members of the class were written, and shuffled them, probably to show that he had no particular designs in calling upon any individual to recite, and that the whole procedure was to be impartial and quite mechanical. The pupil whose name came up was designated as the victim. He had to show what he knew about the particular topic, and when the teacher had sufficiently quizzed him, he again resorted to the divination of the cards to discover who should be next. This routine was repeated throughout forty minutes of the hour. The last five minutes were devoted to a consideration of the work for the next day, and this was the only part of the recitation in which the teacher seemed to be aware that he had pupils before him that were to be taught. Up to this time he had treated his pupils merely as an aggregate of individuals from whom he was to get certain information for the purpose of deciding how much of the assigned lesson each knew, in order that he might give to each and every one his just mark. He did not impress me as a teacher, but as a foreman or boss whose duty it was to inspect the work of those under him to see that it came up to the standard. I did not find the methods of this teacher strikingly peculiar. In all of the classes that I visited in this school, I did not find a third that were conducted on an essentially different principle. For the most part it was dreary lesson-hearing and marking. It ought to be said in this connection, too, that the teachers were not beginners. Most of them were seasoned instructors with years of successful (?) experience to their credit."

"To what an extent this teacher had carried the method of lesson-hearing, and how definitely she had impressed upon her pupils the idea that the chief function of the class exercises was to recite *to her*, is shown by the following incident. The class was reading Whittier's *Snow-Bound*. Individual members were called upon to rise in their seats and read a few verses of the selection, after which the teacher questioned the pupil on some of the details of what he had read. No pupil seemed to be reading for the benefit of the class; the teacher was the only one considered. At length a girl who had been given a seat in front of the very front row was called upon. It was a single seat at one side of the room. The teacher was standing at this side of the room near the wall, and the girl turned and faced the teacher, with her back to all of the class, and read just loud enough for the teacher to hear and make the necessary comments and corrections. For three minutes pupil and teacher carried on their individual colloquy. It seemed never to have occurred to either pupil or teacher that the pupil should face the class and read for its benefit, and as far as I could judge, there was not a pupil in the room who saw anything peculiar or out of the ordinary in the manner in which the recitation was being conducted."

That by no means all and probably not the majority of high school recitations are characterized by the deadening procedure described above, the following typical reports of observers indicate:—

"Today I listened to a lesson in English in which not a pupil rose to recite and not a question was asked, yet it seemed to me a very successful lesson, and one in which the class learned much. It is true the pupils did not take away any added store of new facts, but if I could judge from their attentive attitude and the appreciation and interest revealed by the expression on their faces, most of them obtained a new insight into the nature of genuine fun, and an increased love for real humor. During the entire hour the teacher read to the class parts of Howells' *Albany Depot.* She was an excellent reader, with a gift for facial expression, and effective gesture. Her occasional comments were also suggestive. If the class enjoyed the hour as much as I did, they surely spent it profitably."

"In the lesson in geometry that I observed on Thursday the teacher seemed more interested in making the pupils think than in finding out how well they had learned the theorems in the book. She spent fifteen minutes in testing their knowledge through a written exercise, and the remainder of the period in developing through question and answer a statement of the advanced theorems and outlining in a general way the proof. She told little outright. She showed great skill in so directing her questions as to make the pupils see what the facts and principles were. It was an interesting lesson, and the class responded well."

"The teacher (of history) possessed the art of making the past living and present. He emphasized facts when they were important, and he demanded accuracy, but he always took pains to show that the facts had some bearing on other facts or on general principles which they illustrated. He tried to make the pupils feel that somehow the Romans were men such as we are today, and that the causes for their actions were not different from the causes of our actions at present. I have heard such teaching criticized as 'distorting' history, but it seemed to me that far from distorting facts it gave them their true meaning. I should have found more of my history in high school and college interesting, if it had been 'distorted' in this fashion."

"This teacher did not tell his pupils the facts about magnetism; better still he did not require them to recite about these facts. He showed the facts by a series of careful demonstrations, and obtained from his pupils a statement of the facts in their own words. I am sure they will remember the essential points in this lesson when much that they have learned from the text-book will have past into forgetfulness."

"Until I witnessed this lesson, I had supposed that beginning Latin was a subject to be learned almost exclusively from a book, and that the sole business of a Latin teacher was to listen to his pupils recite, and to correct their mistakes. I evidently was in error, if the lesson that I observed is at all typical. The teacher spent but a small portion of the hour in listening to pupils recite paradigms, and give rules. Most of the period was devoted to showing the class the best method of translating their exercises from Latin into English, and

working out with them the technique of the procedure. After the class the teacher told me that as a rule the pupils did more reciting than on the day of my observation, but she also said that she spent a considerable portion of the class period in developing the work with her pupils, and in showing them how to study. She was sure that it brought results in the end, and was well worth while."

(c) *Tests should be made as brief as possible in order that the major part of the recitation period may be given over to the more important work of drill and instruction.*—The fact cannot be too often emphasized that the test for knowledge is never an end in itself, but only a means to an end. The real function of the recitation is to drill and instruct the pupil. The test for knowledge cannot be made a substitute for the more important phases of teaching. In some classes it must necessarily occupy a larger place than in others, but as a rule should not consume more than a third of the total recitation period. In many classes a five-minute test at the beginning of the period will be sufficient. Such a test must of course be written and be so devised, that the pupils can answer the questions in a few direct words.

The five-minute test at the beginning of the hour can be used to advantage in such a subject as history. In this written quiz the attempt is made to hold the class responsible for the more important facts brought out in the lesson of the preceding day. Such tests are of course too brief for more formal examinations which are to cover the work of many lessons. Some teachers have found it advantageous to give a five-minute test both at the beginning and the end of the recitation period.[1] The test at the end of the recitation serves a double function. In the first place, as we said in Chapter IV., it acts as an incentive to the pupils to give their attention to the main points brought out during the recitation period, since they know that they are to be held responsible for them in the quiz that is to follow. In the second place, this test serves as an immediate review and a summary of what has preceded, and for this reason is an important factor

[1] See Chapter IV., p. 67.

in the comprehension and retention of the main facts presented during the recitation.

(d) *Tests should not all be of one type.*—Tests to determine knowledge and skill, should not be of one type alone. There are various forms such tests may take. The most common test employed in the schools is that of ability to recall the parts of what has previously been learned. This recall may be a *verbatim* restatement, as in the case of rote memory, or it may be recall in the terms of the sense or meaning of what has been learned. In most subjects of the high school curriculum mere *verbatim* recall has but a minor place. Recall of ideas is the test of attainment in such subjects as history, science, and literature.

Another valid test for learning is to determine whether the presentation of one of a pair of associations tends to call up the second member of the pair. For example, a pupil is learning a German-English vocabulary. His knowledge may be tested by asking him to repeat this vocabulary word for word, or by finding out how rapidly he can reply with the English word when the German equivalent is given. Clearly this second method of testing knowledge is better for this particular kind of learning, than is the first method.

Another test of learning is the ability of the learner to recognize a word, an object, or a situation, when presented. The boy who is taking a course in the manual arts knows his tools when he can use them; a girl knows her lesson in French if she recognizes the meaning of the words when she meets them in the text. At one time it was believed that a pupil had mastered his text in grammar or science when he was capable of giving a set of definitions or rules. The real test is not, however, that he remembers a collection of words and their sequence, but that he knows how to use in a concrete instance the principles contained in these formal statements.

Closely associated with recall as a test for knowledge is reconstruction. This latter test consists in putting into its proper order materials that are given out of order. The memory for the order and arrangement may in this instance be more important than the memory for the details that are to be arranged. In history it is not only necessary to know the names of the kings of England, but also the order of their reigns; it is perhaps as important to know the order of the admission of the States into the Union as to give the names of the States themselves. In these cases the sequence of arrangement is significant.

Tests for knowledge may aim to determine facility in either what has just been learned, or in what has been retained for some time. Obviously the latter test is the more important as a measure for real knowledge. A large part of what is barely learned rapidly fades from the mind. Within a few hours much has disappeared. For this reason tests that require the reproduction of that which has been in the mind for some time are desirable if the pupil's real ability is to be measured. High schools have sometimes made a mistake in abandoning examinations at the end of courses in such subjects as history, where that which has been learned in the early part of the course may be quite forgotten if it is not held in mind by the pupil for the purpose of a final test in the subject. Examinations are a distinct incentive to retention, and in those subjects in which retention is desired they should not be abandoned.

Obviously there are certain subjects in the high school curriculum that do not require final examinations from the fact that in these subjects the knowledge and skill are cumulative, so to speak. If a pupil at the end of the year can translate his Latin well, it shows that he has mastered what has gone before; if the learner in the class in stenography can take the dictation of the teacher with requisite speed and accuracy, this is a test that involves all that has preceded. The case is quite different in a text-book course in physics, for example, where the learning may be taken up section by section, and

each part left without definite relation to the rest. Here an examination requiring a knowledge and an organization of the entire course is most desirable.

As a rule teachers are too stereotyped in the kind of examinations that they give. These tests are very much of the same pattern. What is needed is a variety of tests, suited to the various educational results that we strive to measure. Giving the proper test for knowledge, the test that best suits the particular needs of the subject and the pupils is an important function of instruction, since it serves as an incentive to, and a device for learning, as well as a measure of achievement.

Summary of the Preceding Discussion.—In conclusion we may bring together the most important facts in regard to the test for knowledge as an aim of the recitation. The high school teacher must observe the following cautions:—

Do not make the entire recitation period a test for knowledge. A reasonable sampling of the knowledge and skill that the pupils have acquired is sufficient. Above all, do not turn the classroom exercises into mere "lesson-hearing."

Do not over-emphasize tests to determine rote memory; test for ideas, ability, power to do.

Vary the tests to suit the subject, the pupil, and the aims of instruction. Ability to reproduce what has already been learned is not the only valid means of determining what has been acquired.

Record the results of the tests so that they will be significant; so that they will mean something to both pupil and teacher. The records must not only show failure or progress, but they must indicate just where failure or progress lies.

In marking, make as fine gradations as practical. It is not satisfactory to indicate all grades of excellence by two or three letters of the alphabet. At least six grades are possible.

Make the standards of marking as objective as possible.

Where definite scales of measurement xist, use them; where they do not, attempt to arrive at some objective measures of the pupil's attainment. Do not trust to mere impression.

Standards to measure appreciation cannot be exact or finely graded, but there must be certain objectives before the teacher in all subjects, and phases of subjects taught. To have no object is to travel in the forest without path, guide, or compass.

In order to hold the attention of the pupil and to economize the time of the recitation, use written tests whenever possible in preference to oral tests. In this respect in particular the entire procedure in the classroom needs to be fundamentally and radically changed.

CHAPTER IX

THE METHODS OF THE CLASS PERIOD.—THE NATURE AND FUNCTION OF DRILL

Conflicting Opinions in Regard to the Value of Drill.—Twenty years ago, J. M. Rice published in the *Forum*,[1] under the title of "The Futility of the Spelling Grind," the results of a series of investigations in the elementary schools of the United States. One of his principal conclusions was that practice in spelling of over fifteen minutes a day was wasteful, since additional study seemed to accomplish no results. Later O. P. Cornman gave spelling tests to certain schools in Philadelphia, the results of which he published in a monograph entitled, "Spelling in the Elementary School."[2] The conclusions of Cornman were in many respects similar to those of Rice. In more recent years further studies by Courtis and others have made it clear that many children in our schools fail to show improvement through practice.

Such results have been taken by many to indicate the uselessness of drill, and there have been not a few who have considered drill as a method of the dark ages in education, and who have decried its wastefulness, its drudgery, and its deadening effects. Some who have emphasized the necessity of teaching the pupil to observe, to think, to develop tastes, and to acquire permanent interests have seen in drill a foe to school progress. At times it has seemed as if many of our educational leaders desired that all drill should be banished from the schoolroom. The advocates of such a radical change in school procedure have never succeeded,

[1] Vol. XXIII., pp. 162–172; 407–419 (1897). [2] 1902.

of course, in having a program of this sort put into actual operation, and indeed the most outspoken opponents of drill would themselves not attempt to eliminate it in all its phases. Drill, which signifies at times a dull, dreary, fruitless grind, also involves persistency of effort; it means "keeping everlastingly at it." At the present time there is a decided reaction against this extreme position in regard to the futility of drill. Drill is coming back to its proper place in the schoolroom, though it will never again be used as the exclusive method of teaching, if indeed it has ever been so employed.

Causes for a Reaction in Favor of Drill.—There are various causes why there is a reaction today in favor of drill. Some of the most obvious are:—

(a) *A better understanding of the doctrine of interest in its relation to effort.*—In Chapter IV., the fact was emphasized that interest is not to be confused with mere entertainment. Interest is not engendered by "taking things easy." Indeed, it often dies out when such an attitude is present. The sanity and clarity of the writings of such leaders in education as Bagley in regard to the value of effort have helped to do away with the preachings of "soft pedagogy," which at one time were sure of a favorable hearing at any gathering of teachers.

(b) *The failure of instruction without drill.*—Instruction without drill will not work. Remove every vestige of drill from the schools today, and all learning would cease. Drill, in the form of practice, is an absolute essential of every stage of instruction from the kindergarten through the university. The trained student of our graduate schools is the drilled student. The good teacher will soon find out for himself, without any abstract knowledge in regard to educational theories and practices, that he cannot get results without drill. In a certain very real sense drill is the end of all learning, which seeks to perfect the learner in those habits of knowledge, of skill, of methods of procedure, and of judgment that will make him an efficient worker in the

world in which he lives. Even reasoning itself is perfected only when fundamentally correct habits of thought have been established and made habitual. *You cannot teach the pupil to think without training him to think.*

(c) *The results of experimental education.*—Recent experiments in the psychology of learning have conclusively shown the great importance of practice in improving any act of skill, or indeed any mental or physical function whatsoever.

These investigations have been varied and extensive. They began with Bryan and Harter's [1] study of improvement in telegraphy, published in the years 1897–99; they include similar studies by Book,[2] Swift,[3] Rejall and Hill [4] on improvement in learning to typewrite; studies in tossing balls, in tossing shots into a bottle, drawing lines between two parallel lines of a maze, tapping of a telegraphic key, observing small visual details, marking out a's on a printed page, cancelling zeroes, substituting English for German script, substituting letters for others according to a key, substituting letters for numbers, improvement in adding, improvement in memorizing, improvement in reading Russian, etc. This by no means exhausts the list. Those cited show, however, something of the nature and varied character of the abilities investigated.[5] Besides experiments in human learning, a variety of studies has been made concerning the improvement in animal learning by such men as Thorndike, Watson, and Yerkes.

[1] Studies in the Physiology and Psychology of the Telegraphic Language, *Psy. Review*, Vol. IV., pp. 27–53; Vol. VI., pp. 345–375 (1897–99).

[2] *University of Montana Publications in Psychology;* Bulletin No. 53 (1908).

[3] The Acquisition of Skill in Typewriting, *Psychological Bulletin*, Vol. I., pp. 295–305 (1904).

[4] Reported by Thorndike, *Educational Psychology*, Vol. II., pp. 102–115; 140, 210 f., 244 f., 256, 289, 309, 312.

[5] The literature on the question of improvement through practice is conveniently brought together and admirably digested and summarized by Thorndike in the second volume of his *Educational Psychology*. It is also found in a more compact form in his *Educational Psychology*, Briefer Course, pages 125–282. Much of the work here cited was done under the direction of Thorndike, who is the leading writer and investigator in this field.

All of these studies in regard to learning present the same picture, namely,—practically unvarying improvement in skill through practice. The results of these various investigations are summarized by Thorndike in the following words:—

"So far as I am aware of the facts, no mental function has ever been deliberately practiced with an eye to improving it, and with a proper opportunity for the law of effect to operate without some improvement as a result. There have been cases where one investigator has failed to find improvement, but where others have found it. There have been cases, of course, where certain individuals failed to improve. On the whole, however, it seems fair to say that *all functions that anyone is likely ever to take any theoretical or practical interest in are improvable unless the general practice of life has already put them at their limit;* and that the latter case is very rare."

Again he says:—"First, hardly any functions have ever been practiced in the course of the scientific study of mental functions which did not improve and, provided they were of fairly narrow scope and with success and failure easily distinguishable, at a fairly rapid rate. Second, there are striking cases of individuals who have had enormously long practice, as taken in the course of schools or trades, and who have kept at the same level of efficiency for a long time, but who, under more favorable conditions make notable advances. Third, a new stimulus to interest and effort, or new methods of training, often produce a similar advance in the ordinary work of the world. Fourth, all that we know of the neurones as modifiable organs, and of the physiology of learning, seems to me to show that many more connections can be formed than usually are formed, and that any given set of connections can be brought to a surety and fluency of action approximating in results the expertness at which we marvel, if conditions of proper stimulation and reward by satisfaction are provided."

It may seem from such results as these above cited, and from the opinion of such a competent experimenter and authority as

Thorndike that there is no merit in the contention of those who have emphasized the lack of value of drill. This, however, is hardly a legitimate conclusion. There is something in the claim of those who have decried drill in the ordinarily accepted sense of the word. Just what merit there is in this contention the following pages will attempt to make clear. In order to do this, an analysis of the nature and conditions of effective drill will be necessary.

The Laws of Habit-formation.—Drill is in reality another name for practice or habit-formation, and, consequently, in order to understand the principles underlying it and the methods of its successful operation, it will be desirable to consider in some detail its essential nature. Habit-formation may be thought of as the ultimate end of all learning, no matter what its nature may be. Habit consists in the establishment of connections between various situations and various responses, by making these connections firm and the paths between situation and response permeable.

There are many kinds of habits, some exceedingly simple and others bewilderingly complex; some are habits of a low order as measured by ultimate facility, as, for example, the single-letter habit in striking the keys of a typewriter; others are of a relatively high order, as for example, the word habit in operating the typewriter. In other words, there exists in a complex act of skill a "hierarchy of habits." There are extremely elementary habits that, so to speak, are swallowed up by larger habits, and these by still larger ones, until, for example, the typist no longer thinks when he is operating his machine of single letter, or of words, but of whole phrases and sentences. The smaller habits have been transofrmed into the large and more inclusive ones.

If we consider more specifically the school situation we shall see that this principle of the diversity and complexity of habits holds good in every subject of the curriculum, and in every circumstance of school life. There are, for example, the 3 x 4 habit (extremely

simple and definite); the habit of carrying in addition (somewhat more complex and intricate and hence less easily established); the habit of clear articulation in reading; the habit of studying the map in getting a lesson in geography; the habit of looking for the main topics in an assignment in history; the habit of correct punctuation in English composition; the habit of visualizing concrete situations in reading descriptive prose or poetry; the habit of definitely finding and stating a proposition in geometry; the habit of observing what occurs in the course of an experiment in chemistry; the habit of keeping a note-book in a neat and orderly fashion; the habit of attention during the recitation; the habit of obedience to those in authority; the habit of reading stories of adventure, and so on through a list that is practically endless. Indeed, the law of all school activity and of life itself is the law of habit.

Since some habits are much more intricate and complex than others, it follows in the nature of the case that under ordinary conditions some will never reach the degree of perfection and automatic precision that others will attain, and consequently, some activities will be so imperfectly set up that the habitual phase of their manifestation may be overlooked. However, there is no learning in the entire curriculum that does not in some measure aim at and to some degree attain facility and precision. So we find that habit is all-pervasive and all-inclusive. It is the very essence of the learning process. Habit-formation conforms to the following laws in all acquisition of whatever type:—

(a) *Repetition of the desired function.*—It is a maxim of all learning and a fact of daily experience that "Practice makes perfect." No one who desires to perfect his knowledge, or skill, ever attempts to do so without repetition. Iteration, and reiteration is the chief method of the schools, and has been since time immemorial. However, as we have seen, it does not always bring results. The reasons for its failure are important, since they throw a significant light on the psychology of learning and on the validity of certain school methods. In a word, repetition

is often inadequate to bring results, because of the fact that it is not the sole condition of habit-formation. There are other principles, equally important, which if disregarded may bring to naught all our efforts toward progress.

(b) *Pleasurable consequences in the learning.*—If we desire to establish a habit in an animal or a child, or if we wish to perfect one in ourselves, we shall find it necessary to attach to the behavior that we wish to set up some pleasurable outcome, or if it be a "negative response" (a so-called habit of avoidance), an unpleasant result. This is a fact clearly established through common observation and experience, and through experimental inquiry. The function of reward and punishment in controlling behavior is too well known to need extended comment.

The reasons for the operation of this principle, however, are not altogether clear though the fact itself cannot be denied. One explanation is found in the principle of "circular activity," which leads the individual to repeat an act when it has resulted satisfactorily. The satisfactory consequence is supposed to heighten the tone of the organism and to cause the same act to be repeated until it has become temporarily wearisome through excessive exercise. This principle is illustrated in the child's acquisition of spoken language. He repeats over and over again some sound that he first utters quite spontaneously. This explains the seemingly meaningless ma-ma-mas, pa-pa-pas, and da-da-das, and similar babblings that characterize the rudimentary beginnings of infant speech. Here the function of satisfaction is to lead to repetition, and consequently through repetition to establish connections between situation and response.

Thorndike has given an additional explanation for the efficacy of satisfaction in establishing a habit in what he terms the "Law of Effect." He holds that a pleasurable state of affairs in and of itself tends to establish more firmly a habit irrespective of whether added repetitions follow or not. On the other hand an

unpleasurable state of affairs tends to weaken a habit although the number of repetitions are not diminished. That is, if a child repeats his spelling lesson twenty times under agreeable conditions these twenty repetitions are more effective than if they were made under conditions of indifference or with actual distaste. He says,—

"To the situation, 'a modifiable connection being made by him between an S (situation) and an R (response) and being accompanied or followed by a satisfying state of affairs,' man responds, other things being equal, by an increase in the strength of this connection. To a connection similar, save that an *annoying* state of affairs goes with or follows it, man responds, other things being equal, by a decrease in the strength of that connection."

Again he writes,—"These tendencies for connections to grow strong by exercise (repetition) and satisfying consequences and to grow weak by disuse and annoying consequences should, if importance were the measure of the space to be allotted to topics, preëmpt at least half of this inventory." In other words, Thorndike maintains that the principle of repetition on the positive side, with disuse on the negative side, together with that of satisfaction on the positive side and dissatisfaction on the negative side constitute the two great laws of learning, habit, drill.

Not all psychologists agree with him on this point. Watson,[1] for example, insists that satisfaction as such has nothing to do with habit-formation. Given a certain number of repetitions it makes no difference to learning whether these repetitions have been attended by, or whether they result in, satisfaction or dissatisfaction. Watson, however, would not deny that satisfaction tends to lead to repetition, and dissatisfaction to avoidance. In the absence of definite experimental evidence on this point, judgment must be reserved as to the facts at issue. However, there

[1] See *Behavior, An Introduction to Comparative Psychology*, p. 257 (1914).

can be no doubt that *pleasure in an activity tends to make that activity more perfect*, either because it leads to repetition of that activity, or because in addition to this the mere pleasure itself apart from repetition is a means of establishing a habit. Since this is so, the attitude the teacher should take is to *surround all desirable school activities with pleasurable accompaniments and pleasurable consequences, and all undesirable activities with unpleasurable circumstances and results.*

It is to be remembered that there are three kinds of pleasurable outcomes that may attach themselves to an activity. The pleasure may be inherent in the exercise of the act itself, and of necessity attend its expression; it may flow from it as a consequence of the act, or it may be artificially attached to the act. For example, manual work in the shops may be a pleasure to the boy from the fact that he finds it inherently agreeable to use his hands and manipulate tools; or again he may enter upon it with zest because he believes as a result he will soon be able to go out into the world and earn an independent living; or finally he may take pleasure in his work through the consequence of an artificially attached reward, such as the commendation of his teachers, his parents, or friends. It is not always possible to make the pupil work with pleasure merely for the work's sake; it is fortunately possible in many instances to make the school work pleasurable either in its natural or artificial consequences. Pleasure of some sort must be the attendant of repetition, and the teacher cannot hope to get substantial results from drill that is accompanied by indifference or distaste.

(c) *Attention during the process of learning.*—In all human learning the mental attitude is an extremely important factor. In animal learning it is of but slight significance, because of the fact that the attitude of animals toward a task that they are being taught to perform is so unstable and fluctuating that attention can be considered of but slight value in their learning. With human beings, however, the "set of the mind" is a deter-

mining element in the learning process, and changes habit-formation from a purely objective condition to one that is largely directed and modified by subjective controls. The nature and direction of attention become one of the most important problems in human acquisition, and the value or the uselessness of drill is directly dependent on the attentive attitude of the pupil.

There are two main reasons why attention is so important during acquisition. The first of these is found in the fact that without attention repetition may at times be quite formal and external. In other words, while the pupil is "going through the motions," the repetition is purely seeming and make believe.

A good example of seeming repetition that is formal and external is sometimes found in oral drill in concert. The pupils in a class in a foreign language are frequently required to repeat in unison certain words, phrases, or sentences in order that they may get the correct pronunciation. If such a group is observed, it is generally found that some few are really leading in the exercise; many others are moving their lips, but are in reality getting little or no genuine practice. The repetition is purely formal and external. Written drill, like oral drill, may also fail because the pupil is giving no thought to what he is writing. It is a practice of doubtful expediency to require pupils in the elementary or in the secondary school to memorize a list of words or facts by writing them down time after time.

In the second place, attention during repetition is necessary in order that the learner may be aware of the object of the drill and the elements that enter into its successful accomplishment. It is extremely important that the pupil know when he has achieved what he is expected to do; otherwise there is no certainty that he will be benefited by his attainment. This matter was discussed at some length in the preceding chapter [1] and need not be further elaborated here. In this connection, however, it

[1] See p. 159.

should be said that one of the principal reasons why a knowledge of results is necessary is that the pleasure that comes with achievement is possible only when that achievement is known. In all learning of any complexity, at least, pleasurable outcomes are dependent on a knowledge of those outcomes. Attention, then, on the end to be obtained is an essential element in what Thorndike calls the Law of Effect.

Not only should the learner know what the goal of his endeavors is; he should also give attention to processes that he is following in order to reach the desired results. It is possible to stumble on right methods of practice without recognizing in any way that these are the best methods. In this case they are often dropped and wasteful and wrong methods substituted.

This essential principle in the psychology of habit-formation has often been brought out in the experimental literature on the curve of learning. For example, in an investigation recently conducted in the laboratory of experimental education at Brown University in which the problem was to study the improvement of three subjects in folding handkerchiefs according to a certain standard pattern, it was found that one of the learners hit upon an economical device used by experts in this method of folding, employed it for several trials, and at length dropped it without again returning to it during the course of the experiment. There was nothing to stamp this method immediately as the one most desirable, and it did not enter sufficiently into the attentive consciousness of the subject to influence his subsequent learning.

The following is an illustration of this principle taken from the field of high school practice:—A teacher found that several members of his class in algebra who had for some days handed in correct examples in factoring polynomials, were later unable to do examples of this type. He concluded that his pupils had either forgotten the method that they had previously employed correctly, or that in doing the earlier examples they had received assistance outside of the class. It was suggested to the teacher that he inquire more definitely into the causes of their failure. On doing this, he found

that in the case of the examples handed in correctly, the pupils had simply followed the model examples in the text in a blind fashion, not definitely understanding the processes involved. Later, when these model examples were no longer before the pupils, they had no idea of the correct procedure.

This fact has an important bearing on the value of incidental learning, as it has been termed. Some have maintained that much valuable drill is secured as a by-product. In doing one thing the learner is often practiced in doing something else that does not appear as the main part of the learning, and which, indeed, may be quite unrecognized by the learner. While it is possible that this incidental drill may have some effect, its value in any particular instance is so uncertain that it cannot be safely employed as a principle of learning.

(d) *Consistency and invariability of response.*—Long ago James in his chapter on Habit pointed out the fact that in order to break an undesirable habit it was necessary never to lapse into it, when once the reform had been undertaken. This is a matter of common experience. Reëducation is much more difficult than education. It is better that a pupil should come to a subject with no knowledge or skill regarding it than to come to it with incorrect notions and wasteful methods. Sometimes college instructors say that they do not wish their students who come from the secondary school to have had any previous training in the subjects they are to take in the higher institution. This is because the college teacher assumes that the teaching in the lower school is wrong, and he consequently blames the secondary teacher; similarly the high school teacher blames the elementary teacher, for often in his opinion, he is the only person who has the correct method. Likewise the business man sometimes says that he does not care to have the novice in his office familiar with the courses in economics as given in the college, and occasionally there is a school principal or superintendent who believes what the student learns in the normal school or in the

department of education in a university is worse than nothing, because what he learns is wrong, and he has to be set right. Probably in most instances these people are incorrect in their opinions. They are right, however, in assuming that *wrong practice is worse than no practice at all.*

An example of the difficulty of overcoming wrong practice is furnished me by a teacher of history in a city high school which receives a considerable number of pupils from a small country high school offering a two-years' course. The pupils from the small high school have been taught to study history topic by topic. The teacher in the city high school found that these pupils were able to do little more than "recite facts." A half-year was required to habituate them in methods of studying by outline and problem-questions. For this reason, they failed to make a satisfactory grade in their junior history courses, and the teacher was obliged to give them individual instruction. This doubled his work in those classes in which the country high school pupils were enrolled.

Not only should the beginnings of drill be free from the burden of correcting bad methods previously acquired, into which there is a constant tendency to lapse, but they should be guarded against falling into incorrect practices through lack of supervision over the elementary processes. Here we see the necessity of attention on the elements of learning discussed in a previous paragraph.

It should be pointed out that the effect of doing something in a wasteful or incorrect way is quite different from not doing it at all. If a pupil pronounces a word correctly ten times in the class and then outside of the class pronounces it ten times wrong, he has tended to destroy the correct habit previously acquired. If he does not pronounce the word outside of the class at all, then what he loses is due to a gradual waning of the effect of his previous practice through temporary cessation of the learning, but if he pronounces the word in the wrong way this actively interferes with the correct associations that have been set up through the class exercise. An analogy may

serve to make this fact clear. When I open up the sluiceway from the reservoir to the pond, the latter gradually fills. When I shut off the supply from the reservoir, the water in the pond slowly evaporates, but if I shut off the sluiceway and open the channel from the pond to the stream, the water soon falls. Similarly, when a habit is being formed, it becomes more and more nearly perfect through its continued exercise. When I stop exercising it, the habit slowly loses its strength. The sluiceway has been closed, and natural evaporation is taking place. However, when I exercise an opposing habit, the habit first formed begins to distintegrate. It is being drained off, because an opposing habit is drawing away its strength.

Summary of the Principal Reasons for the Failure of Drill to Accomplish Desired Results.—In the light of the foregoing discussion of the principal laws of habit-formation, we are now prepared to answer with some definiteness the problem presented at the beginning of this chapter concerning the apparent contradiction between the experiences of the classroom and the findings of educational psychology on the value of drill in perfecting skill and knowledge. In general we may say that drill is futile when it relies merely on the device of formal, external repetition to achieve results.

Pupils who do not improve in algebra, although they are made to recite the same principle over and over again, although they are constantly assigned the same type of example to solve outside of class, at their seats, or at the board, fail because they are merely repeating their work and doing nothing more. Perhaps they are practicing under compulsion, and it is a dull grind. They experience no pleasure in what they are doing, and therefore they do as little as possible; perhaps they are going through the motions with no attention to what they are doing, never noticing when they are in error, never trying to work with correct and economical methods, blundering heedlessly and carelessly along; perhaps they are practicing wrong methods as often as right ones, forgetting what they learned in the class, and un-

learning everything that they have formerly partly acquired. *The teacher must be ever on the alert to see that drill is exercised under the best possible conditions.* He must attempt to make the outcomes of the work pleasurable, and the practice as little of a grind as possible; he must strive to focus the attention of the pupil on what he is doing and how he is doing it; he must do all that he can to prevent exceptions in right methods from creeping in. If he does these things, drill is sure to bring results.

Some, who have seen in drill nothing but barren repetition, and who have found that it often is futile, have concluded that it is a mere formal activity which goes on without skilful direction, and therefore have looked upon it as something quite incidental to the real business of teaching. Such persons have hastily concluded that it makes little difference how large a drill class is, or who conducts it. Skill in teaching here is at a minimum, hence it is a matter of minor importance who directs the work. Nothing could be farther from the truth. There is just as much method to be used in drill as in the other activities of the recitation. *How to drill the pupil is just as much of a problem as how to teach him to think. Both demand the teacher's highest art.* We have seen in the preceding pages of this chapter some of the reasons why this is so, and this topic will be further developed in what is to follow.

The Principle of Excess Activity in Learning.—Thorndike in his *Educational Psychology* has pointed out an important principle of learning which he terms the law of "Multiple Response" or "Varied Reaction." He gives as an example of this the activities of a kitten that is confined alone in a small cage. "It tries to squeeze through any openings; it claws and bites at the bars or wire; it thrusts its paws out through any opening and claws at everything it reaches; it continues its efforts when it strikes anything loose and shaky; it may claw at things within the box. . . . The vigor with which it struggles is extraordinary. For eight or ten minutes it will claw and bite and squeeze in-

cessantly." These excessive waste motions are not peculiar alone to animals. In a similar way the human learner employs useless and roundabout methods in the initial stages of the formation of any habit. The pupil in the school is no exception to this universal rule. It is impossible for the teacher so to instruct him that he shall from the start use only the most direct and economical methods of procedure.

It is a condition of all learning, whether of the human or the animal type, that it be based fundamentally on a superfluity of response. That is, many things are done that in themselves accomplish no beneficial result. For example, the novice in operating the typewriter strikes the wrong key almost as often as he does the right one, he makes unnecessary movements in striking the right key, and fumbles the keyboard in a very wasteful and uncertain way. If his movements were photographed during the initial stages of his learning, they would resemble a tangled skein of yarn; but if a similar photograph were made when he has reached an expert stage, it would be found that his movements would be direct and relatively few. The snarl would have become untangled, and from what appeared to be a confused jumble, there would have emerged a definite and well-organized set of actions. If the learner is left to his own devices, he is sure to blunder along, using many useless motions time and time again, and perhaps in the end never learning how to perform the desired activity correctly. What is true of learning to operate the typewriter is equally true in learning any act of skill, or in fact in any form of learning whatsoever.

To be convinced of this fact we need only to observe the common school activities. The pupil who is trying to follow a copy in his writing lesson is doing many things that are in themselves useless and wasteful. We have but to notice the contortions and grimaces of his face, the unnecessary movements of his trunk, shoulders, and arms, the awkward and uncertain strokes of his pen, to realize that

his greatest need is to eliminate much that is random and uncertain in his attempts at writing. Similarly, if we observe a beginning class in French, we will see how the few happy hits, so to speak, in correct pronunciation are lost in scores of misses. The pupils in algebra, are doing many things, but often more are wrong than are right, and so it is with every subject in the curriculum. The beginning stages are characterized by a superfluity of physical and mental motions.

Methods of Restricting the Field of Trial and Error in Learning.—It is the problem of the teacher in guiding the pupil to master correctly some act of skill or some subject of knowledge to aid him in selecting from all his activities only those things that are valuable in perfecting him in the desired acquisition. In other words, the function of the teacher is that of judiciously restricting for the learner the field of trial and error. This may be done in several ways.

(a) *The teacher must present to the pupil an effective copy.*—In every subject there must be constantly before the pupil a specific standard of achievement. As this fact has been discussed somewhat in detail in the preceding chapter, it will be sufficient to amplify the topic here only in one particular, namely,—by considering the characteristics of an effective copy.

Obviously such *a copy must be correct.* No teacher can hope to instruct a class in a foreign language by the direct method whose pronunciation is imperfect, and whose use of the language is halting and uncertain. As bad as the grammatical method is, the teacher who has not obtained a reasonable mastery of a language has no alternative but to resort to this unpsychological method of instruction.

A young woman of good ability who had specialized in history and social science in her college course, but who had taken only a small amount of foreign language, taught during her initial year in a small high school where she was required to give instruction in various subjects, including first-year French. During her college course, she had heard much about the value of the direct method of

language teaching. Consequently, she attempted to employ this method in her French class. She confused her pupils, because of her ignorance of the spoken language, and they soon formed the idea that she did not know her subject. This not only affected her instruction, but also her discipline. Matters were becoming serious, and she was advised to change her method, and follow the grammar and exercise book. Immediately conditions improved, and by the end of the first semester, the class was doing work of a good grade, and the problem of discipline had entirely disappeared.

Not only must the copy be correct; *it must be clearly and definitely presented.* It is a common fault of teachers not to make clear enough just what they wish their pupils to do. If the teacher speaks indistinctly or so low that he cannot easily be heard, the pupils are not likely to make an effort to find out what he is saying. If he writes something for their instruction on the board, or shows them some object, or demonstrates to them a method of procedure, he must present these details in such a way that they will easily be seen.

One of the most successful teachers in the writer's acquaintance is a high school instructor in physical science who devotes considerable time each day in devising plans for making his instruction pointed and clear-cut. He seldoms teaches a lesson which he has not previously thought out with specific attention on those points which he wishes to illustrate. He is ingenious in devising illustrative materials; he always speaks incisively, and with deliberation; he uses the blackboard to make every obscure point intelligible, and he insists that his pupils be concise and clear in their speech. The demonstrations that he performs before the class are gone over in advance of the lesson to make sure that they can be seen, and that they will work out as he has planned.

Again, *a copy must be not excessively difficult to imitate.* In the manual arts, instructors seldom make the mistake of requiring pupils to construct something that is beyond their abilities. Not infrequently, however, teachers of the "academic subjects" set

tasks that the majority of the class fail to do. The novice in teaching with his college standards fresh in mind is particularly prone to this mistake.

As an illustration of the necessity of adapting standards of instruction to the capacities of the learner, the writer recalls the instance of a man of great ability and scientific attainment, who failed absolutely as a high school instructor, for the sole reason that he carried over the content and method of the graduate school of the university to the high school. His pupils learned little from him because of the fact that he could not readjust his ideas and practices to suit the high school situation.

Finally, *the copy must be one which the pupil desires to imitate.* This principle is particularly important in setting up standards of conduct. The "model pupil" is only a model when he is held in respect by his schoolmates. If he is without influence or is looked down upon by the pupils, he cannot affect beneficially the actions of his fellows. Standards of correct speech have often very little value, from the simple fact that pupils do not care whether they speak correctly or not. This is one of the reasons why it is so extremely difficult to inculcate in the average high school pupil proper habits of oral English. Unless pupils wish to speak correctly, it is practically impossible to drill them to do so.

An efficient teacher of English who has succeeded in a rather marked way in improving the oral expression of his pupils does not attempt to correct all of the errors of speech that occur during the recitation. Attention is focused on the gravest and most frequent mistakes only. No large amount of time is spent during the class period in drilling pupils on correct forms, but whenever mistakes occur the teacher attempts to make the pupil concerned ashamed of his lapses. Since this instructor possesses tact and is liked by his pupils he is able to follow this method without arousing resentment. He has succeeded in developing in the class a spirit of pride in correct speech and a distaste for the most flagrant errors.

(b) *The teacher must condition the environment of the pupil in such a manner that it will not be possible for him to go widely astray in his learning.*—The pupil if left entirely without guidance, will stumble along in a most uncert in manner. His path must in a measure be marked out for him. In the laboratory he must be provided with proper materials and apparatus, if he is to get the desired results without an excessive waste of time. Instructors often allow their laboratory equipment to deteriorate. It is constantly out of order, and will never work satisfactorily. Similarly the instructor in the manual arts must see to it that the tools and materials to be used are in proper condition, and in their proper places. In text-book subjects, corresponding rules hold.

A teacher of history who employs with his senior pupils the library method to some extent has made it succeed largely because he has systematized the procedure of finding topics in books and looking up authorities. One of his chief devices is a carefully constructed card-catalog, arranged according to a topical analysis. He has habituated his pupils in the use of this with very satisfactory results.

(c) *The teacher must encourage the pupil to think about what he is doing, and how he is doing it.*—In a preceding paragraph in the present chapter, we have discussed the fact that attention is an important condition of correct habit-formation because it emphasizes the goal of the learner's efforts, and also the elements that enter in to make the habit perfect. Further, it is valuable as a preliminary means of determining the nature of the learning to be undertaken. It is worse than futile to plunge the pupil into a drill activity at that stage of learning when thought and careful observation are required. When the processes to be exercised are not well understood, when the means of getting results are not comprehended, then repetition is likely to be wrong, and the resulting practice may be harmful. It should be an invariable rule of the teacher carefully to develop and ex-

plain to the pupil all new processes, methods, and facts on which the pupil is to be drilled, and it should further be the aim of the instructor to lead the pupil to think for himself in regard to these things.

The writer recently observed a class in algebra in which this fault was brought out. The teacher was drilling the pupils on fundamental processes in fractions. For the most part the exercise was effective, but it failed entirely at one point because the instructor failed to recognize that the slow and halting responses of the class were due to the fact that the pupils did not understand how to simplify certain expressions. The teacher, however, continued to insist on sheer repetition when explanation and illustration were required.

In the discussion of the question of helping the pupil to limit the field of trial and error through giving him definite instruction as to what to do in specific instances, we are in danger of falling into one of two extremes; we are likely either to show and explain too much or too little. If we explain too much, we are in danger of doing a large part of the work for him, and consequently what he does is in no real sense of the word his own, and since it is not his own, there is no genuine learning, only seeming learning. If we explain and show too little then the pupil stumbles along and often gets nowhere.[1]

This difficulty becomes at times a pressing one in the teaching of laboratory science. We cannot go into detailed explanations of just what the pupil should do in every phase of the experiment that he is to perform. He will get little real benefit out of a course conducted in this manner, if we wish to inculcate in him the fundamental ideals of scientific methods and procedure, or if we wish to make him resourceful in the further conduct of experimental work. On the other hand, if we do not give him a reasonable amount of instruction and assistance, he will find the difficulties so great that he soon becomes discouraged in regard to the work. A similar problem presents

[1] See Chapter XI., p. 240.

itself in the question of supervised study in the high school. The purpose of this is to direct the pupils in the methods that they should follow in getting their lessons, and to help them when they meet difficulties that are too great for them to overcome with a reasonable expenditure of time and effort. Here the rule should be to help pupils to the extent of showing them how to solve genuine difficulties, but not to the extent of doing the work for them. This matter will be discussed in greater detail in Chapter XVII.

There is a great temptation on the part of teachers to do too much of the work of the pupil for him. In general the work goes so much more smoothly under these conditions that it gives the impression of being done effectively, because the halting, stumbling, and uncertainty of the pupil are practically eliminated. Further, it is so much easier in the initial stages of learning to do something for the learner than to show him how to do it for himself, that most teachers and parents are not willing to take the time or to employ the patience necessary to set the child on the right road, where he can gradually learn to accomplish by his own efforts those things that he should master for himself. It is one of the great merits of the Montessori system, that children are shown how to acquire simple habits through the teacher's directing their activities in such a way as to stimulate their initiative.

CHAPTER X

THE METHODS OF THE CLASS PERIOD.—ECONOMICAL METHODS OF DRILL

Aspects of Drill that Further or Hinder Learning.—In Chapter VII. various aspects of classroom waste were discussed. Here it was pointed out that the pupil may have wasteful methods of learning, and the instructor wasteful methods of teaching, among which roundabout and unpsychological methods of drill play an important part. Detailed consideration of this topic was left, however, for elaboration at a later time. It is the purpose of the present chapter to consider this important aspect of the problem of economy in the lesson period from the standpoint of the principles underlying the psychology of habit-formation. Some of these principles have been discussed in the preceding chapter; others will be mentioned here, and their application to school procedure pointed out. As we progress in the discussion, we shall see that uneconomical methods of drill constitute one of the chief elements in the wastes that arise from school practices. For example, it is evident from what has already been said in Chapter IX., that drill which is a merely formal, and not a genuine mental, activity, that drill that is monotonous and irksome, that drill that is devoid of attention directed toward the proper aspects of the subject to be learned, that drill which is fluctuating and haphazard, that drill that is not properly supervised and directed, is likely to accomplish little. Under such unfavorable conditions small improvement is to be expected in ordinary school practice. Other conditions that affect learning are the following:—

(a) *The elements that are emphasized in drill must be associated*

in their proper order.—Thorndike has emphasized the fact in his discussion of habit-formation that it is extremely important that the sequence of elements in an act of physical or mental skill should be the most direct, natural, and economical. In the first place a habit should be formed in the direction in which it is to be used. If you wish to say the alphabet from a to z, you must learn it in that direction. Try to repeat the alphabet backwards, if you have had no practice, and note the result. A direct application of this principle to the ordinary procedure of the high school is found in the learning of vocabularies of a foreign language. If the aim is to translate into English, then the order should be from the foreign word to its English equivalent; if the aim is to translate from English into the foreign language, then the reverse procedure is the more economical. It is a matter of common experience that pupils who can translate into English well, may do their work in composition poorly. One reason for this is to be found in the fact that a habit formed in one direction is not necessarily formed in the opposite.

It should further be remembered that a habit that is to be used in many different situations should not be drilled in one specific situation only. Thorndike states this principle as follows,—"Form a habit in the way in which it is to be used." For example, it is not wise to drill upon tables in the fundamental operations in arithmetic. We should drill on the important number combinations as they arise in ordinary school practice, without particular reference to any formal arrangement. We use these combinations in no particular sequence in ordinary arithmetical operations; if we learn them in a definite order, then as a rule we recall them in the order learned, and this may often prove an extremely wasteful method. The child that is given the number combination 3 x 7 should be able instantly to respond 21; but if he is a slave to a table, he may be obliged to begin with 3 x 1, and go through the entire list until he reaches the proper combination.

The most obvious application of this principle in the teaching of secondary school subjects is found in the languages. If the pupil has learned a language by the strictly logical and grammatical method, he is often obliged to go through his paradigms, before he can make a proper use of his forms. The procedure is then as follows:—The pupil is asked by the teacher to give the Latin equivalent of "they love." He begins by identifying the form as third person plural, present tense, indicative mood of the verb *amare*. When he has succeeded in properly placing the form, then he starts with the first person indicative, *amo*, and continues,—*amas*, *amat*, *amamus*, *amatis*, *amant*. The waste here is clearly apparent. No one who has learned a language in this way alone can have fluency in its use. It will always be something of a puzzle to him. The principle applies not merely to the teaching of a foreign language, but obviously to some of the more grammatical methods of English instruction. The lack of economy in such a procedure constitutes an important argument for teaching a language largely by the so-called direct method, referred to in an earlier part of our discussions. It is one of the chief advantages of the direct method that words, idioms, and expressions in general are learned in connection with their use, and the formal aspects of the language are brought in incidentally and not as the chief means of acquiring skill in the language. It is a safe rule for the teacher of a language to follow which insists that the grammatical method, if used, shall be supplemented by drill in the language as it is actually spoken or written.

It is also to be kept in mind that there is a proper sequence in which the elements that enter into any habit should be taken up. There is a best possible order of learning. For example, in teaching the German language, is it desirable to introduce the pupil to writing the *Schrift* from the start, or can this be advantageously postponed until a later time? In studying a foreign language, should correct habits of grammatical usage and analysis be firmly established before translation is begun? In acquiring the fundamental principles in algebra, should one process be fully mastered in all of its details, before another is

undertaken? In the answering of these and similar questions, no dogmatic reply should be given. However, certain guiding principles may be beneficially applied by the teacher in solving these problems.

In the first place, *the more interesting aspects of the subject should be taken up as soon as possible.* This means, for example, that the pupil should soon begin to use a language in reading and in speaking, and should not have his interest killed, by a long and tedious drill on elements that he cannot use. This also means that in such subjects as the manual arts actual construction should not be delayed by many formal exercises. These facts have already been touched on in our discussions in regard to the function of interest in learning.

In the second place, *the less difficult elements in the learning should be given before the introduction of the more difficult.* For example, it is a doubtful practice to introduce the study of a foreign language by long and intricate discussions of phonetics, and drills on the same. In Latin the use of conditional sentences, seldom found in the literature read during the earlier years of the course, should not be taught during the first year of study, as is at present frequently the case. In algebra the more complicated methods of factoring should be postponed until relatively late; in stenography the simple principles should be mastered without too much regard for method or formal order, and exceptions that are difficult may reasonably be brought in long after the more simple rules have been mastered; in English composition some of the refinements of diction may be omitted temporarily and the attention devoted to the more fundamental and more easily comprehended errors. The reasons why teachers and writers of texts have so often violated this rule of common sense are two. As has been said previously, they have set up ideals of completeness and logical sequence that may be quite justifiable from the point of view of the subject, but are entirely at variance not only with the findings of psychology in regard

to the mind of the learner, but also with the observations of all who have given any thought to the nature of the child and the youth.

In the third place, *difficulties should not be introduced until fundamentals have been so mastered that the addition of new processes will not interfere with the establishment of the old, and will not in turn be interfered with by the old still in process of formation.* For example, it is clearly not desirable to trouble the pupil about rules of scansion in Latin verse, when he has not mastered vocabularies, forms and idioms sufficiently well to translate with fair ease; it would be folly to compel the learner to solve problems in simple equations before he had mastered the mechanics of these operations; it would be useless to expect the novice to take general dictation in stenography before he had a considerable familiarity with outlines and logograms and practice in their use.

Sometimes imposing a difficult habit on the learner before more simple habits have been fully learned, checks all further progress. This was clearly brought to the mind of the writer in an experiment conducted under the direction of the seminary of experimental education at Brown University. This experiment had as its object the determination of the learning curve of a subject who was learning to operate the linotype, a power machine used by type-setters and compositors. The linotype resembles in some particulars the typewriter, but it is more complicated in its operation, and differs from the typewriter in several essentials. One of the most important of these is the necessity of "justifying the line" in composition on the linotype. "Justification" relates to the fact that the end of every line of printed matter must be in strict alignment with all the other lines on the page, or in the column. In order that each line shall be the proper length, the compositor must make an accurate and rapid judgment as he nears the end of the line as to how it is coming out, and then operate his machine accordingly. In the case of the learner whose curve of progress was being studied the attempt to justify the line was begun before some of the more simple habits of manipulation

had been at all perfected, and as a result no further progress was made. After weeks of trial the learner, completely discouraged, gave up further attempts at mastering the technique of the machine.

In the fourth place, *those habits, the acquisition of which in the proper order is essential to other habits later to be formed, must be early introduced* It is obvious that some mastery of vocabularies must come before facility in translation is acquired, that a familiarity with some of the more important facts in history is necessary before there can be any skill in historical reasoning, that the knowledge of certain chemical formulae and drill in their use is imperative if the results of an experiment in the laboratory or a demonstration in the classroom are to be understood. This principle of learning cannot be violated, and satisfactory results follow. Unfortunately at times these habits that are fundamental to the formation of others may be difficult and uninteresting, and hence a conflict between this principle and those that have preceded may arise. However, the teacher must always consider in such cases relative values, and act not formally or blindly, but after careful consideration.

In the fifth place, *any habit that must be dealt with in the initial stages of learning will be formed improperly if attention is not given to it from the beginning.* For example, if the teacher does not insist on the correct pronunciation of words in French, German, Spanish, and Latin from the very first, improper pronunciation will soon become a habit, and it will be exceedingly difficult later to break it and form a correct habit in its place; if logical sequences in demonstrations in geometry are not initiated in the first few lessons, they are likely never to be, and the habit of loose thinking in this subject will be established; if the proper position of the hands in learning to use the typewriter is not drilled on from the beginning, incorrect methods will be learned, and these cannot be broken later without enormous difficulty. On the other hand, it is not necessary to drill pupils continually

in correct oral speech in order that their written discourse may be reasonably free from errors.

(b) *Unnecessary elements should not be introduced in a habit, even with the intention of ultimately eliminating them.*—This is another important principle in the economy of learning insisted upon by Thorndike. The child who is to learn quickly to multiply and divide fractions, must gain facility through methods of rapid calculation such as cancellation, and should not first be taught a more cumbersome and roundabout method, such as reducing all the fractions to a common denominator, and then multiplying or dividing the numerators. Neither should he be given elaborate practice in visualizing fractional relationships in performing simple exercises in fractions, for the very apparent reason that the process of visualization is a cumbersome and awkward method of manipulation, and one that must soon be dropped for another method of procedure, particularly when fractions of any complexity are to be dealt with. The principle of the elimination of unnecessary elements in habit-formation has several aspects. One maxim reads:—"*Do not form a habit that must be broken later*," an example of which is to be found in the school practice in regard to fractions, just discussed. Another maxim reads:—"*Do not introduce an element into the habit that is unnecessary in its exercise.*"

The best illustration of waste in the classroom due to the violation of this second maxim, as far as instruction in the high school is concerned, is again found in methods of language teaching. If the aim of instruction in a foreign language is ability to read and understand it, then the translation method as ordinarily employed is clearly uneconomical. In translation an association is formed between the foreign word, its English equivalent, and the meaning of the English word. What is required in order that a language may be understood is to associate the foreign word with the meaning. The additional association of the English word is unnecessary and wasteful. The person who can use a language well is able to "think in the language,"

as the phrase goes. Translation is uneconomical and often distorts the meaning of the language. In the writer's own case, he finds a marked difference in his use of German and of French. French he learned in the schools, and he is always obliged to translate into English in order to get the meaning, while German he learned chiefly in Germany, and through the direct connection between words and their ideas. The difference in ability to use these two languages is marked, and cannot all be traced to the fact that greater practice was had in one than in the other. This is another argument for the use of the direct method of teaching language, if the aim of such teaching is primarily facility in the use of the language. For those that insist, however, that the chief value in language instruction is not to be found in acquiring the ability to speak, write, and read the language, but in the formal training that is incidental to the learning of the language, and in the added facility that is gained in understanding and using English, then these arguments in favor of the direct method of instruction will have little force, for by such persons it will be insisted that grammar must be taught, because grammar trains the pupil to think and discriminate, and that translation must be insisted on in order that the pupil may be trained in the use of English as well as in the use of the foreign language that he is studying.

The maxim which enjoins the learner from forming a habit that must later be broken finds illustrations from the teaching of many subjects in the secondary school. Some examples of its violation are the following:—accustoming the pupil to study a history lesson from an outline prepared in advance by the teacher; drilling the pupil on outlines in stenography which cannot be economically employed when a stage of proficiency has been reached; habituating the pupil in Latin to look for the subject and predicate in a sentence, rather than requiring the pupil to read the sentence in the order in which it is written; insisting that the pupil shall write his themes with strict observance of the formal types of discourse, such as narration, description, exposition, and argumentation, rather than accustoming him to tell what is in his mind in the most direct and practical way, bringing in these various forms of discourse as they naturally arise; and so on through a long list of school practices. The teacher should make it an unvarying rule to teach every subject in the way in which

it is ultimately to be used, unless there is a very definite and justifiable reason for adopting an opposite procedure.

(c) *Habits must be formed in definite situations, they cannot be acquired in general.*—It has long been a recognized principle in the psychology of learning that habits are specific in their nature. For example, ability to spell orally does not necessarily imply an equal ability to spell when the word is written or *vice versa*. Further, ability to spell correctly when one uses a pen or pencil does not mean that one will have an equal ability to spell when one uses the typewriter. In order to spell correctly under a given set of conditions, the learner must have had practice in spelling under these conditions.

This fact was vividly impressed on the author when he first began to use the typewriter. He found that his spelling suffered to a marked degree. Words that he had long been familiar with were written in most unusual ways. This fact was also called to his attention in attempting to determine the learning curve of the novice who was striving to master the linotype. The subject of the experiment had been employed as a proof-reader in a newspaper office, and was generally considered a capable person. He had a good knowledge of spelling and punctuation. When he began to compose on the linotype, however, mistakes in spelling and punctuation were numerous. Evidently he did not possess an ability to spell and punctuate in general, although he did possess that ability when he read proof.

As a further illustration of the fact that habits are formed in definite situations, and that similar habits must be formed over again in new situations, we need only to remember that ability to write English is often found in the English classes in school, and not in classes in history, science, and foreign language. The teacher who expects his pupils to write well in the subject in which he gives instruction must accustom them to proper writing in connection with that subject. He cannot be sure that the habits formed in the classes in English will carry over to work in other subjects.

Teachers often make the mistake of supposing that activities that are called by the same name are essentially the same in the

mind of the learner. To add means quite a different thing when it is the addition of numbers of one digit than when it is the addition of numbers of two or more; using grammatical English in a written exercise is different from using it when speaking; acquiring the problem attitude in algebra is a different matter from acquiring it in geometry; using constructive imagination in planning a design in manual training is not the same thing as using it in writing a story, or in designing scenery for a play. There is much waste in matters of drill because of the fact that these fundamental differences are not definitely understood by the teacher, and as a result it is often assumed that the pupil who has acquired facility in one kind of school practice has without further training a similar ability in a different kind of practice. The pupil often fails because he does not have the drill necessary to do the new task, which is erroneously assumed to be identical with the old. It is as uneconomical not to give drill when it is needed, as to require it when it is superfluous.

The fact that habits are specific and that when formed in one situation they do not necessarily operate in others, raises the question of formal training, and its value as a main objective in teaching. This is a matter of no little importance to the secondary school teacher, who must often ask himself questions like the following:—"Is my aim in teaching geometry to develop skill in logical reasoning?" "Shall I strive in this course in English to inculcate general habits of order and neatness?" "Can I hope in my laboratory classes to habituate the pupils in the methods of critical thought?" "May I expect that my instruction in Latin will provide the learner with a general linguistic sense, which will be of value to him in all his language courses?"

While no final answer can be given to such questions, it may be said that the advocates of special subjects of instruction in the high school have as a rule made extravagant and undemonstrated claims as to the general disciplinary values of these sub-

jects. The teacher should attempt to find in any subject that he teaches as many values as possible that inhere in the subject itself. In other words, he should teach the subject primarily for its content and practical values, and not for its value as a general training, in reasoning, discrimination, imagination, or what not. However, it is proper and desirable at times to emphasize these general values, and this can best be done by making the pupil conscious of them and eager to secure them. For example, a pupil will be much more likely to carry over from his course in physics the conception of the scientific method to other fields of life and apply it in these new fields, if he understands what this method really signifies and possesses the desire to employ it whenever it is possible. Likewise rigor in reasoning that is developed in mathematics may or may not be utilized in other school subjects. The pupil who finds such reasoning helpful, and who has an idea of its general utility, will be aided in his methods of reasoning in whatever field he may find the need for such reasoning. It is a function of the teacher to explain general methods and to create ideals of work. The question of disciplinary values will be further discussed in Chapters XIII and XVI.[1]

(d) *There are definite limits to possible and desired proficiency in any given habit or set of habits.*—It is one of the most obvious facts in the psychology of learning that there are certain limits of improvability. Some of these limits are set by the desire and ability of the learner, others are in a measure determined by the difficulty of the subject-matter, and still others are conditioned by practical considerations. To attempt to drill the pupil beyond these possible and desirable limits of improvability is clearly a waste. It is perfectly obvious that if a pupil has no capacity for learning a foreign language, or is so little interested that he makes no honest effort, drill can accomplish nothing valuable for him. One of the most discouraging duties of many

[1] See pp. 275, 276, 338, 339.

high school teachers is that of conducting a class of repeaters. Going over the subject a second time is as a rule as great a failure as was the initial attempt. School programs should be sufficiently flexible to permit a pupil who has failed in one subject to take something in its place for which he is likely to have greater ability and interest.

This problem is a fairly simple one as far as elective subjects are concerned. It becomes more difficult when there are specific requirements. For example, if a pupil has definitely failed in his first year of Latin, and wishes to enter a college that requires it, then he must take the subject over again if he is ultimately to succeed; if his aim is to prepare for a technical school, then he must finally pass in his mathematics, and so on. In cases where such pupils show general ability, and have a desire to carry out their plans, repetition may at length produce results. If they have no ability in general and little desire, this is fair evidence that they are not fitted for the career that they have selected, and it will be much more economical for them and for the school if they select another career in which the chances of success seem greater.

There are some subjects, of which English is the most conspicuous example, with which all secondary pupils must have a reasonable acquaintance whatever their careers in life are to be. If pupils fail in such a subject, are we not forced to drill them, and drill them again, never mind how slight their capacities, or how weak their interests? The answer to this question is not an easy one, yet it is perfectly obvious if the learner has reached his limit of improvement, that it is of no use to attempt to go further with him, never mind how desirable greater proficiency may be. If we are certain that a pupil can make no further advance in English, but can do something in the manual arts, then no abstract notion of what an education ought to be should prevent us from allowing the pupil to do what he can do, and to give up what he cannot accomplish. However, we must be sure of our ground in the first place before taking so radical a step. It may often happen that a pupil who fails in one phase of a subject so complex as English may find other aspects of it in which he may do better.

There are certain subjects so difficult for the high school pupil that high degrees of proficiency should not be expected. The drill should be conducted in connection with the more simple parts of the subject, and the more difficult materials reserved until a later date. This is true in many instances of the more advanced work in algebra and in science. The rule here should be to require that which can reasonably be done, to be done well, but not to expect that the more difficult aspects of the subject be mastered. Of course, this mastery may be possible with an excessive amount of drill, but this additional drill would cause a relative waste when we take into account the importance of other subjects to which adequate time for mastery should be given.

It is not an uncommon thing to find a high school teacher, particularly the young teacher fresh from college, demanding an over-refinement of subject-matter not warranted under the conditions. I remember in particular a class in French in which the teacher spent a large amount of time in drilling the pupils on certain difficulties in idioms that were hard to master and were not often encountered. In another class a teacher of English was insisting on the mastery of ultra fine distinctions in the use of words which the pupils could comprehend only with difficulty, and for which they would probably never have any use in after life. In a third class a teacher of history was attempting to familiarize his pupils with the intricacies of the Athenian constitution, and making relatively little progress. Clearly his labor was not worth the pains. The teacher of every high school subject should attempt to determine with as great accuracy as possible the parts of the subject that can be mastered by the pupil of fair ability and reasonable industry in the amount of time that is at the learner's disposal, and from such pupils the teacher should not expect more. Of course it is not only possible, but generally desirable to require of the superior pupil a greater attainment, and to set relatively low standards for the dull and backward. To this extent, at least, should the teacher allow for individual differences.

There are many subjects in the curriculum in which we should not expect high proficiency, because such proficiency is not particularly important. It might be possible to make all pupils expert penmen, but would it be worth the while to drill them to the "saturation point of efficiency" in a skilful act of this nature? It would be of greater service to most persons if they were given some practice in the use of the typewriter. In many high school subjects the amount of proficiency required can be determined not by the subject as such, or by any academic conceptions of its logical development. The amount of skill that should be expected and the amount of consequent practice that should be demanded must be fixed by the practical objectives or aims which are the justification for teaching the subject.

It is important, for example, that pupils who have a high school education should spell with reasonable accuracy, and for this reason drill in spelling should not end with the elementary school. However, it is not desirable that this drill should be conducted to the point of turning out "champion spellers." What we desire is that high school graduates should spell the words that they use in their written exercises correctly. We have little interest in the question as to whether they can spell words which they will never use in their daily work.

Often the amount of proficiency that is to be demanded in a subject is determined by whether it is taught as a subject of general knowledge and skill, or as a semi-vocational, or a vocational subject. Clearly a higher degree of skill is to be demanded in stenography, if the course is taken as a purely commercial subject, than in algebra that is pursued for quite different reasons. If the pupil in algebra has mastered some of the more elementary processes, so that he can use them with reasonable rapidity and accuracy, and has acquired a fair conception of the nature of the subject, he has perhaps followed it as far as desirable in the majority of instances. If the pupil in stenography is fitting himself to enter an office on graduation from the high school, then clearly he must have sufficient proficiency to take ordinary business dictation.

There are some subjects of secondary instruction that should be

carried to a considerable degree of proficiency for the simple reason that if this proficiency is not attained, all which has gone before is of little value. It is probably true that most pupils in the high school would get vastly more out of a foreign language if they would pursue it until they could use it, either to speak and write it or to read it. Such proficiency cannot be acquired, however, without long and intensive practice. For this reason it would be much better for a pupil to take one foreign language for four years (if possible in a junior and senior high school course for six) than to take two or three languages for shorter periods. It seems a great pity that most pupils who take foreign languages in our high schools, and indeed many who continue them as college students, get no real practical ability in their use. The alleged disciplinary and cultural values that are supposed to attach themselves to the study of these subjects are so uncertain and mythical, that they cannot justify instruction in them for these ends alone.

(e) *Drill to be economical must be individual in its character.*— One of the greatest wastes in drill exercises arises from a lack of the recognition of this principle. Pupils who are drilled *en masse* are often given practice when they have no need of it, and on the other hand are many times not afforded the drill which is essential to their progress. This is one of the reasons that make drill as a classroom exercise so difficult, and often so worthless. We find a violation of this principle wherever we turn. If we adopted and carried out the maxim,—"*Drill all pupils in terms of their abilities and according to their needs*," we should inaugurate in our schools of every grade something little short of an educational revolution, but nowhere in our whole system of instruction should we find it bearing more beneficial fruits than in the field of high school education; and nowhere in the field of high school subjects should we find more far-reaching consequences than in that of the teaching of English expression.

Pupils enter the high school with greatly varying abilities in

their use of written and spoken English. A part of this difference in ability is due to the fact that they have different capacities, but in a great measure these differences are caused by the training that they have received in the home. This is particularly true of spoken English. Those children that come from homes of culture know how to speak correctly because they have been brought up in an environment where correct speech is the fashion. It is a waste of time to drill these pupils on certain forms of expression that they have already mastered. On the other hand, many high school children have been surrounded all of their lives by persons who could not speak English with any degree of accuracy. They have not infrequently been reared in illiterate families. They need constant instruction in the correct forms of speech, and unless they receive such instruction they will continue in all probability to use poor English all of their lives, no matter what their attainments in general may be.

It is obvious that the pupils who need intensive drill in spoken English cannot be given this drill in the ordinary class period. In the first place, the time is so limited that but a small amount of practice is possible, an amount that would not be of much value on the whole. In the second place, the time taken to drill these individual pupils, if it were taken during the class period, would deprive other pupils of the attention that should be given them, and hence such drill could not be justified. If drill is to be given it should be provided for outside of the regular recitation.

One of the chief difficulties that confront the teacher of oral English expression is found in the fact that outside of the schoolroom the pupil who has incorrect habits of speech is falling back into wrong usage in conversation with his playmates and elders. As was pointed out in Chapter IX., consistency of response is a prime essential of correct habit-formation. The learner who is constantly lapsing into wrong usage can hope to make but little progress in the direction of correct expression. Thus it is that the task of the teacher who aims to correct the oral expression of those pupils whose environment outside of the school is illiterate, is well-nigh impossible. He cannot ac-

complish much more than to correct a few of the grosser errors. On the whole, the best that can be done, as we have already said, is to inspire in the minds of his class the desire to speak correctly and to give to his class some standards by which correct speech can be measured, and then leave it to individuals to correct their own errors and to practice in right usage until it becomes for them second nature.

The following incident illustrates the potency of desire in correct habit-formation. An English woman who came to this country as a domestic, with rare exceptions spoke good English, only occasionally when excited, dropping her H's. Her employer was curious to find out the reason for this. "Mary," he said, "why is it that you so seldom drop your H's; the people you lived with in England do, do they not?" "They do, sir," was the reply, "but in my case when I was a girl in school the teacher impressed me with the fact that it was a fine thing to speak good English. She made me wish to talk properly, and after that I always corrected myself when I made a mistake. I taught myself to speak well."

The fact that drill should be largely an individual matter suggests the desirability of having drill groups that are distinct from the ordinary recitation groups. To these drill groups should be sent pupils who are below the standard in proficiency in various school subjects. For example, if a high school pupil is found by his teacher to be deficient in spelling, he should be placed in a drill section that is devoted to this subject, and he should be made to practice on the words that he has not mastered. Similarly, if he is behind the group in his knowledge of essential facts in history, if he lacks the required facility in translation in a foreign language, if he blunders along in the fundamental processes of algebra, he should be given the drill that will make it possible for him to continue the subject with profit to himself and the class. No pupil can do good work who has not mastered the essential elements in the work that he has already taken up. It is impossible to do justice to a class as a whole when some are ready to advance

rapidly and when others are incapable of further progress because they have not done well the work that has gone before.

Drill groups should be formed for every subject in the high school curriculum. These groups should be supervised by teachers of experience, who should work with the group as a whole as far as they have common difficulties, and with individuals as far as the difficulties are peculiar. For example, if a pupil fails to spell correctly a certain definite list of words, he should be given practice on this list and not on a list including words that he already knows how to spell. It is a clear waste of time to drill the learner on something that does not need drill. This fact leads to a further important principle relating to economical methods of drill, namely,—that in order to attend to the individual needs of pupils careful consideration must be given to the exact nature of the pupil's difficulties. This means, as we have already seen in an earlier part of our discussion,[1] that the teacher must have some method of determining the nature and direction of the pupil's errors.

A lack of consideration of the needs of the individual in this connection results often in *drilling the few at the expense of the many*, the most serious source of waste in most classroom exercises. Likewise, individual oral drill ignores the needs of the group and centers the entire activity of the recitation period temporarily around one pupil. In Chapter VIII. the fact was emphasized that a written test for knowledge is more economical than an oral test. Similarly, a written drill exercise is more economical than an oral drill exercise. As a rule, it is indefensible to drill a single pupil for any length of time when the rest of the class are practically inactive. In the ordinary "recitation hearing" which is the bane of so much of our instruction in the high school, this is not an infrequent practice in some form or other. A pupil is called upon to recite. He makes some error and is corrected perhaps several times before his

[1] See Chapter VIII., pp. 153, 154.

performance is considered satisfactory by the teacher. During this interval, the rest of the class are getting nothing out of the recitation. If this process is continued with each member of the class, we find that the recitation is reduced in efficiency to such an extent that not ten per cent. of what could be done is accomplished.

One of the most striking instances of waste from this source that has come to the writer's attention was that of a class in English conducted by a teacher of experience, who stated that his chief aim in the course was to drill the pupils in correct and distinct enunciation. To this end, he compelled every pupil to repeat his statements until they were in a satisfactory form. The particular class observed was reading a play of Shakespeare, but the insistence of the teacher on the correct expression of his pupils resulted in a total lack of consideration of the play itself, in return for which each member of the class was given one and one-half minutes of drill during the entire period, and obtained little else worth while from the recitation.

There are abundant examples of the opposite practice, however. Indeed, teachers at times go to the extreme of ignoring the most common errors of speech. A middle course is desirable. One teacher of English makes it a rule to require those pupils who habitually use such expressions as done for did, set for sit, don't for doesn't, and them for those, to remain after school and practice on the correct forms. During the class exercise the most obvious violations of proper usage are pointed out, but the pupils making the errors are given drill individually or in small groups, and not at the expense of the class as a whole.

Formal oral drill is most commonly found in pronunciation exercises in courses in foreign language and in the so-called oral composition in English. In a foreign language, it seems necessary that the pupil should be able to acquire a reasonably correct pronunciation. It is an almost hopeless task to do this, however, through individual drill in the classroom. For this reason oral drill in concert is often resorted to. Though this

method of oral drill is more economical than individual oral drill, it has certain obvious defects, as has been pointed out in Chapter IX. As a rule in concert drills, there are a few who are actively engaged in the exercise, while the remainder lag behind and follow in a perfunctory way. Indeed, some merely make their lips move, without actually using their vocal organs, and the practice that they obtain from such an exercise is of no value. To obtain any genuine drill from an exercise in pronunciation the attention of the learner must be focused on the exercise, and he must himself have in mind the words and express them. Passive imitation is here of little avail. Again in concert drills the teacher has no opportunity to discover individual errors and to correct them.

The best method of drilling in pronunciation in a foreign language is by the use of the phonograph. In the first place, the records are made by persons who have absolutely accurate and distinct speech. Again, the learner can repeat any part of the record as many times as he desires, and can constantly compare his efforts with the record. Further, he can do this by himself, and he is not so likely to be disturbed, as if he were practicing before his classmates. In the well-equipped school there should be several small rooms in which such phonographs can be placed, and pupils should be assigned a certain number of minutes each day in which to practice correct pronunciation. This should be considered as necessary a part of the course, as are laboratory exercises considered a necessary part of a course in physics or chemistry.

In recent years we have heard a great deal concerning the desirability of oral composition in courses in English. It is urged, and with a good degree of justice, that the average individual writes little, though he speaks a great deal, and that it is therefore more important to train the pupil in oral expression than in written expression. Some teachers have devoted a considerable part of the total time allotted to class work to formal oral exercises. Pupils are assigned topics and give an

oral presentation of these topics in the class. Doubtless this sort of work is of value if it can be conducted properly. It must be remembered, however, that each pupil can get but a small amount of practice in such exercises, and further that the class as a whole may get practically no benefit from the exercise.

Let us take an example in an extreme form of the practice in oral expression where the general waste is enormous. The class under consideration is one in English numbering twenty-seven members. The teacher devotes one hour a week to drill in declamation. Each pupil is allowed five minutes for the exercise. Consequently in a forty-five minute period a pupil gets the opportunity to declaim before the class once in three weeks, and in the course of the year approximately twelve times, possibly thirteen. This gives him an hour's practice. This amount of practice is cut down, however, by the fact that during the course of the exercise in declamation, time is taken for criticism and correction of errors, so that on the average not more than five pupils declaim during a single period, and this reduces the total amount of drill received by each pupil to less than forty minutes during the year, an amount so small that little improvement can be expected under such conditions. On the other hand, the class as a whole has been deprived of nearly thirty hours of instruction, and has received little benefit from listening to the others declaim. The only benefit that the class has received is from such criticisms of the various declamations as are important for the class to consider. Consequently, while in the course of the year, the class should have received during this period approximately thirty hours of instruction, it has under the most favorable conditions received not more than one-third of that amount, probably even less in most instances.

There are two conditions under which formal oral compositions are allowable as class exercises. One of these is when the content of the composition is something which is of value to the class to know, and which the class as a whole is required to utilize in its work; and the second is when the criticisms that are brought out in regard to the presentation of individual

pupils are criticisms of general value and are actively participated in by the class.

An illustration of these conditions in force in actual school practice will make the underlying principles more definite. The class under consideration is composed of twenty-three members in the senior year in the high school. Although it is a course in English the teacher chooses the topics to be presented mainly from the field of other school subjects. Pupils according to their interests, knowledge, and abilities, are given topics relating to current events, community happenings, important scientific topics of immediate interest, and the like. It is the aim of the instructor to allow no topic to be presented that is not of general educational value, and so to supervise the work of the pupils that these topics will be presented in a clear and comprehensible form. Further than this, the pupils are required to take notes and hand in later a written statement of the important facts presented. They are also expected to consider the form of the presentation and to criticise it intelligently. In this way, each member of the class is kept mentally active during the entire period, and the attention is directed toward something that is worth while. Thus, the waste of individual drill is reduced to a minimum. Such work as this can easily be done in various subjects of the high school curriculum. Indeed, oral and written expression should be cultivated principally in connection with those courses in which the practical need for such expression arises, and should not be left merely as formal exercises to be conducted by the teacher of English. In the coöperative class, spoken of at various times in the course of our discussions, there is a splendid opportunity for training in oral expression. Under such conditions there is a minimum of waste, and a maximum of general benefit.

Maxims of Economical Drill.—In the discussions of the present and of the preceding chapter we have considered the chief laws of correct habit-formation, and the main sources of waste in drill. The facts and principles here stated and considered lie at the basis of the economy and technique of learning and of teaching. The more important of these by way of final

summary and emphasis may be stated in the form of maxims of effective drill. They read as follows:—

(a) *No learning can take place without practice, but mere practice is not sufficient.*—The practice must be actual, not purely objective and formal; it must be conducted in such a way that the learner knows the object of his achievement, desires to attain this object, and knows when the object has been attained; the object must be attainable when effort is reasonably vigorous and sustained; the process by which the object is attained should be made as free from grind as possible; the learner should know sufficiently the details of the process to recognize when he is going right and when he is going wrong; in other words blind trial and error should be reduced to a minimum, or stated in another way, practice must be the right practice to produce results.

(b) *The practice, if it is right practice, must be uniform and constant.*—There can be no lapses into old and wrong methods. In those school subjects in which the practice outside of the classroom tends to differ from that within, drill is often futile, always unsatisfactory.

(c) *Habits should be formed in the way in which they are to be used.*—They should be formed both in the right direction and in the right connections. The teacher of language especially needs to consider these facts and to apply them.

(d) *Superfluous habits should never be initiated if they can possibly be avoided, and if initiated should be eliminated as soon as possible.*—Roundabout methods of procedure may at times be used in order to show the pupil the reason for a certain process, but such methods should never be practiced. The most economical and direct means of getting the desired result should always be applied. This principle is of particular importance for the teachers of language and of mathematics.

(e) *Habits should be formed in the psychological rather than in a logical order.*—As far as it is possible, the learner should

begin with those things that are most simple, easy, and interesting for him. The more complex and difficult elements should be postponed until the more simple are mastered. For this reason the formal, grammatical, and logical methods of teaching language are often a failure.

(f) *In the early stages of habit-formation, progress should be relatively deliberate.*—Haste makes waste. No learner can advance to the more difficult stages of acquisition, when he has not mastered the initial stages.

(g) *Habits formed in one kind of activity do not necessarily carry over to another kind of activity, even when the similarity between the two activities is pronounced.*—For this reason the teacher who wishes that a habit be set up in some particular field must see to it that the habit is actually functioning in this field, and not assume that it does so function because a habit called by the same name has been acquired in another field. For this reason, too, the teacher should aim to practice the habit in the field in which it is to be used.

(h) *Not all habits should be practiced until expert skill is reached.*—In most subjects in the curriculum a reasonable knowledge and a partial skill are all that should be desired or can be achieved without undue expenditure of time and of energy. The limits of perfection in any habit are practical limits.

(i) *Drill in habit-formation should be directed to the needs of the individual.*—For this reason general class drills are often wasteful; each pupil should be treated according to his individual needs.

(j) *The few should never be drilled at the expense of the many.*—This is a maxim that every teacher should constantly keep in mind. Its frequent violation results in tremendous losses and reduces the efficiency of instruction often many fold.

(k) *The teacher must constantly supervise the initiation and the perfection of habit.*—The teacher must know definitely what the pupil is doing, where he is succeeding and where he is failing;

the teacher must direct, encourage, and aid him constantly; undirected, and haphazard drill is often worse than useless. One of the chief functions of the teacher should be to show the pupil how to study, and so to direct him that he forms economical habits of study.

CHAPTER XI

THE METHODS OF THE CLASS PERIOD—ADDING NEW KNOWLEDGE THROUGH ORAL AND BOOK INSTRUCTION

In the preceding chapters on the methods of the class period, we have discussed the question of the test for knowledge in its various forms, and have considered further the nature, function, and limitations of drill. In the present chapter, and in those immediately following, we shall take up the problem of imparting new knowledge during the class period, and shall consider in the first place, oral instruction, or the "telling method," as it is sometimes termed.

The Nature of the Telling Method.—The telling method of instruction, as the name implies, consists in the imparting of information orally by the teacher to the class. It ranges from the formal lecture, on the one hand, to brief bits of information and comment, on the other,—given out by the teacher during the course of an ordinary recitation. The formal lecture has but a small place in the high school, and as a rule should not be encouraged. On the other hand, brief comments and explanations by the teacher are extremely common, and in many instances take up a large part of the class period. Often this latter form of the telling method is as faulty as the former. The lecture method suffers from the fact that it is too set in composition and presentation; the method that employs comment and incidental explanation is, as a rule, too fragmentary and ill considered. The explanations may be cumbersome and difficult for the class to understand; frequently they are not well thought out, and are at times related to no definite aim or plan of instruction. The teacher should prepare with care the main

statements that he is to make to the class, make sure that they are framed in simple language, and that they are reasonably brief and direct.

Comments and explanations are generally interspersed with the questions asked by the teacher, or are of the nature of corrections and suggestions offered during the course of a recitation. As a rule they are too frequent. In both questioning and comment many teachers consume altogether too much of the time of the class.

The first detailed study of the part that the teacher takes during the ordinary recitation was investigated by Dr. Romiett Stevens [1] and reported in a monograph in which stenographic reports of class procedure form the basis of the discussion. One of the general results of the investigation was that many teachers take far too large a part of the time of the class period, and leave but a small part of it to the pupils. Although the investigation concerned largely instruction in the form of questions, numerous examples are given of the comments of teachers on the replies of pupils, and of incidental information given out in a more or less haphazard way during the progress of the instruction. A few examples of such comments will serve to show the general nature of instruction of this type.

In discussing the fate of André and the treason of Arnold, the teacher is moved to remark: "Perhaps Arnold is not open to as much criticism there as you may think. He went to General Clinton and offered to surrender himself. When you consider how he got his command at West Point, you will find there the worst point in his whole career. He got the command from his best friend Washington; the betrayal was not only a betrayal of America, but of his best friend, and Washington felt the disgrace perhaps even more than Arnold himself." Again: "A congressional investigation cannot be justified unless the charges are serious. Now the charges against Arnold in his Philadelphia career were of a petty sort; he was charged with embezzling funds entrusted to him, and the charge that he had used

[1] The Question as a Measure of Efficiency in Instruction, Teachers College, *Columbia University Contributions to Education*, No. 48 (1912).

an army wagon was not enough to disgrace him before the country." The chief objection to such statements as the above is not primarily as to their form, or value as bits of information. A few statements like these, well phrased, and made with deliberation at important points in the progress of the recitation are helpful. When a large number of such statements, however, are found, as appears to have been the case in this particular recitation in American history, they are presented in such a hurried and ill-considered manner that they make practically no impression on the mind of the pupil, and are consequently a great source of waste.

A serious waste in class instruction is found in the rambling comment of the instructor. An idea or a fact is suggested, which the teacher takes up and develops without particular thought as to where it is leading, or as to its general bearing on the lesson as a whole. The following illustration will serve to point out the defect in such a procedure:

In a class in Roman history the question of representative government was raised. The teacher first explained what representative government meant, and for this there was ample justification, but he was not satisfied to make his point, and next discussed representation in the House and Senate in the government of the United States; this was followed by a statement of how the representatives are chosen, and of the number of states in the Union. This comment concluded with an inquiry as to what state was last admitted into the Union. The whole procedure occupied five minutes, and the last three topics had no significant relation to the question that started the discussion.

While rambling discussions of this type are not infrequent they are surely not the rule. The writer has observed many classes in which the teacher with great care and skill has held the discussion to the main issue, and has refused to be sidetracked, by any irrelevant consideration, no matter how interesting or important in itself. Teachers are aided in avoiding rambling and discursive presentation by prescribing definite time limits to the various parts of the lesson.

Such an allotment of time is an important function of the lesson plan, discussed in Chapter XVI.

Faults of the Telling Method.—In addition to the fault of superfluous, hasty, rambling, and poorly thought-out oral instruction discussed in the preceding paragraphs, there are certain disadvantages in the telling method as such, defects that inhere in it whether the form in which it is cast is correct or not, and whether the information is worth while and pertinent or the opposite. The chief of these defects are:—

(a) *The telling method is time-consuming.*—It is clear that no advantage is gained and much time is lost during the class period when the pupil is given extended information which he can easily find in books, and readily comprehend. Although the telling method should supplement book instruction, adding to and making clear what the printed page contains, it should never be a mere repetition of the book.

This rule should not be carried to the extreme, however, of always compelling the pupil to look up in books something that may be told to him in a few direct words by the teacher. It is a common fault of instructors in English to send pupils to dictionaries and lexicons to look up and explain words, phrases, and allusions. At times teachers require as a part of the preparation of the daily lesson the writing out of the derivation and meaning of a list of English words. This procedure is justified when it saves the pupil and the class an appreciable amount of time, when a greater impression is made on the mind of the pupil than would be made if the facts were told him, or when it is the desire to give the pupil experience in the use of a dictionary or a lexicon. The practice of telling the pupil to look up an interesting point that has been raised in the class is generally not to be defended. It is a decided advantage to furnish the information when it is desired. If this is postponed, the value of the fact and its bearing is often entirely lost.

The writer has in mind an unusually successful teacher of English who made it a custom to provide the class during the assignment

with the most essential facts required in the preparation of the new lesson. She passed out mimeographed sheets that gave information on difficult points and explanations of obscure passages. The teacher estimated that this method saved on the average twenty-five minutes of the time of each pupil in the preparation of the assigned lesson. This time was employed to advantage in other ways.

(b) *The telling method often gives the teacher a false idea of his skill in class instruction.*—If an instructor's manner of speaking is vital and agreeable, he generally receives apparent attention. He therefore gets the idea that he is doing well with his class. The real test of teaching ability is found when the teacher attempts to direct his pupils and develop in them the powers of initiative and response. It is a simple matter to tell a class a fact or to explain to them some principle. It is a vastly different matter to make them comprehend it.

(c) *The telling method lacks a permanent record.*—One of the chief advantages of the printed word lies in the fact that the ideas expressed are permanently preserved, and can be continually referred to for verification. The pupil who does not understand the meaning of his text on the first reading, can read the difficult parts over and over until the meaning is clear. On the other hand, the hearer must comprehend the spoken word at once or else miss its meaning. Further, as his memory fades there is no chance for reference and verification. For this reason, teachers who present topics in oral form should, when possible, furnish a printed or mimeographed outline of the important points, or require the pupils to take notes as to what has been said.

The Technique of Note-taking is Extremely Important.—As a rule, pupils of the high school grade have little idea how to take notes, and indeed college students are generally deficient in this aspect of their work. Note-taking is important for two main reasons. In the first place, through the notes the hearer has preserved in a permanent form that information that has

been given him orally, and in the second place through the exercise in taking and arranging his notes he has reacted to the oral lesson. This second phase of the note-taking activity gives it its chief value. So important is the matter of taking notes that we can with advantage consider the most essential principles involved in this form of instruction.

(a) *Notes should not be taken in the form of dictation.*—As has been pointed out in the chapter on Waste in the Classroom, the *verbatim* taking of notes is extremely wasteful, and cannot be justified as an ordinary method of class instruction.

(b) *The pupil should not be required to take voluminous notes.*—Akin to the fault of requiring the pupil to take down the spoken words of the lecturer *verbatim* is that of expecting him to take down detailed and extended excerpts of what he hears. If this is required the pupil is busy for the entire period of the exercise in the mere technique of note-taking, and consequently has no opportunity to give attentive consideration to what the speaker is saying, or to weigh the relative importance of the matters discussed. Hence, the chief value of the oral lesson is lost.

(c) *The pupil should be required to jot down the main facts of the lecture or discussion, and as soon as possible after the recitation write out in proper form these facts.*—It is important to accustom the pupil to the practice of giving careful attention to class discussions, and to the words of the teacher, and to make brief notes of the important facts brought out. These should be written up in proper form in a note-book immediately after the class exercise, and should be inspected and corrected by the teacher. This exercise can to advantage be made a part of the regular work in English composition. Under such conditions the taking of notes may be very valuable exercise.

Such an exercise serves several important ends. As has already been said, it may furnish excellent training in English expression. Further, it demands attention during the class period on the part of the pupil; it requires discrimination in

selection of materials and in their arrangement, and it impresses the facts recorded in a way that is likely to secure permanence. Of course the chief objection to such procedure is the amount of time consumed by the teacher in inspecting and correcting the notes. Consequently this form of instruction can be used only in a limited degree.

Advantages of the Telling Method of Instruction.—(a) *It tends to secure and hold the attention.*—Oral instruction is the most primitive form of teaching. It makes an appeal to the hearer under proper conditions, since it is personal and vital. Instruction through books suffers in these particulars. It lacks the emphasis and the human appeal that belong to the spoken word. However, the teacher who secures these advantages inherent in the best forms of oral instruction must possess a voice of good quality and the ability to use it well. He must first of all speak clearly, pronouncing his words distinctly and with sufficient force to be easily heard in all parts of the room. His voice must be well modulated; it must vary in intensity, and in pitch; it must be vital and sympathetic in tone, and it must possess the various shades of inflection necessary to bring out meanings. The proper use of the voice is a fine art that every teacher should cultivate. We have seen in our discussions concerning discipline that the voice of the teacher is an important factor in class control. It is equally important in instruction.

The writer has made a rough classification of the most common speech defects observed in the class work of one hundred different high school teachers. Arranged in the order of their most frequent occurrence they are as follows:—Unnecessarily loud speech; lack of emphasis in bringing out meanings; listless speech (frequently accompanied by lack of bodily vitality); monotony in pitch, inflection, and intensity; low speech, indistinct speech, particularly dropping the voice at the end of a sentence, and in some instances leaving the sentence incomplete; high pitch; irritating speech, such as a nasal

quality, a masculine quality in the case of women, or a feminine quality in the case of men. Classifying these hundred teachers according to five grades of excellence, the writer obtained these results: —Very poor, 4; poor, 21; medium, 42; good, 25; excellent, 8. Of twenty teachers of English observed, seven were distinctly poor readers and only three superior readers. The ability to read well should be an absolute requirement for a teacher of English literature, since a large part of instruction in appreciation depends on this ability.

(b) *It is directly adaptable to the immediate needs of the class.*— One of the greatest disadvantages of instruction through books is found in the fact that it cannot be planned primarily for the needs of a class and never for the needs of individuals. Many of the text-books and reference books used in the high school are written by teachers in colleges and universities. These books too frequently over-emphasize the logical presentation of the subject-matter; they too frequently give entire attention to the presentation of the subject-matter from the sole standpoint of content; they too frequently ignore the capacities, the development, and the interests of the pupil. Fortunately in recent years teachers of high school subjects have furnished in increasing numbers text-books in their particular fields of instruction, and teachers in colleges, higher technical schools, and universities in writing for pupils of high school grade have considered more definitely than formerly the value of writing in such a way as to appeal to the learner and to satisfy his needs. However, even under the most ideal conditions the text-book and the reference book will often fail to meet the specific wants of individual classes in all particulars. For this reason text-book instruction must be frequently supplemented by oral instruction. Indeed in some courses the teacher is obliged to make his own book, if he hopes to secure desirable results.

This is particularly true of instruction in some of the subjects more recently added to the high school curriculum. As yet the field of

general science has not been sufficiently marked out and the methods by which it should be presented determined, and as a consequence there are a number of texts written from different points of view. In many instances these do not meet the needs of pupils in these courses adequately. The same is true in regard to instruction in high school agriculture. Further, some of the older subjects, such as civics, biology, and geography can best be taught in terms of local conditions, and here a text should be used as an aid but not as the chief means of instruction. The best teaching in these subjects is generally found in those instances in which the teacher organizes the work himself. Some of this organization may well be in the form of printed or mimeographed outlines and instructions, but much must be explained orally to the pupils. In any event the work must be supplemented by explanations on the part of the teacher, and by general discussions on the part of the teacher and the class.

(c) *It supplies the class with information that is more special and recent than that offered in the book.*—Text-books, however comprehensive and accurate, soon get out of date, particularly in the fields of physical and social science. Constantly new discoveries are being made, and new points of view being advanced. Further than this, methods of presentation and instruction may change in the treatment of various courses in the curriculum, so that in this way a book although adequate and accurate in regard to subject-matter, may be out of date. Not only may the text be in part or as a whole out of date, for the reasons above stated, it may also be insufficient from the point of view of the special interests or needs of the school and the community. This is generally true of the applied aspects of science. Texts in physics and chemistry, for example, cannot take account of the vocational possibilities of particular localities. They must be written from a general point of view. In a community where there are important dyeing and bleaching industries, evidently the emphasis in chemistry should be different than in those communities in which the activities are

largely agricultural; in a coast town or city, biology might be taught with quite different materials than those used in an inland locality.

The Capable High School Teacher must be Superior to any Single Book or any Collection of Books.—For the various reasons presented in the preceding topic, it may be seen that no teacher can afford to be a slave to any one book or collection of books. The text-book and the reference book have a place and an important place in all grades of high school instruction, but they should never be the sole means, seldom the chief means, by which pupils acquire knowledge, and advance in skill. In America more than in European countries the teacher relies on the book as the chief source of imparting information to his class. The reasons for this dependence on the book arise chiefly from three main causes, causes that every ambitious teacher of high school grade should seek to remove. These causes are:—

(a) *Many of our teachers lack initiative.*—In our earlier discussions of the preparation of the secondary school teacher, we emphasized the fact that in Germany and in France the training and preparation required for a teacher in a *gymnasium*, a *lysée*, or communal college is much more extensive and rigorous than that required for a teacher in our public or private high schools. As result of this more exacting preparation in Europe than in America a superior set of teachers is secured. One of the qualities of superiority, perhaps the most important quality, is initiative. The average secondary teacher in Europe succeeds better in planning and doing than does the average teacher of high school grade in America.

(b) *American teachers have not been so trained in the presentation of subject-matter as to be able to do this on their own initiative.*—A careful preparation in the technique and the principles of teaching is necessary in order to train the teacher in resourcefulness of presentation. Such preparation we have seen is lacking

in the case of many of our high school teachers. However, as the years go by the necessity of such a preparation will be more and more apparent. As it is at present, the opportunities now offered for the higher training of teachers in America are so extensive and numerous that the ambitious individual need rarely fail from a lack of such preparation.

(c) *Many teachers do not have sufficient familiarity with the subject-matter in which they give instruction to be able to add materially to the information given in books.*—In scholarship, as we pointed out earlier in our discussion, the American high school teacher is often deficient. It is impossible for a teacher who does not know the advanced phases of his subject to do much more than follow a book. On the other hand, the teacher who has any field of thought and research within his grasp, can give to his class much more than any text-book can possibly furnish. Further, the fact that the teacher is a scholar will change his whole attitude toward the subject that he is teaching, and will react favorably on his attitude toward the class and the attitude of the class toward him. In this connection it should again be emphasized, that in recent years there has been marked improvement in the training of the high school teacher, and as a result young men and women of greater ability, skill, and knowledge are in ever increasing numbers entering the field of secondary instruction.

Text-book Instruction.—In the above discussion of oral instruction, we have from time to time contrasted it with instruction through the medium of books, and have pointed out some of the advantages and disadvantages that are to be found in obtaining information from the printed page. We have seen that the book has the advantage of presenting in a permanent and readily accessible form information that is important for the pupil to obtain; that this information is as a rule reasonably accurate, and that it can be secured, if books are properly used, in a relatively brief space of time. On the other hand

books are often so constructed both in respect to subject-matter and to form that they are not suited to the needs of particular classes and individual pupils. Also they lack the interest that oral instruction with its emphasis on the personal element possesses when such instruction is properly given; and they are often over-logical, and give too little heed to the interests and abilities of the pupil. Bagley [1] points out additional difficulties in the use of text-books. He says, "The pupil must have some motive for attacking the printed page, or some interest in its contents, if he is to give it the attention that is necessary for the assimilation of the matter presented. . . . The text-book may employ terms the meanings of which are not familiar to the pupils. . . . It may present matter for the apperception of which the pupil lacks an adequate basis of fact. . . . Even if these conditions are not operative, the reading of the text will not hold attention so well as would oral presentation of the same matter."

Text-books should be Considered merely as Aids in Teaching; not as Substitutes for Teaching.—From the above discussion it is apparent that text-books are necessary tools of instruction, but that they must be considered as supplementary to instruction rather than as the sole or chief means of imparting knowledge. As has often been pointed out in these pages, one of the common criticisms of high school instruction is that it consists largely of lesson hearing, that is,—in requiring pupils to recite on materials that they have memorized from texts and manuals outside of the classroom, and often with no direction on the part of the teacher. The teacher must prepare the pupil to study the text intelligently and economically. This is ordinarily done through the assignment. Unfortunately the assignment, which is the very core of successful instruction, is frequently ignored, or grossly slighted by many teachers.

[1] *Classroom Management* (1907), p. 191.

The Essentials of a Proper Assignment.—In order that the assignment may perform its proper function, the teacher must keep constantly before him certain basal principles.

(a) *The teacher must know the book thoroughly, and evaluate it in terms of the needs of the class.*—High school teachers sometimes, when assigned a subject with which they have little familiarity, aim merely to "keep just ahead of the class." Clearly such teaching can bring only the most mediocre results. While the teacher should have a much wider familiarity with a subject than the information given in any one book, the least that should be demanded is that he know thoroughly the text-book that the class is using.

Parker [1] in discussing this requisite for an effective assignment, says,—"After a text-book is adopted, the teacher should study it thoroughly in order to use it intelligently. Some books do not involve any necessary order in the study of the chapters which they contain. In such cases any order which the teacher may devise might prove satisfactory. In other books, however, little departure should be made from the regular order of the chapters." Again he writes, quoting Thorndike,—"Many of the evils attributed to the overuse of text-books are really due to misunderstanding and misuse of them. In the case of a good text-book there is a reason for every item and for its position in the whole. Too often a teacher uses a section of a book much as a savage might use a coat to cover his legs, or as a child uses a saw to cut a string, scissors to cut a board, and a padlock as a bracelet."

(b) *When the teacher has an adequate understanding of the text that he is teaching, he must then decide on the proper emphasis to be given to the various topics that it contains.*—Clearly not all items are of equal importance, even when considered objectively; and when these are considered in terms of the interests, capacities, and comprehension of the class there are some that

[1] *Methods of Teaching in High Schools* (1911), p. 422.

need to be made extremely emphatic, while others may be passed over with but slight attention. McMurry [1] urges that the text-book be made use of largely as a summary, an aid to review, a convenient outline and a help to the memory. The teacher must re-arrange the materials in the text-book by culling out the more important truths, and bringing the secondary and minor facts into relation with these. He should omit some details and add others.

It not infrequently happens in certain subjects of instruction that the teacher attempts to emphasize practically all the topics of the text equally. This is often true of the teacher of history, who is unwilling to omit any detail that the writer of the book has thought proper to elaborate. In the average text in this subject, however, there are many facts of so little general importance in themselves that it is not proper to require the pupil to master them. There are other facts that are important when considered from the general point of view of the development of a people, but so remote from the pupils' interest and so difficult for them to comprehend, that the teacher is not justified in dwelling upon these facts. For example, the average high school pupil can get very little from a discussion of the development of the Athenian constitution or the growth of the English system of law. Is it wise under such conditions to attempt elaborate expositions of such topics, however important they may be in themselves?

(c) *The teacher should give adequate time during the recitation to the assignment.*—Too frequently the teacher leaves the "giving out" of the next day's lesson to the last moment, and then in a few hurried words tells the class what they are to prepare.

Miss Stevens in her discussion of the question in class instruction furnishes several instances of typical assignments given hurriedly at the end of the hour. An example taken from a class in English is as follows,—"I want to announce the work for the next time, and I want to hand back to you the themes I have corrected, and I shall

[1] *Method of the Recitation*, Chapter XIII.

ask you to bring them next time, so that we may enter our misspelled words in our books. The work for the next time is to take a portion of the chapter on Bryant, read as far, please, in that chapter, as the discussion of American literature at the time Bryant wrote, on page 176; that covers practically the whole of Bryant's life, and leave for another time only the discussion of Bryant as a writer." Clearly this is not an assignment in the sense of an attempt to prepare the class for studying the next lesson. It is merely a set of hurried and poorly phrased directions. Less detailed and more hastily given out than this, as poor as it is, are the following,—"Next day's lesson: Fifth Canto finished; read the Sixth. I want to see if the next time you can tell me what particular task Scott set himself when he wrote this story, etc." "I want everyone by Monday to have purchased a copy of Silas Marner. . . . For tomorrow prepare the grammar on page —."

In a few instances attempts were made in the assignments quoted by Miss Stevens to do more than merely to give directions. In these instances the teacher used the assignment as an aid to the pupil in the preparation for his work of the next recitation. However, such assignments seem to have been infrequent and woefully brief. A teacher of history concludes the recitation as follows,—"I am going to ask you this question for you to think over and tell me tomorrow: You said that no matter how large a state was, whether large or small, whether it had one thousand or millions in it, each state should have two men in the Senate, but it is according to the population in the House. Which do you think is the fairer, to have the representation according to population or according to the number of states?" In a similar way an English teacher ends the day's recitation,—"The next time, in finishing this poem consider Lancelot, whether he is an out and out scoundrel, or whether he is noble and manly in heart." The slight merit that these last two assignments possess lies in the fact that they are intended to stimulate the thought of the pupil in the preparation of his next lesson. That they are fragmentary and inadequate is clearly evident.

The writer has noted down the character of the assignments in two hundred high school classes visited by him. In one hundred and two of these classes there was no assignment in any other sense than that

of giving brief directions as to the work to be taken up for the next lesson. In ninety-three cases the assignment consisted of a statement such as this,—"Take the next six pages for to-morrow's lesson." In ninety-eight cases some attempt was made to direct the pupil in the preparation of the following lesson, but in only twelve of these were more than ten minutes devoted to the work. In one lesson in history half an hour was given to working on the coming lesson. This, however, was an extreme case.

It seems probable from the facts discussed above that serious attempts at assigning lessons are exceptions in high school instruction. The assignment is slighted in the majority of cases, and is not made a teaching opportunity. While no general rule of procedure can be laid down, it is safe to say that in the average high school class from one-quarter to one-third of the time of the recitation should be given over to the work of preparing the pupils for the new materials that they are to take up. No teacher who contents himself with giving a few brief and generally ill-considered instructions in regard to the advanced work to be taken up by the class is teaching his subject to the best of his ability.

(d) *In the assignment the teacher should make his instructions so definite that they shall be unmistakably understood.*—He should not be satisfied to frame his statements merely so that the attentive pupil of reasonable intelligence may understand. He must, if it be possible, compel all but the dullest to comprehend what is meant. Teachers are often surprised to find how poorly they are understood and how inadequately their directions are followed. They generally blame the pupils, and with a certain degree of justice. However, observations concerning the stupidity and carelessness of the boys and girls under their charge will not remedy matters. No teacher who contents himself with hurried and poorly devised instructions given out at the end of the hour can expect to have these instructions comprehended, and acted on by any large number of his class.

The dullness of some pupils in understanding the assignment is illustrated by the following composition written in response to the directions of the teacher to compose a theme in description so worded that the reader could "feel the picture." In the theme the words *feel the picture* were literally interpreted with the following astonishing result:—"There is a banister along the wall up as far as the attic, and follow this all the way up. Then feel along the wall and you will find a door. Open this door. Then walk around the room. Feel along the wall for a picture which is just about the height of your head. Then come down the way which you came up."

(e) *In the assignment the teacher should attempt to clear up those points concerning which there is likely to be difficulty and misunderstanding.* These misunderstandings and difficulties are of various sorts. Often in English and history the meaning of certain words needs to be explained in advance. Sometimes it is well to warn the class of errors which the previous experience of the teacher has shown him are frequently made. In mathematics and science processes are to be explained and illustrated, in language idioms to be pointed out, and so on. In these explanations the teacher should strive to aid the pupil in overcoming his probable difficulties in the most economical manner. As we pointed out in Chapter IX., however, the teacher must avoid on the one hand the extreme of telling the pupil so little that he will blunder about in his work, and on the other hand telling him so much that all initiative is taken away from the learner and he is made dependent on the teacher.[1]

(f) *The chief function of the assignment is to teach the pupil how to study.*—Few pupils in the first years of the high school have an adequate notion of how to prepare their lessons; many never acquire any proper idea of how to study. It is an important function of the teacher to give the pupil the necessary information and to habituate him in the essential skill relative to the preparation of his school tasks. It is probably more important

[1] See also Chapter XVII., p. 365.

so to train the pupil that he acquires the technique of economical and effective study than it is to furnish him with any body of facts or to habituate him in any specific kinds of skill. In part, instruction in how to study belongs to the supervised study period to be discussed in a later chapter; in part it belongs to the period of assignment during the recitation hour.

There are various devices that skilled teachers use to aid the pupil in the preparation of his next day's work. Subsequently these will be discussed at considerable length. Here we may briefly mention some of the most important. In such subjects as English literature and history the teacher should frame either by himself or with the aid of the class study-questions, the aim of which is two-fold, namely, to emphasize important points and to stimulate thought. Such study-questions are sometimes found in well-edited texts for high school use. The resourceful teacher should in any instance be able to frame a certain number of such study-questions. At times study-questions may be expanded into topics or organized into outlines. This is a favorite device in history.

Demonstrations of technique and methods of procedure are often employed by teachers of language, mathematics, and the natural sciences. Sometimes the teacher of geometry, or algebra works out with the class the chief principles involved in the coming lessons; teachers of physics and chemistry go over with the class in advance the technique of their laboratory work; and teachers of language show the pupils how to translate with the aid of lexicon and dictionary a passage "at sight."

One of the finest classes that the writer has ever witnessed was that of a skilled instructor in German. He spent the entire hour with his pupils, young men and women in the senior class, in going over an unfamiliar passage and showing them how to translate it in the most direct, time-saving, and effective way. The outcome of this kind of instruction was a marked increase in the ability of the class to read German, and a genuine pleasure in the accomplishment.

The following statement from an observer of a class in Roman history illustrates how some teachers attempt to instruct their pupils in the proper method of studying history:—"As the period was unprepared, there was no hearing of any lesson, but the whole period was spent in discussing the assignment for the next recitation, and in showing the pupils how to select the important ideas in the book and interpret their significance. I have never seen ancient history taught more effectively. In the first place the aim stood out clearly, and the pupils comprehended the aim. The content of the assignment related to the Roman army, the uses to which the men and the equipment were put, and the question of conquest and defence. The teacher constantly impressed upon the class the desirability of interpreting the facts that they found in their book in terms significant today. He raised suggestive questions, but he left all of the work to be done by the pupils themselves. He developed their ideas with them, but he made sure that the thoughts expressed were their ideas, and primarily their development.

"During the first part of the period he required the class to read over silently the text, with the thought of discovering while they read, those facts that had relation to modern life, and present-day conditions. Then he asked one of the pupils to read aloud a section that had been previously read by the class in silence, and called for suggestive questions relating to this section. The comparative ease with which such suggestions were given showed that the members of the class had considerable familiarity with this method of study. Among the questions brought out were the following:—'What are the sources from which the United States army is drawn?' 'To what services may this army be put, besides those that it now performs, so that its productive power may be increased?' 'Why do modern nations spend so much money in the defence of the territory formerly defended by the Romans?' 'Are the defences of the United States adequate?' Many additional suggestions of a similar nature were formulated by the teacher and the class working together. Without further discussion these suggestions were left to be considered in the final working over of the lesson outside of the class. The vitality of the recitation, and the apparent enthusiasm of the class were remarkable. The discipline was perfect. There was no objectionable be-

havior, and not a single pupil showed a negative attitude toward the work. Of course, points of criticism could be found. At times the discussion seemed to get too far away from the lesson in ancient history. However, the teacher seemed to encourage these wanderings in so far as they raised a profitable set of questions that related to modern life and present-day conditions."

CHAPTER XII

THE METHODS OF THE CLASS PERIOD—ADDING NEW KNOWLEDGE THROUGH ILLUSTRATION AND DEMONSTRATION

The Nature of Illustration.—A common fault found in all grades of instruction is a lack of understanding on the part of the pupil of the meaning of the facts and principles presented. While this is to an extent due to an absence of interest and ability in the learner, it is in part the result of poor methods of teaching. At times teachers do not make the subject-matter with which they are dealing sufficiently concrete and definite to secure the attention and comprehension of the pupil. Very often such attention and comprehension can be gained through the use of apt and familiar illustrations. It has been the writer's experience that high school teachers as a rule do not pay sufficient consideration to the problem of adequate illustration. They are too apt to dwell in the realm of the abstract. A consideration of the nature and scope of illustration by the teacher should impress him with its great value as a means of adding new knowledge to the information that the learner already possesses.

(a) *To illustrate is to make clear.*—The root meaning of "to illustrate" is to make clear. As a working definition the original significance of the term can be accepted as a fundamental guide in teaching. It is one of the most important functions of the teacher to make clear to the pupil those ideas that are presented in text-books and oral discussion and which in themselves may be difficult to understand and envisage. The teacher who uses illustration as a method of instruction aims to make the less well known clear in terms of the better known. Illustration

often employs likeness and comparison as its method of exposition, but the teacher should always remember that mere comparison is not enough. That which is illustrated must be illustrated by something more simple and familiar than itself.

Particularly in literature the high school pupil finds quantities of pseudo-illustrative materials in the form of allusions. Allusions are often to be classed as pseudo-illustrative from the fact that they express through simile, metaphor, and other figures of speech comparisons which are frequently more obscure than the simple statement without comparison. In the writer's own experience, Milton's poems were made extremely distasteful because of the wealth of classical and Biblical allusion that they contained, and the insistence of the instructor that all of these allusions should be traced to their source and explained. To a classicist such comparisons would be vivifying and clarifying, but to the immature boy or girl of high school age they can be nothing but a burden, discouragement, and source of confusion. The teacher of literature must remember that the allusion is introduced by the writer for two purposes. Probably his minor aim in most instances is to make clear and definite; generally his main purpose is æsthetic. But in any case neither clearness nor beauty can be attained unless the reader understands the significance of the allusion. As a rule this understanding cannot be secured easily by requiring the learner to study out the significance of the comparisons. He frequently loses the main point in the tangle of explanation, and he rarely gets æsthetic appreciation by the laborious process of working out the meaning of the allusion. The appreciation of beauty, like the appreciation of wit, must be based on a ready comprehension. To explain a joke is to destroy it; likewise to explain a simile or metaphor is to rob it of its main value.

(b) *The forms of illustration are varied.*—There are numerous forms of illustration. The most simple and direct means of explaining some fact or principle is to show this fact or demonstrate this principle to the learner. This is technically known as object-teaching, and will be discussed at greater length in a subsequent paragraph. Often, however, it is impossible to illustrate through

the object itself, and sometimes, as we shall see later, it is pedagogically undesirable. Pictures and models serve as excellent substitutes for objects. At times maps and graphs are important means of illustration. Diagrams also are useful. They are far removed from the objective and concrete in many instances, and yet they are media of illustration if they make more clear and definite anything that in itself is obscure and difficult. Diagrams are sometimes used to advantage in language lessons. They serve a purpose in the exposition of extremely abstract forms of thought, as for example, the employment by James in his *Principles of Psychology* of the "wave of consciousness" to illustrate the nature of mental processes; and the use by some writers and teachers of graphic and glyptic formulæ in teaching chemistry.

It is to be remembered that a visual presentation is not always necessary as a means of illustration. All that the teacher needs to do in many instances is to call before the "mind's eye" of the pupil some scene or circumstance which vivifies the spoken or the printed word. The function of the teacher here is to suggest some experience that arouses in the mind of the pupil a train of thoughts or definite images that serve to give meaning to what otherwise is likely to be indefinite and confused.

Illustration through stimulating the imagination of the pupil has its chief function in literature, in history, and the social sciences. In the appreciation of literature it is often necessary for the reader to image the situations described or narrated. Whittier's *Snow-Bound*, for example, means much more to the boy or girl who can picture the winter's landscape, the biting cold outside, and the blazing warmth coming from the great fireplace, and see in fancy the family group seated near by, than it can possibly mean to the pupil who merely interprets the words of the poem in terms of their abstract meaning. It is one of the functions of the teacher through suggestion to arouse such images in the minds of his pupils. Otherwise the teaching of this form of art may be barren and devoid of interest. In the ap-

preciation of humor, too, which is sadly lacking in any developed form in most pupils, the teacher can do much through illustration to stimulate a liking for and a comprehension of the genuinely comic. Such writers as Washington Irving have a very real and subtle sense of the truly humorous. However, most pupils of high school age fail to comprehend much of this humor because of its very delicacy and refinement. Through suggesting parallels in the pupils' daily life to the scenes and incidents portrayed by Irving, the teacher may make real what otherwise would be entirely lost.

"I thought," writes an observer, "when visiting an English literature class, I should surely find the teacher appealing to the imagination of the pupil, especially when the subject of the lesson happened to be a poem. Not once, however, was the attempt made to have the pupils use in their mind's eye that which was not present. Nothing was said about the rugged grandeur of the Scottish Highlands and lakes, nor of the stern character of the Gael. Instead of arousing the class to sympathize with the spirit of the poem, the whole hour was occupied in asking them petty questions, the answers to which the pupils would forget after their final examination."

"What impressed me most in this recitation," writes a second observer, "was the unusual ability which the teacher possessed to call up through hints and suggestions scenes and experiences that gave life and substance to the subject of the lesson,—the steps taken by Rome to meet Carthage on the sea, and the events that followed these naval preparations. He caused me, and I am sure he caused his class, actually to visualize these preparations. He made the first naval encounter between Rome and Carthage appear before the mind's eye as a physical fact."

Literature, like history, acquires value in depicting human life in terms of its broader practical, or moral significance. The character in fiction, or in real life, if correctly portrayed, typifies some important aspect of human experience. Such characters stand out as examples of men and women whose behavior is to be copied or avoided, as the case may be. However, too frequently, these persons seem remote and unreal. They must be made vital in the imagination if they are to have any significance for young people of the present day and generation. What is true of historical and fictitious personages

is likewise true of actual events and situations. They must be interpreted in terms of the present if they are to have a meaning.

The practice of teachers varies considerably in illustrating the past by calling up present events and characters. Some teachers of history treat their subject largely as a set of facts and principles that have neither retrospective or prospective reference. Some go to the other extreme of attempting to relate everything in the text to present-day life and conditions. As a rule, however, teachers err more by lack of use of parallels between the past and the present than by excessive use of such illustrative materials.

We find such instances as the following:—A teacher of English history is discussing with his class the Spanish Armada and the growth of England's sea-power. He ignores the fact of the Great War and the part that the British navy has played in it. A teacher of Roman history in considering the class legislation contained in the agrarian laws never mentions similar conditions in other periods of history. A class in United States history, considering the gradual wearing down of the South by the North, is not referred to a similar process taking place at the present day in the European struggle.

Examples of the opposite tendency are the following:—A teacher of civics in discussing taxation, begins by considering the manners in which taxes are raised in the local community. The perfidy of Rome in her treatment of Carthage is made evident by illustrations taken from individual life. "If you signed a temperance pledge, and an enemy got all of your acquaintances to induce you to drink, and then punished you for drinking, would that be fair treatment?" asks the teacher. The pupils see the point and the moral issue involved. The significance of ostracism is brought home by a reference to the political struggle between Wilson and Hughes, and the effect that the Athenian law would have on these men were it in operation in America. To illustrate how West has constructed his history and to impress on the class some elements of historical method the teacher sets before his pupils the problem of writing their own lives either

chronologically, or under various topics, such as education, travels, occupations, recreations and amusements.[1]

(c) *Illustration does not consist merely of passive presentation; it involves reaction on the part of the pupil.*—Teachers make a mistake if they assume that illustration consists merely in showing some object to the learner, or calling some fact or incident to his attention. Effective illustration involves activity on the part of the learner. Such activity may consist in objective doing, as in dramatization of a school play, in the making of illustrative materials for individual or school use, and so on, or it may be more of a subjective nature, as for example, the active control of the imagination in the creation of a mental picture of some incident or scene that is presented in the class exercise, or that is assigned for outside study. In any event, there must be some reaction on the part of the learner if the illustration is to be effective in its highest degree.

The following example of illustration that involves activity on the part of the pupil is one that can often be used to advantage in the work in English composition. An observer says:—"The best example of the process of interpreting facts of knowledge in terms of facts of experience I found in a class in English. The teacher in assigning a lesson in exposition took pains to find some subject that could be described from first-hand knowledge. As an illustration of what she wanted, she selected an article from the morning paper describing a Swedish festivity. There were many different nationalities in her class, and she asked for a description of national customs from various representatives of this group. The pupils responded with enthusiasm to the suggestion, and the compositions that were later handed in were above the average work of this class, as the teacher later informed me."

The Nature and Scope of Object-teaching.—In a preceding paragraph the fact has been mentioned that the most direct

[1] See Chapter II., p. 32.

form of illustration consists in presenting the object to the learner. This is object-teaching, as it is commonly termed, and it possesses certain decided advantages, as well as disadvantages. Object-teaching is not something new in educational practice. In various forms it has been advocated by educational reformers for many centuries, and to a greater or less degree it has been a method employed in instruction.

The teaching of all subjects in their origin was chiefly objective. The great departments of human knowledge grew up largely because of human needs. Geometry, for example, as its name implies was measurement of land. In the Roman schools calculations were carried on by the use of pebbles and the reckoning board. Schoolrooms were often adorned with busts of authors read, and with pictures cut in stone, depicting great events of history or mythology. Nevertheless a large part of the teaching was very far removed from the concrete. This is particularly true of the education that existed in the middle ages. In later times, Comenius made it a cardinal maxim to "present first the thing itself and the real intuition of it; then the real explanation for the further elucidation of it." Rousseau said: "In general never substitute the sign for the thing, save when it is impossible to show the thing." Pestalozzi held, that "sense impression of nature is the only true foundation of knowledge." Pestalozzi's influence first made itself felt in Europe, but it made great headway in America after 1860 through the influence of the Oswego Normal School. Most of the accredited methods now used in the elementary schools of Europe and of America can be traced more or less directly to the principles of object-teaching.

Important Considerations to be Kept in Mind in Teaching by Means of Objects.—(a) *The object may be brought to the pupil, or the pupil to the object.*—It is obvious that certain objects, or their representations, may be presented conveniently in the classroom. Others cannot be brought before the pupil

easily, and the pupil must be taken to the objects. As a rule it is advantageous to bring the object into the classroom when this is feasible. It can then be shown to the class under controlled conditions, and it is thus possible more definitely, clearly, and economically to exhibit its essential features. In some instances objects of great size have been brought into the classroom. In engineering colleges, for example, enormous rooms have been provided into which may be brought electric cars and steam locomotives, in order that the students in these courses may be shown the construction and principles of operation of these machines. Object-teaching on such a large scale is extremely expensive and cannot be used to any great extent in most institutions of learning, clearly not in the ordinary high school.

Obviously there are many objects that cannot be brought into the classroom under any circumstances, for example, museums of art and industrial plants. It is important and sometimes necessary, however, that the learner should see these objects. There are other objects that might be brought into the classroom, which can better be seen and understood in their natural environment. In botany and zoölogy it is generally desirable to show the pupils plants and animals in the fields and woods when this is possible. The natural habitat is here significant and important. Moreover, courses in geology and in geography are also effectively taught by taking the pupils out of the school building and exhibiting to them natural phenomena as they exist in the world outside of the classroom.

Often the object exhibited is not so important as the process involved. This is clearly true to a considerable extent in industrial plants. It is even more true in the operation of a state or a city government. What the learner is here chiefly concerned with is the procedure rather than the thing. That kind of object-teaching which emphasizes relationships and procedure is pedagogically more important than that kind which lays

stress merely on the object as object, for the plain reason that the comprehension of processes and relationships requires a greater mental activity on the part of the learner than does the understanding of objects as mere things.

As a rule object-teaching is more in evidence in the elementary than in the high school. In the primary grades a considerable amount of instruction follows the lines of the Kindergarten and the Montessori methods, both of which lay great stress on "sense training" and objective methods. In the upper grades, too, there are numerous attempts to make abstract notions clear through objective methods. In the high school, on the other hand, in the older courses, with the possible exception of science, object-teaching as a rule is conspicuous by its absence.

(b) *The mind of the learner must be prepared to understand the object and to comprehend the process shown.*—The mere presentation of the object is not sufficient to insure comprehension. The pupil must know what to look for and how to look for it in advance of the actual presentation. If a teacher is to take his class on a field excursion, or on a visit to a museum or a local industry, he must in the first place acquaint himself with what is to be seen, and then he must instruct his class in what they are to see. Field excursions in biology often suffer from the fact that they are mere "excursions." Too much is left to chance and casual observation.

As a rule both adults and children observe very inaccurately what they see, and often omit some of the most important and essential features. In recent years psychologists have given a considerable amount of attention to what is technically known as the "psychology of observation and report." Simple events have been acted before individuals, and they have been required to state later just what happened. Again, pictures have been shown for a brief period and the observer has been asked to describe what he has seen. At times the procedure has been reduced to classroom conditions,—demonstrations have been conducted in such a subject as physics or chemis-

try, and the pupils have had the task of writing up what has occurred. In practically all of these instances the same facts appear, namely,—that much that is objectively present is not recognized by the observer, that a considerable portion of what is seen is distorted and confused in the subsequent report of the observer, and that many important points are passed over, while less essential details are remembered. Similar facts have caused such a leader in education as President Emeritus Eliot of Harvard University, to conclude that one of the great functions of the schools should be to train the pupils in accurate observation of what is presented to them. How much can systematically be accomplished in this way is uncertain. However, in specific instances, the teacher should endeavor to prepare his pupils in advance for the presentation and observation of concrete materials, and he should further instill into their minds a desire to observe carefully and report accurately. If he does this he will doubtless give them a certain amount of general training that will be as useful to them as an equal amount of training in fundamental habits and in correct modes of thought.

(c) *The pupil must be required to give back to the teacher in some form that which he has observed.*—Not only must the object be presented, not only must the pupil be prepared in advance to observe what he is to witness; he must further be required to report in some form the results of his observation. Pestalozzi, years ago, in insisting on the importance of observation, emphasized equally the necessity of coupling it with expression. Here is involved the important principle spoken of in an earlier paragraph,—namely, illustration must include activity as well as passivity on the part of the learner. In the procedure of the school, observation can be advantageously correlated with work in written and in oral composition. The pupil is required to describe in written form what he has seen, or to tell what he has seen, for the benefit of the class. In this latter instance we have again an example of the benefits of oral composition when properly conducted, and also an excellent illustration of the coöperative class.

(d) *Care must be taken to prevent the object from confusing the idea which it is intended to clarify.*—It must always be kept in mind that object-teaching is a means to an end, and not an end in itself. Its purpose is to give meaning to some fact or principle that is relatively abstract and obscure. Whatever clarifies the meaning aids in comprehension. The function of object-teaching is merely to make ideas more definite and simple. If, however, the learner's attention is buried in the object, he may for this very reason fail to grasp the idea which the object is intended to illustrate. He may not see the forest because of the trees.

There are two chief reasons why objects may distract from the meaning which the teacher is intending to impress on the minds of his pupils, rather than emphasize this meaning. In the first place, an attractive object may in itself be so interesting that the pupil will be entirely absorbed in it as an object of sensory experience.

This is often true in regard to pictures, particularly moving pictures, which have been advocated as means of instruction. Such pictures, if used in the school, however, must be employed with the greatest of care; otherwise they are likely to degenerate into mere forms of entertainment. Children are interested in a purely sensory way in pictures, particularly animated pictures. They give little heed to what these pictures mean unless they have had their minds prepared in advance to look at these pictures, and unless they are required to react in some definite way to what they have seen. The writer has often found that little children will follow with concentrated attention the presentation of a "photo-play" without understanding anything about the plot or the deeper meaning, merely because form and movement are in themselves attractive. This is doubtless true to a considerable extent of adults as well. Question a dozen of your acquaintances in regard to the "pictures" that they saw yesterday, and you will with scarcely an exception find that their ideas are extremely hazy on the subject. Perhaps the fact that the great majority who witness these forms of entertainment get but

little beyond the mere stimulation of their senses, in part accounts for the fact that the ideas behind the photo-plays continue to be so superficial and few, and the plots so hackneyed and wretchedly constructed. The public demand nothing better. When moving pictures are used in the school as means of instruction they must be exhibited in connection with definite topics of study, and they must be so presented as to require the pupil to think out the meaning to an extent himself. What applies to moving pictures applies with equal force to pictures shown with the ordinary projection lantern, and to pictures in the form of stereoscopic cards, for use in the common hand-stereoscope.

In the second place, objects may hinder comprehension because of the fact that little effort is required to look at them. Attention may be at a low ebb, and thought practically nonexistent when the object is before the eyes. If the learner attempts to envisage the absent object, however, he finds that he must give a higher degree of attention and comprehension. Further, he discovers by this means where he is weak in his comprehension, and finally in the end the object and its meaning are better stamped on the memory because of this effort in visualization.

Judd,[1] in discussing the teaching of geometry by illustrative methods, says, "Writers on the teaching of geometry have urged that it is a mistake to give models and photographs to students when they are studying solid geometry. The writer saw this pedagogical doctrine carried one step further by a teacher who did not draw even the flat figures of plane geometry on the board, but required the members of the class to keep the figure in mind after it had been drawn by a movement of the hand in the air before them. This teacher's contention was that reasoning about figures was more exact if the students had the figures in their heads."

It would be difficult to decide in any *a priori* fashion the rela-

[1] C. H. Judd, *The Psychology of High School Subjects*, p. 44 (1915).

tive merits of the use or disuse of models and diagrams in teaching such a subject as geometry. Here is an opportunity for an extended and carefully controlled experiment under classroom conditions. It seems probable, however, that those writers and teachers who would entirely discard the use of visual illustrations in teaching the properties of plane and solid figures, have gone too far. Many persons have little power of visualization in space relationships, and would be entirely lost without some objective aid. On the other hand, it is desirable to train pupils to think in visual terms as much as possible. It seems well to continue the use of the common objective means of teaching geometrical reasoning, but to supplement it by subjective methods.

The problem in regard to object-teaching here raised is not peculiar to the teaching of geometry. It applies to all subjects and to all grades of instruction. There is danger of insisting too much on the concrete when abstract methods of thought are desirable and necessary. Little progress could be made in arithmetic, and still less in algebra, if the thinking in these subjects were tied down to objects, and if the learner were always required to work out relationships in concrete terms. Splints may be useful in teaching the pupil to count, but he must soon get beyond this stage of learning if he is to make real progress. Some of the elementary work in fractions can be done by visual methods, but these must be discarded relatively early. Even in such subjects as civics and social science thought must go beyond the "picture stage" if it is to possess real value.

Demonstration as a Form of Illustration.—In preceding paragraphs demonstration has been spoken of as a method of making some idea or fact clear to the learner by exhibiting its operation. Demonstration may be considered as that form of illustration which is employed when a process as distinguished from a thing is to be exemplified. We commonly think of demonstration in such subjects as physics and chemistry. It is a method of illustration which can easily be applied to the

teaching of all of the natural sciences. By the aid of the moving picture it can also be used in practically all subjects of the curriculum. Indeed, when anything objective happens, that occurrence can be demonstrated, if the teacher has the proper facilities to do so.

Demonstration in the form of the "class experiment" may be substituted for individual laboratory work, and often to great advantage. Many experiments in physics, for example, require apparatus that is too expensive to duplicate, and too delicate to be handled by the individual pupil without careful supervision. In such cases the demonstration before the class should be carefully worked out, the pupils being required to note accurately all that takes place, and write up a report of it as a part of their regular assignment. Teachers of laboratory subjects should consider the possibilities of the class experiment, and utilize it whenever it can be advantageously employed. At times it is economical and pedagogically correct to have a weekly period for the class experiment as a substitute for one of the two double laboratory periods usually set aside in the high school for the teaching of the sciences.

Cautions to be Observed in Class Demonstrations.—From what we have already said in regard to the general principles of illustration it can be seen that demonstrations must be conducted with great care if they are to secure results. There are several cautions in addition to those already mentioned that the teacher must keep in mind, if demonstration is to prove effective. The most important of these cautions are the following:

(a) *The teacher must make sure that the essential parts of the demonstration can be seen easily by all of the class.*—Frequently processes are exhibited before large bodies of pupils that make little impression on the majority of the class. Sometimes these demonstrations cannot be seen; sometimes they can be seen if the pupil exerts an extra amount of effort. They must be so

clear and striking, however, that they at once secure the attention of the class, if they are to make a valuable impression.

Some teachers spend a large amount of time and show great ingenuity in making apparatus of such proportions that it can be observed by all of the class without difficulty. When such apparatus is constructed it should be devised with the thought of its wide use. Something that can be shown many times, rather than once, something that can be used to illustrate various applications of a principle or law, is well worth while. Some of the practical applications of the principles of electricity can be shown as class demonstrations to great advantage, when the apparatus is of sufficient size to be seen by all. Other physical principles can be demonstrated equally well.

The writer recently witnessed a demonstration in chemistry, in which hydrogen sulphide was being generated under a hood, and the class, twenty-six in number, were gathered around to observe the process. Seven pupils could see what was taking place. The others could get but an occasional glimpse. Twenty minutes were consumed in demonstrating the method of generating the gas, and in showing its properties. The majority of the class spent the time in looking about the room, reading their text, and conversing with their neighbors. In a second class an instructor in botany was demonstrating the properties of cane sugar and grape sugar at a small table with a class of thirty crowded around him. In another school, a teacher of physics was discussing magnetism, and was showing the arrangement of iron filings in the magnetic field. Only the pupils in the front row of seats could see what was being demonstrated.

The following examples show careful attempts on the part of the instructor to make his class see the details of his demonstrations:—

A teacher of physics is instructing his pupils in the essentials of the construction of a steam engine and its manner of operation. To do this he uses a wooden model whose dimensions are roughly four feet by two feet. This model can be taken apart and its parts shown separately. These are painted in white, black, red, green, blue,

orange, and yellow, in order that they may stand out more clearly when the machine is shown as a whole. This same teacher has made other models for demonstration purposes, such as a spring barometer, a force-pump, and a steam pressure gauge. These are all of such size that they can be seen in their details by every member of the class.

A teacher of physiology in presenting the topic of micro-organisms and their significance in the human body, shows the class various types of such organisms by means of the microscopic attachment to an excellent projection lantern.

A teacher of the manual arts proposes to prepare a series of "close-up" pictures for a cinema demonstration of some of the most important fundamental operations in wood-work. The value of this method of demonstration to large groups has not been sufficiently recognized. Since the picture can be greatly magnified, and since the operation of the machine can be regulated to almost any desired speed, the details of motions can be brought out by this means in a truly astonishing manner.

(b) *The teacher must be reasonably sure that the demonstration that he is conducting will be successful.*—A demonstration that does not work, is worse than no demonstration. Under such circumstances the class frequently forms the opinion that the fact to be illustrated has no real existence outside of the lecture or the text-book. Perhaps more often they conclude that the teacher has little skill or knowledge of his subject. This belief on the part of the class is a serious matter, and the teacher should do all in his power to prevent such an opinion from being formed. Too much care in the preparation of a demonstration cannot be taken.

An observer reports the following incident: "Yesterday I visited a class in geometry conducted by Miss S—. I was much impressed with her ability as an instructor until she attempted to show to the pupils by visual demonstration the fact that the angles of a triangle equal two right angles. The fact had already been demonstrated clearly and definitely, but to make its truth more emphatic the

teacher roughly constructed a triangle, and measured it with a crude protractor. The measurement showed that the triangle had one hundred and ninety degrees. I gained the impression that this part of the recitation was a failure. In the place of making a point emphatic and pressing it home, the teacher ended the day's exercise with the weak remark,—'If I had drawn the triangle more carefully and measured it more accurately, you would have seen that it would have just one hundred and eighty degrees.' I asked myself the question,—'Does the class believe her statement?'"

Examples of Illustration in High School Subjects.—In the preceding pages of this chapter various examples of illustration have been given in connection with the principles there discussed. Under this topic will be brought together other examples of effective illustration taken from the field of high school teaching.

(a) *Dramatization as a means of teaching literature.*—An effective means of making a play of Shakespeare real to a high school class is to assign various parts to individuals in the class, who present it before the class as a whole in dramatic form. Such a procedure always arouses interest, and if kept within bounds is an admirable means of making vivid the play under consideration. There are certain objections, however, that must be considered, and given due weight. As a rule it is impossible to select all the class as performers. Some have such slight dramatic ability, that they would spoil the play if they were given any important rôle. Again, pupils are likely to make too much out of the work, and to over-emphasize the acting side. If a play is presented with any degree of elaborate detail, it consumes a great amount of time. Most teachers of literature limit attempts at dramatization. They may assign various scenes to be read by individual members of the class, and they may improvise crude stage properties and settings, but to go beyond this is outside of the province of the teacher of literature. If a school play is to be given, that is quite a dif-

ferent matter. It is rather a form of social activity than a means of serious instruction.

The most elaborate instance of an attempt to make real plays of Shakespeare in the high school that has come to the writer's attention is that of the puppet plays given in the high school of Easton, Pennsylvania. The following description is given in the words of Lear Anderson, a senior in the school: "The idea of the 'Little Theatre' originated with the class of 1916. The plans for carrying out the idea were hailed with the greatest enthusiasm. . . . The Little Theatre is about four and one-half feet long and three and one-half feet high. There is an opening at the front for a curtain which can be raised and lowered by a string. There are tiny electric bulbs for footlights. The interior of the stage is also lighted by several small bulbs above it. Dolls, which represent characters, are moved by long wires attached to tiny bases to which the dolls are fastened. The Manual Training Department constructed the theatre and the stage furniture. The Domestic Arts Department dressed the dolls; the boys who had studied electricity in physics, did the wiring for the lighting; and we were fortunate in having in our class a young man who could paint scenery. When the Little Theatre was completed it represented the joint efforts of several departments of the school. It is a splendid example of how the interests of other departments are bound up with those of the English Department.

"We made a careful study of *Hamlet* before we made any attempt to dramatize it. Then a committee of students were appointed to divide the work. There were property men, an electrician, a manager, a director, and readers who prepared parts for the various characters. There were rehearsals after school, and many of the students devoted much of their spare time toward planning scenes and preparing parts. . . . There were a few of us at each performance who were fortunate enough to be mere spectators. These spectators were required to give suggestions and to criticise the day's work. We were always better satisfied, however, when we were taking an active part in the work, in spite of the fact that it required more of our time. A written criticism and report in detail of each day's performance was made by a class reporter who was appointed each day. . . .

"The direct benefits we derived from the use of the Little Theatre are sufficient to encourage the English Department to continue its use. The incentive to learn to read well was greater than it ever had been. The Little Theatre gave those in the Manual Training Department an opportunity to apply their knowledge of construction work, as well as teaching them the proportions of a theatre. The girls in the Domestic Arts Department learned what colors appear best behind the foot-lights. We had always daily reports of the class, but a dramatic criticism was unusual as well as novel. . . .

"The Little Theatre still has many untried and undiscovered possibilities. . . . but we feel that we have at least succeeded in opening a field of action in which an appreciation for good drama in comparatively small children may be developed."

(b) *Object-teaching in the practical arts.*—In the high school the most extensive field of object-teaching is found in the manual and domestic arts. These subjects cannot be taught apart from the concrete materials with which they deal. In these departments we find the advantage of illustration not only through the presentation of concrete materials, but also through activities required in the construction of these materials. It should, however, be kept in mind that the very ease with which concreteness and definiteness is obtained in these subjects may carry with it certain disadvantages unless these subjects are safeguarded. Pupils are to be taught not only to acquire a certain amount of skill in performance, but also to acquire discrimination, taste, and judgment. These abilities must be established if the courses are to have real educational value. A similar problem appears in the teaching of the laboratory sciences, which like the practical arts have a foundation in concrete materials and their manipulation.

Adams [1] in his excellent book on illustration quotes Sir William Ramsay as follows:

[1] John Adams, *Exposition and Illustration in Teaching*, p. 318 (1910).

"Far too much stress is laid, nowadays, on what is called 'practical work.' It is possible to have quite an intelligent idea of chemistry without ever having handled a test-tube or touched a balance. Lectures on chemistry may be well illustrated experimentally, and the necessary theories demonstrated by the lecturer. . . . To spend several hours a day in practical work is, if not waste, often, at least, a work of supererogation." While few teachers of those subjects which offer opportunities for practical work would agree with this extreme and somewhat reactionary statement, all should recognize the fact that practical work should be something more than mere practice. In the workshop, the studio, and the laboratory, the student should be taught to discriminate and think, as well as to see and do.

(c) *Illustration through demonstration apparatus.*—In our discussion of demonstration as a means of illustration the statement was made that teachers of science could profitably spend time in constructing or assembling pieces of apparatus suitable for demonstrating some of the more important principles of the science and its application. As an example of a piece of apparatus of this sort, the following description is suggestive:

"The transformer which I use in demonstrating to my class in elementary physics that the potential of the outgoing current (secondary) bears the same ratio to the potential of the incoming current (primary) as the number of turns of wire carrying the outgoing current bears to the number of turns of wire carrying the incoming current, has been a valuable aid to me in my instruction," writes Mr. R. O. Dummer of the Hope Street High School, Providence. "The transformer consists of three parts;—First, a core (x) of No. 18 iron wire, 2½ inches in diameter, and 10 inches long. This core weighs about 10 pounds, and is tightly wound together by strong cord, and then shellacked. Second, a primary coil (y) of 600 turns of No. 16 cotton-covered magnet wire. A lead is taken out at the end of the first 200 turns. The coil will slide over the core easily. Third, a secondary coil (z). This consists of a loop of flexible lamp cord six feet long. The ends of this cord are fastened to the base of a 1½ volt lamp

which serves to indicate the voltage of the outgoing or secondary current. The lamp will burn at proper brilliancy when supplied with a current at a pressure of 1½ volts. Decreased brilliancy means a falling off in the voltage. Increased brilliancy means an increase in voltage.

"The apparatus can be so arranged that a current will flow through 200 turns of wire, through 400 turns, or through 600 turns. Suppose the current is sent first through 200 turns. Take the flexible cord with the small lamp attached and make one turn about the iron core close to the primary coil. The filament will glow slightly; add a second turn and the brilliancy is increased; add another turn, and the lamp will give its proper brilliancy. Thus we find through this demonstration, by means of a piece of apparatus, the construction and manipulation of which can be easily seen by the entire class, that 100 volts in a primary of 200 turns gives a current of 1.5 volts in a secondary of three turns, verifying our equation:—

$$\frac{v}{v'} = \frac{t\,(urns)}{t'}$$

$$\frac{1.5}{100} = \frac{t}{200}$$

$$\therefore t = 3$$

"Now on making this computation for a current through 400 and 600 turns, we find t to have values of 6 and 9 respectively. This means that when the current is sent through 400 turns of wire, we must wrap the flexible cable around the core six times in order to bring the lamp to proper brilliancy, and that when the current is sent through 600 turns of the wire it will take nine turns of the flexible cable to produce the desired effect. The class are greatly interested, when they have discovered by the formula what the effect should be, to see if this effect actually takes place in a demonstration apparatus.

"In concluding the experiment, I send a 100 volt current through 200 turns, wrap the secondary three times about the core, and the lamp comes to proper brilliancy. I add one more turn, and the lamp is over-brilliant, and with the addition of a fifth turn, it burns out."

It may be said in conclusion that this demonstration is an admirable illustration of the deductive development lesson of the anticipatory type. This is discussed in detail in Chapter XIV.[1]

(d) *Illustration by means of pictures.*—In our discussion of this means of illustration, we have mentioned the use of the moving picture, the common projection lantern, and the stereoscope as important. The moving picture has not been extensively employed as yet as a means of instruction in the high school. It can be used most effectively when introduced as a part of a lesson in the classroom. Frequent use in this way would mean careful preparation in advance; it would require a selection of films that would be difficult to obtain, even when they are in existence, and would involve large expense. For these reasons the use of moving pictures as effective means of illustration must of necessity be limited in most high schools. The projection lantern may be employed more extensively. In the best high schools at least one such lantern is available. Courses in science, history, and literature could be made more vital, interesting, and definite if the teachers had for their use, at the appropriate time, carefully selected sets of slides.

In a high school of medium size in one of the better New England communities, a room that will conveniently seat fifty pupils is set aside exclusively for the purpose of illustration by means of the projection lantern. The machine is of the best. It combines with the ordinary projection features by means of slides, a reflectoscope, and a microscopic attachment. The lantern is at the service of every department of instruction in the school but is used chiefly by the teachers of science, history (including civics), literature, and art. At the beginning of each term a definite assignment of the room is made to various teachers according to a carefully worked-out program. Slides and other materials to be used with the lantern are carefully assembled in advance, and the schedule of the various classes is so arranged that the room will be used by each class at the time when it will be

[1] See p. 307.

most advantageous. The room is occupied practically every day in the school year, and on many days it is constantly in use during the session. The teachers have found this means of illustration of the greatest advantage, and as the work has become more and more systematized, and teachers have learned to understand its possibilities, its value has been greatly increased. The success of this means of illustration is due to the fact that it has been carefully worked out in terms of instructional needs. It is not used in an incidental or haphazard way, and never as a method of entertainment.

In many high schools the hand-stereoscope is used extensively in connection with courses in such subjects as commercial geography and economics. This method of illustration is easily employed in teaching certain phases of history and literature. It can be used to advantage in giving pupils pictures of space relationships in three dimensions in teaching solid geometry. The great value of the stereoscope is in the fact that it represents objects tri-dimensionally, and thus gives them an appearance of reality that cannot be obtained by any other means of pictorial representation. There is a disadvantage in the fact that a picture can be presented to only one pupil at a time.

In one high school in which the hand-stereoscope is used effectively as a means of instruction a room of large dimensions is devoted to the purpose, with a teacher or assistant always in attendance. The room is provided with filing cases, and the stereograms, which have been carefully collected over a period of years by the principal and teachers, are arranged according to definite topics of instruction. Here are found stereograms in connection with the teaching of literature, history, geography, economics, civics, science (principally biology), art, and commerce. Pupils are assigned to look up and report on specific subjects that arise in the course of the class work. For example, the teacher of literature is working with the class on the poems of Burns. Pupils are sent to the room at definite periods, previously assigned, and are referred to stereograms designated by certain numbers and filed in reference to these numbers. Each slide assigned is studied by the pupil, who takes down notes of what he has

seen, and writes a paper on "The Land of Burns." In this particular instance the teacher correlates the work in composition with the observation of the stereograms. An incidental feature of the use of the stereograms, which the teachers of commercial subjects consider of general value, is that the pupils are introduced to a carefully worked out and practical system of filing.

(e) *Illustration through models, charts, maps, and diagrams.*— Models in high school instruction are employed largely in courses in the life sciences. They have certain advantages as means of illustration that the living or dead forms do not always possess, since they can show facts and relationships that the actual objects cannot easily exhibit. Care should be taken for this reason to impress upon the pupil the fact that models are specially prepared, and that both in size and appearance they may not be in conformity in every particular with the object that they illustrate. In the writer's own case he was astonished to find that some of his students in psychology had supposed that the *papier maché* model of the human brain represented accurately in all details the actual brain. They therefore assumed that the brain was hollow, as was the model, and that the various fibers could be seen in the real brain, just as they could be seen in the model. Some of the class did not appear to realize that the model of the brain was very much larger than the actual brain. Because the model is an abstraction, and does not represent the actual object in all of its details, Adams [1] recommends that "whenever possible, the teacher should follow the example of the engineer, and end all his model work by a reference to the actual object."

Maps are important in high school work, principally in instruction in history. At times they can be used to advantage in other subjects. Whenever localities have a significance they should be definitely indicated. Often teachers of history discuss in detail facts whose significance depends largely on the

[1] *Op. cit.*, p. 323.

location of cities, boundaries, coast lines, and mountains, and yet ignore entirely these important geographical features, or at most refer to them verbally. Maps are necessary for instruction of this type.

Maps as they are used in the schools in America have certain very obvious defects which need to be remedied before they can be used effectively. I am indebted to Mr. R. M. Brown, of the Rhode Island State Normal School for the following notes in regard to wall maps:— 1. A wall map should display its features in such a way that they can be seen from every part of the room. A glazed surface does not permit this. Names in small type tend to confusion. 2. A physical wall map is more valuable than a political one. 3. A physical wall map should follow the rules generally accepted by geographers. Lowlands should be in green and highlands in brown. Water should be in blue, the deepest shades for the greatest depths. Localities may be indicated by a large dot or circle. Political divisions may be indicated on such maps by heavy red lines. 4. The newest idea is to have a single map for a single feature, and new maps are being published at a small cost with this end in view.

Teachers find it difficult as a rule to secure an adequate number of maps, and especially to obtain maps that are designed to show particular features. Most of the wall maps that are in use confuse with the multiplicity of their details. Rarely can any important feature be seen by all of the class from their seats. As a substitute for the large wall map the teacher will find the individual outline map often superior. The important features can be filled in by the class, and in this way the attention will be centered on the chief details. The outline map is of considerable advantage in teaching the development of a country. When maps are not available the teacher should emphasize the important geographical facts by drawings on the board.

Graphic representations in the form of diagrams are of great use as illustrations in such subjects as mathematics, science, civics, and economics. The interpretation of statistical facts by means of the distribution graph and similar devices should be used more extensively than at present.

In regard to graphic representations in algebra, Judd [1] says:—"The student gets an idea from seeing a graphic representation of an equation which he never could get in the same vivid way if the matter were discussed wholly in abstract terms. This disposition to show the student concrete facts related to algebraic equations is one of the most important innovations that have been made in the presentation of mathematical sciences to secondary school students."

In discussing graphic representations of abstract facts and relationships, Adams [2] says,—"The value of such diagrams is that we can envisage at one glance a large number of facts that would baffle any mind to deal with when presented *seriatim*. . . . The now common plan of recording such matters as lengths of shadows, temperatures, barometric pressures, school attendances, has rendered the chart form of illustration familiar even to young children."

In the use of maps and diagrams the teacher should keep in mind the important fact that their meaning is not self-evident. The pupils must be trained in their interpretation if these illustrations are to be of value.

(f) *Illustration through example.*—A common means of making clear some topic that is difficult of comprehension is to reinforce it through example. The most obvious illustrations of this type in high school instruction are found in such subjects as algebra and foreign languages. Here the examples are presented in verbal form, and great care must be taken to make them as definite and clear as possible. Otherwise they will fail as illustrations because of their abstractness. It is to be remembered that examples in these subjects in addition to serving as illustrations of rules and principles perform the further functions of offering opportunities for drill and for thinking. Examples have added attractiveness and meaning when they are taken from experiences familiar in the everyday life of the pupil.

For instance, the teacher of physics illustrates the meaning of stable, unstable, and neutral equilibrium, by showing a glass stand-

[1] *Op. cit.*, p. 109.

[2] *Op. cit.*, pp. 384–385.

ing upright, a celluloid manikin with a lead weight at the base, and a glass turned over on its side; and the meaning of friction by adhesion by exhibiting a glass bird sticking to a flower dish by means of gum rubber. The teacher of Latin makes clearer the meaning of the prepositions: *a, ad, de, e,* and *ex,* by writing the words ad-vance, absent, de-scend, and ex-terior on the board and discussing with the class their significance.

It has often been urged that examples with a practical application are to be used whenever possible as means of illustration, and attempts have been made to give every subject in the curriculum a practical significance. While it is possible and desirable to make high school subjects practical in the broadest sense of the term, it is frequently impossible, and sometimes undesirable to attempt to show the relation of a topic or a subject to the business of earning a living.

In discussing the application of mathematics to occupations in the world outside the school, D. E. Smith says,—"The actual amount of algebra needed by a foreman in a machine shop could be taught in about four lessons, and the geometry of mensuration that he needs can be taught in eight lessons at the most. The necessary trigonometry may take eight more."

Examples may be negative, as well as positive, so to speak. That is, the teacher may illustrate what the correct fact or procedure is by *showing what it is not.* There is, however, danger of illustrating through "bad examples." The danger consists in what the psychologist terms "negative suggestion." The learner may take the bad example as a copy. For this reason a rule that should always be followed is,—"Never call an error to the attention of a pupil or a class unless such an error is frequently made."

Recently the writer visited a class in commercial English in which the whole period was used in the correction of a poorly written business letter taken from the text. There is no justification for such pro-

cedure. Frequently he has found classes in English expression devoting considerable portions of their time to stating the right forms for the erroneous expressions found in the exercise books. When such exercise books are used, the high school teacher should take pains to have the frequent and common errors alone corrected. Unusual errors, and extreme niceties of language should not be called to the attention of the average high school pupil.

Illustration may be secured by contrasting examples. When the contrasts are perfectly clear, and are carefully emphasized, so that confusion is not likely to result, this is an effective method of making concrete the subject-matter of the lesson.

For example, in the teaching of Latin, differences in declensions and conjugations are often emphasized by contrasting examples of the various forms. In teaching history, the patriotism of Lincoln may be contrasted with the self-seeking of Napoleon. In the teaching of stenography the formation of similar outlines may be made more evident by showing the particulars in which they differ. In the teaching of algebra the various methods of factoring may be set over against one another; and so on throughout the entire curriculum. Indeed, in a sense, contrast is an essential part of all likeness. There is no difference without a resemblance, and no resemblance without a difference. The purpose of the lesson and the psychology of instruction determine in any individual instance which shall be emphasized.

(g) *Illustration through oral suggestion.*—In an earlier part of the present chapter we pointed out the fact that the teacher need not present to the pupil an object or a representation of an object in order to illustrate the matter at hand. It is sometimes more striking, and generally easier, to call up some familiar scene to the imagination of the pupil than it is to present it physically to the view. The teacher who is fertile in illustrations of this sort is generally an effective teacher.

A common form of oral suggestion is by analogy. The subject for consideration is made more intelligible by calling to

the learner's attention some familiar fact or process with which he is acquainted.

This is a form of illustration employed in history. For example, political parties in Rome are illustrated by political parties in the United States; personal liberty in Greece is compared with liberty in America; the Great War is discussed with reference to our own Civil War. In these instances the facts compared are of the same order, so to speak, and differ only in details. They are in a way partial examples, rather than thoroughgoing analogies. In this resemblance with difference lies a great danger. The pupil may consider the illustrations as complete examples of that which the teacher is attempting to clarify, and may identify all of the conditions of the illustration with those which are illustrated, and thus get an entirely wrong idea of the topic under consideration. For this reason, illustration through analogy in which facts of one order are compared with facts of a totally different order is sometimes more effective.

An excellent example of analogy of this type is given by Judd [1] and taken from a class in high school physics in which the instructor was attempting to clarify the methods of the transmission of heat. "The instructor began by furnishing the students with the imagery necessary to enable them to picture to themselves the molecules and their relations. He asked them if they had ever noticed the way in which bricks are carried in the construction of a building from the supply point to where they are to be used. By questioning the class he brought out the fact that there are at least two entirely different ways in which the bricks may thus be carried. In one case a line of workmen is formed and the bricks are passed directly from one to the other along the line. In the second case the workman takes a hodful and goes the whole distance. With this analogy in mind, he gave some simple demonstrations to show that in some cases the heat which is applied to substances, such as iron, is passed rapidly from molecule to molecule. . . . On the other hand, in the case of water there is no rapid transmission of heat from molecule to molecule, but heat must be carried by a change in the position of the heated water particles."

[1] *Op. cit.*, p. 325.

Oral suggestion may, of course, take other forms than that of analogy. There is a large scope for exemplification through recalling to the pupil concrete instances of the facts and principles under consideration. In the preparation of the daily lesson the high school teacher should attempt always to have ready a few such examples taken from the experience of the class. There is no subject in the curriculum in which such examples cannot be found. The anecdote is another important means of illustration, particularly in discussing literary and historical personages. Sometimes it is possible to use the fable, particularly in certain phases of moral instruction.

It should finally be remembered that whatever the form the illustration may take, it should be an important aspect of the lesson. Teachers should constantly seek to vivify their instruction by apt and clarifying examples of what the text-book presents, and what the class is considering. It is easy to deal with generalities; it is a comparatively simple matter to give a rule, or to state a fact; but to give the rule point, to make the fact meaningful, is a vastly different matter. Yet no teaching that is worthy of the name stops with the statement of the rule, or the presentation of the fact. Illustration is not merely a fine art in teaching, it is an indispensable means of making teaching effective. Many teachers use illustration ineffectively; few high school teachers over-illustrate.

CHAPTER XIII

THE METHODS OF THE CLASS PERIOD—ADDING NEW KNOWLEDGE THROUGH STIMULATION OF THOUGHT

Reasons for Stimulating the Pupil to Think.—The statement is frequently made that one of the most important objects, if not the chief object of instruction, is to develop in the learner an ability to think. There are at least four main reasons that can be urged in support of this statement. They are as follows:

(a) *Thought is an aid to memory.*—If the object of learning were merely to impress the memory, thinking would have an important function, because of the fact that anything that is thought out makes a more definite and permanent impression on the mind than the same thing committed to memory by rote. If the object in teaching geometry were solely to familiarize the learner with a given number of propositions, stated and proved in a definite way, it would be more economical to require the pupils to reason out the proofs, than it would be to have them learn these proofs by heart. If the only value of the rule in algebra for squaring a polynomial were that the pupils could accurately state the rule, it would nevertheless be better for the pupils to arrive at this rule by a process of inductive reasoning, than it would be for them to commit it to memory by sheer attention and repetition.

(b) *Thought gives meaning to the mere fact.*—Something that is thought out acquires a meaning that it could not possess if it were presented as a pure statement of fact. Not only is a rule better remembered if it is thought out than if it is merely "committed to memory," but in the process of thinking, the real meaning of the rule becomes apparent. This is one of the

chief reasons why McMurry [1] insists that the recitation should be in the form of the inductive development lesson, which consists essentially in formulating and applying some generalization on the basis of facts presented to the learner. For example, the pupils could quite easily learn the fact that large trade centers tend to develop when situated on important waterways, and when possessing ample railroad connections, but to know just what these facts signify, it is necessary for the learner to have arrived at the general statement from the examination and classification of particular instances. It is quite possible for a class in German to learn the rule for prepositions governing the dative case. Indeed, this is the common method of procedure. However, the significance of this rule would be greatly enhanced if it were formulated by the learners themselves after observing numerous specific instances.

(c) *Thought furnishes a method of procedure by which new facts may be acquired, and by which new methods of procedure may be initiated.*—This is the chief function and the essential value of the thought process. If the learner could not think he could never meet a new situation intelligently. He would be obliged to trust to the "blundering method" in acquiring new knowledge, and in coping with novel conditions. A high school pupil who learns to solve an original in geometry acquires by his efforts not only a better memory for and a better understanding of this *one* original proposition, but he thereby gains a method of procedure which will help him in the solving of *all* similar originals; the learner who has mastered a construction in Latin in one particular instance will be able to use the knowledge thus acquired, in understanding similar constructions that he may meet later.

(d) *Thought developed in one field of learning tends to give the learner ability to think in other fields.*—This statement is frequently made, and often passes unchallenged. Indeed, the

[1] *Op. cit.*

developing of the ability of the learner to think in general is held to be the chief objective of education by many. In recent years, experimental psychology has made it apparent that the acquisition of an ability by practice in one field does not necessarily mean that this ability can be used in fields in which it has not been acquired. Certain it is that the pupil who has learned to think in solving originals in geometry has not learned to think equally well in marshaling facts in history, or in devising experiments in chemistry. However, it is doubtless true that the pupil who has learned to think well in one field of learning has thereby acquired an ability to think that goes beyond this subject. It is reasonable to assume that his methods of thinking have been strengthened in all subjects that have recognized similarities to the subject in which he has learned to think.[1]

It is evident from the reasons discussed above that the teacher should consider it one of the chief objectives of instruction to develop in his pupils the capacity to think in the subject that he teaches. However, it is the common opinion of competent observers of high school classes that this objective is realized much less than can reasonably be expected. Apparently many teachers are on the whole content to spend most of their time in testing the knowledge of the pupil for facts that he has learned from the text-book, in drilling the pupil until he becomes more nearly perfect in what he has thus acquired, and in adding to his store of knowledge by statements and explanations made during the class period. Such teachers require little genuine reaction on the part of the pupil, and seem to regard the educative process as the addition of information to the mind of the learner by a method which is chiefly receptive. That this picture does not accurately represent all teachers of high school subjects, probably not the majority of such teachers, and that the number of those who are content with the "pouring-in"

[1] See Chapters X. and XVI., pp. 207–209 338, 339.

process in teaching, is clearly becoming less, are among the most encouraging signs in the field of high school education of the present time.

The Essential Elements that Enter into the Thought Process.—Since training the pupil to think is to be considered as one of the chief aims of instruction, it is important for us to consider at this point the essential elements that constitute the thought process and the conditions under which thought arises.

(a) *Thought is stimulated only when a genuine difficulty confronts the learner.*—The chief function of thought, as we have already seen, is to enable the learner to meet a novel situation intelligently. The situation is novel in that it has not been encountered before, at least in the identical way in which it is now present. Since it is novel it cannot be met entirely by old and habitual methods. There are two ways of meeting a novel state of affairs. Some learners will attempt to overcome the difficulty in a purely haphazard way, and by blundering on until they hit upon a solution by mere chance; more intelligent learners will attempt to discover some method of procedure in the light of their past experience that will aid them in meeting the present difficulty. It hardly need be said that the blunderers rarely solve their problems, and when they do by mere chance, the solution is sometimes not recognized and seldom leaves a permanent impression.

The blundering method of meeting a difficulty finds one of its best illustrations in the manner in which many persons attempt to solve a mechanical puzzle. They twist, turn, and manipulate the device in various ways, hoping that by some chance the puzzle will solve itself. Sometimes when they succeed in doing the trick, they have not the slightest idea of how they accomplished the result. On the other hand, the expert in solving puzzles studies out the situation in advance of actual manipulation; he at once eliminates certain movements as of no avail and restricts his endeavors along promising lines of procedure. When he actually tries to solve the puzzle through

manipulation, he carefully observes each step that he takes, and by this means is enabled to retrace the false moves that he makes, and to confirm the correct moves.

The methods (or rather lack of methods) which many pupils use in attempting to solve school problems resemble those employed by the blunderer in working out mechanical puzzles. Such pupils have no definite idea of procedure. They stumble on, now doing this, now that, but seldom accomplishing anything worth while. Many teachers of algebra and geometry would be much surprised if they should observe in detail the manner in which their pupils "study" their lessons.

(b) *The difficulty that confronts the learner must be a real difficulty for him.*—In presenting to the pupil material in the form of a problem, the teacher must make sure that this material is a genuine problem for the learner. If the problem is too difficult, if the pupil cannot comprehend it, if he lacks the mental content necessary for its solution, then such a problem is of no value. On the other hand, if it requires no genuine thought, if it is so easy that an immediate and ready response can be given, then for the pupil it has no value in stimulating rational ability. Further, if the pupil takes no interest in the problem as it is presented, if he does not care what the solution is, then again for such a pupil the material has no thought value. For these reasons care must be taken by the teacher to give pupils problems of reasonable difficulty, but not beyond their comprehension and ability to master, and problems that have for the pupils some intrinsic or extrinsic interest.

. Probably in no subject in the high school curriculum are materials which are presented in the form of problems, less real incentives to thinking than in geometry. The form of geometry is so strictly logical that the belief is general that it is an excellent means of training the "reasoning powers" of the learner. The fact that in outward structure the propositions in geometry are based on a rigorous deductive procedure should deceive no one acquainted with the minds

of high school pupils. In the first place, the logic is in many instances too difficult for the average pupil to follow, and in the second place, most pupils do not care actually to solve a problem in geometry. They are quite content to "learn" the proof, or to solve originals by the assistance of their parents, or of older or more capable pupils. "It seems almost impossible," writes a beginning teacher, "for the class as a whole to do problems; they cannot even do them when they are done out for them in the text-book. Most of my pupils are of such poor mentality that they could more profitably spend their time on something else than geometry." An extreme and pessimistic statement, doubtless; and yet there is more than a modicum of truth in it. Geometry, algebra, and similar subjects afford a most valuable training in reasoning for the capable and ambitious pupil. For the dull and slothful their usefulness may be questioned. If they are to be taught as subjects that develop reasoning abilities they must be so taught that those who take these courses shall find in them real problems that they can solve with reasonable effort.

Teachers sometimes go to the opposite extreme in presenting to their classes problems that are so easy that they have no real difficulty and require no thought. Often high school teachers who pride themselves on asking "thought questions" put queries to their classes that require for the pupils of good and average ability no deliberation at all. In the writer's experience such questions are not infrequently asked in history. The teacher should beware of the too glib and ready answer to his "thought questions." To think means to deliberate. The immediately obvious answer is not the thoughtful answer.

(c) *Correct thinking must be based on definite knowing.*—One reason why many of the problems that are given pupils are beyond their ability to handle is found in the fact that the pupils have no definite comprehension either of the language used or of the concepts presented. The teacher of history who asked his class to consider in studying an assignment in regard to the life of the Athenians the cardinal virtues of the Greeks, and who later asked his pupils in English history to write a paper on the

psychological tendencies in the reign of Elizabeth may be excused in part because of the fact that he had but recently graduated from college, and had not as yet learned how limited a vocabulary the average boy or girl possesses. The same excuse, however, cannot be offered for an older, more experienced teacher, who found to his surprise that his class failed totally to understand the significance of Boyle's law because they did not know the meaning of the term "inversely."

Much of the teaching of physics, chemistry, and biology would be made more simple if the instructor took greater care in developing the meaning of the scientific terminology used. This terminology must be employed, but it has no value unless the words are based on an adequate understanding of their significance. In any class in which technical terms are used, frequent tests should be given to determine to what extent the pupils understand the meaning of the terminology. Obviously, merely defining the terms, particularly in the words of the text-book, is no adequate test. The pupils must be tested in the actual use of these terms in appropriate connections. In this way the teacher will be training his class in accurate concept-building, which, if not an essential part of reasoning itself, is the prerequisite of all thinking.

(d) *Correct thinking requires that the problem be clearly envisaged and definitely kept in mind.*—No difficulty can be solved unless that difficulty be accurately comprehended and continually held in attention. The pupil must be able to state the problem and understand what it means if he is intelligently to undertake its solution. It frequently happens that high school pupils do not know in any concise manner what they are trying to accomplish in working out an example in algebra or a proposition in geometry. It is much better for the pupil to discover the problem, and to state it himself than it is to have the teacher formulate the problem for him, or to have him learn it in the words of the text-book.

In this particular the teaching of geometry is emphatically at fault in many instances. A common method is to refer the pupil to the text for the statement of the propositions that are to be demonstrated. Often when this is not the method, the teacher states the propositions himself. In every instance when it is possible, the teacher should develop the propositions to be taken up in the next lesson with the class, and have the class state these propositions themselves.[1] Many of the propositions found in the texts in geometry can be seen to be true by the pupils, before they are actually demonstrated. It should be the aim of the instructor so to present these propositions, by the careful drawing of figures, and by comment on them, that the class will be led to perceive the spatial relationships involved. Later, the teacher may ask them logically to prove that these relationships hold true. For example, it is not a difficult matter for the pupil to perceive that the greatest angle in a triangle lies opposite the greatest side. Not until he has seen that this is true, should he be asked to prove it logically. In a similar way pupils may be shown that the number of triangles into which any polygon may be divided equals the number of sides of the polygon less two, and so on throughout a long list of propositions. The value of the learner's formulating his own proposition in geometry is not alone due to the fact that this procedure lies at the basis of correct reasoning, but also to the further important circumstance that such formulation emphasizes the intuitional and constructional phases of geometry, phases which are most vital to the real comprehension of the subject. It should be remembered that the logical method in which geometry is commonly cast is not geometry but logic. Real geometrical insight is not merely or largely a matter of deductive acumen.

The discovery and formulation of problems by the pupil in such subjects as geometry, algebra, and physics is as important for him as is their actual solution. Problem-stating in these subjects should be made a major aspect of the work. It is possible in other subjects, also, to lead the pupil to raise questions and set problems. This is particularly true of history,

[1] For an example of this procedure, see Appendix C, p. 421f.

the social sciences, and literature. In history, for example, two different kinds of problems may be formulated by the pupil. He may ask a question which raises a problem as it existed for the people of whom he is studying, or he may ask a question that embodies a problem for him. Examples of problems of the first type are the following,—"The Greeks grew olives from which they made oil; grapes from which they made wine. They needed wheat, but they did not produce it. What were they to do?" "Fabius could not meet Hannibal successfully in open battle. What kind of strategy could he follow under such circumstances?" Examples of problems of the second type are,—"Why is it that sailors and traders make more progress than do agricultural people?" "What nations today owe their expansion to the necessities of trade?" "Can a small state develop a better civilization than a large state?" It should be observed in passing that pupils in submitting questions of the second type should be taught to frame problem questions that are actually problems for them, and not merely problems in form, or questions the definite answers to which they already know. The pupil who asked the question concerning sailors and farmers doubtless knew the answer before the question was framed.

As has already been said, the learner must not only have the problem before him clearly envisaged, he must further keep it in mind. Every step of his procedure in its solution must relate itself to the meaning of the problem. For this reason thought is very largely a matter of active attention. He who solves the problem, must constantly have an eye on the goal. In doing this two desirable results will be accomplished. In the first place, mere attention to the problem tends to suggest methods of solution. It is a law of mental activity that concentration of attention on an idea brings up various related ideas. To an extent a difficulty works itself out if once the mind carefully considers the difficulty and constantly holds it before itself. It

is a common experience that when we begin to think about something, all sorts of relationships are discovered that before were unsuspected. All things are fish for the mental net.

In the second place, active attention directed toward the problem under consideration will tend to exclude from consideration all irrelevant ideas that may arise. The skilful teacher says to the pupil,—"What is your problem? Does this fact fit into what you are trying to show? If it does, select it; if it does not, discard it."

Sometimes the relation of ideas to the main problem takes the form of the subsumption of particulars under a general rule or principle. This is a common form of problem-solving in language. The teacher of Latin, for example, is constantly asking such questions as these,—"What is the future passive tense of *rego:* the future passive participle of *capio?*" Here the object of such questions is to accustom the pupil to give the particular form its appropriate ending not in terms of some specific instance remembered, but in terms of a general principle relating to the paradigms of the third conjugation verbs. The importance of relating the particular to the general and the general to the particular will be discussed more in detail later. It applies, clearly, to every subject of instruction, although the most frequent examples are found in the sciences and the languages.

Another kind of thought relation of a less rigorous nature is met with frequently, particularly in history and literature. It may be described as the connection of a fact of knowledge with some coordinate fact of knowledge. An observer of a high school class gives a common example of this as follows,—"In Miss ——'s class in history one pupil asked the question whether Charles V. of Spain was the same person as Charles VIII. of France. A comparison of dates showed the pupil that the latter died before the former was born. This type of reasoning through the comparison of facts is identical with using common sense; some people, many people, must be trained to exercise this most simple of rational processes."

(e) *Correct thinking requires selection and analysis of those facts and ideas that relate to the problem that is before the learner.*— For accurate thinking it is necessary not only that the pupil clearly understand and keep in attention the problem to be solved, but that he further critically analyze in terms of his problem those suggestions that tend to arise in regard to it. Here the teacher has a most important function to perform. The novice in thinking cannot be left entirely to his own devices in criticising and evaluating the ideas that present themselves. Unless he is particularly capable he will get nowhere, if he is not guided in his mental processes. On the other hand, the teacher may go too far and help the pupil too much. Obviously pupils differ greatly in their ability to do independent thinking, and the teacher must to a large extent consider pupils as individuals, with individual needs; he cannot hope to adapt his instruction in this particular to the capacities of the class as a whole, if such a class is not selected on the basis of ability. Unfortunately this arrangement is rare in the typical high school class. For this reason, teaching pupils to think is largely a matter that should be left to periods of supervised study, if such periods exist in the school.

Selection and analysis of materials relating to a problem, or to a topic of study are necessary in all subjects of instruction. Courses that require more than mere rote memory, and most courses do, demand discriminating judgment. For example, in algebra miscellaneous exercises in factoring require that the pupil discover the particular method that applies to each example. Various means will suggest themselves, and the correct procedure must be determined before the work can be accurately done. In the assignment of such a lesson the teacher can with advantage call the attention of the class to the methods that have already been mastered; this is the first step. Then the teacher will point out to the pupils the fact that the various examples must be studied to discover under what cases of factoring they appear to belong. Perhaps at this point certain suggestions will

be asked for from the class. However, care should be taken not to tell the pupils just how to do each particular example; otherwise the entire value of the exercise as a training in analytical reasoning is lost. In this case, as in all others of a similar nature, the teacher should go no further than to suggest possibilities from which the individual members of the class must select the appropriate method. Those who lack skill and ability to do the work after such suggestions have been made, should be instructed singly. In discussing this question, Judd says:—"It is a fundamental mistake to give to students all of the examples under a given principle with a definite statement to the effect that all of these are examples of a single type. The student fails to get the mental training in this case which is desired. He merely cultivates a kind of dexterity of manipulation which is very far from a genuine application of a scientific principle."

The principles that have been brought out in discussing factoring in algebra, clearly apply to other miscellaneous exercises in algebra; they further apply to original work in geometry, and to all other mathematical exercises of the same type, whether pure or applied. In science a similar situation confronts the teacher when an experiment is to be performed in which a certain result is desired, but in which the exact method of reaching it is not known to the pupil. Various ways in which similar results have been accomplished in the past must be brought to the attention of the class, and they must select the proper method themselves, and test it out. Unfortunately in the teaching of laboratory science in most high schools, what may be termed "original experiments" are seldom given. In this respect there is a resemblance between the formal methods of teaching geometry, and of teaching the sciences of physics and chemistry. There should be more originals in geometry, if its teaching is to be justified; there should be less formal work in science, and more actual investigation on the part of the pupils.

In the teaching of language, selective thinking is not of such a rigorous type as in mathematics and the sciences, but it is a necessary part of all instruction except that of the purely informational and habit-forming type. Both in translation and in composition numerous instances occur in which discrimination and analysis are required. Similarly in history and literature, any teaching that goes

beyond the mere emphasis on memory and drill on facts, involves a thought process that has in it the same essential characteristics that are required in solving a problem in mathematics or in performing an investigation in science. A particular illustration of this is found in the attempt to teach the study of history by topics, and sub-topics. The majority of pupils coming from the elementary school have a very vague idea of how to read history and general literature with an intelligent comprehension of their significance. Either they attempt to commit the entire assignment to memory in a mechanical way, or they in a haphazard manner recall the materials most interesting to them, without regard to their real values. These pupils must be taught how to study with intelligent discrimination.

One favorite means employed by many high school teachers in the accomplishment of this end is the development of the outline. Here again the instructor may do too much, as well as too little. Those teachers who spend a large amount of time in dictating outlines to the class to be employed in the study of assigned topics err, as has already been said, in using the class period for work that gets comparatively small returns in real mental activity. Further, if the instructor does this work for the class, he fails to develop their ability to think for themselves. The pupil learns to rely on the teacher to work out his problems for him. On the other hand, if the teacher does none of the work, and throws the class entirely on its own responsibility, a large number of the pupils will never develop the ability to outline the work for themselves. Hence, a compromise method is necessary. At the beginning of the course the teacher must suggest topics and sub-topics. Gradually, however, he must throw the responsibility of this work on the individual members of the class. Some of the outlining may be done by the class as a whole in a coöperative lesson. However, in this case care must be taken that the actual thinking is not confined to the most capable individuals. The less gifted pupils, in terms of their abilities, must do their own work.

In the newer subjects of the curriculum selective thinking is not so obviously employed, as in the studies of the more "academic type." Nevertheless, it finds a place even here. In the commercial courses there are rules and principles of procedure that demand the exercise of discriminative judgment. Stenography, in particular, requires

mental processes that are similar in many respects to those that are found in the study of a foreign language. In the manual training and household arts courses much depends on the skill of the hands, but to be merely "finger wise" is not enough.

In discussing the problem of the organization of the materials of thinking, Parker [1] offers several practical suggestions which we can to advantage keep in mind. He says,—"To stimulate and assist pupils in carrying on reflective thinking the teacher should:

I. Get them to define the problem at issue and keep it clearly in mind.
II. Get them to recall as many related ideas as possible by encouraging them:
    1. To analyze the situation.
    2. To formulate definite hypotheses and to recall general rules or principles that may apply.
III. Get them to evaluate carefully each suggestion by en-encouraging them:
    1. To maintain an attitude of unbiased, suspended judgment or conclusion.
    2. To criticise each suggestion.
    3. To be systematic in selecting and rejecting suggestions, and:
    4. To verify conclusions.
IV. Get them to organize their material so as to aid in the process of thinking by encouraging them:
    1. To "take stock" from time to time.
    2. To use methods of tabulation and graphic expression, and:
    3. To express concisely the tentative conclusions reached from time to time during the inquiry."

[1] *Op. cit.*, pp. 199–200.

Of these principles set forth by Parker we have already discussed some in the preceding pages of this chapter. Others will be touched upon later.

Induction and Deduction the two Fundamental Forms of Reasoning.—In most discussions of thinking and of the rational processes a careful distinction is made between inductive and deductive methods of handling individual instances and bringing them under general principles. For purposes of emphasis these processes are treated as quite separate, and sometimes they are set over against each other as if there were some fundamental antagonism between them. As a matter of fact these two processes are simply different aspects of the same fundamental tendency of the human mind, which may be stated as follows: *When any new fact is presented, or any situation exists that is in any way novel, there is a tendency on the part of the human individual to treat this new fact, or react to this novel situation in terms of past experience,—which past experience assumes the function of a general principle of procedure in all similar cases. On the other hand, when a principle of procedure is presented, the human individual has the tendency to envisage this general principle in terms of concrete examples.* In other words, it is a tendency of the human mind to find the general in the particular and the particular in the general. Sometimes the identification of the particular instance with a general principle, and the opposite is made so readily that it approximates pure habit, and in such cases the thought process is reduced to a minimum; sometimes such identification is laborious and time-consuming, in which case elaborate thought processes are in evidence. The identification of the particular instance as an example of a general principle, and the envisagement of the general principle in terms of a particular instance are both illustrations of the conceptual process. Such a method of thinking is clearly a matter of mental economy. The particular instance, as a mere instance, is without significance, and possesses little value either

for thought or behavior; on the other hand, the mere knowledge of a general principle (if indeed it can be called knowledge under such circumstances) is barren. Since this is true, every teacher should aim in his instruction to give meaning to particular instances by showing their general bearings, and to make concrete and definite all general principles through clear-cut and definite illustrative examples.

The conceptual process, which as we have seen consists essentially in the identification of the particular with the general, when expanded develops into a definite rational procedure. On the one hand, when a particular instance arises the meaning of which is not clear, and when the learner by comparison of this with other similar instances finally arrives at some comprehensive principle that explains and identifies it, such a process is induction. Often the general principle may be known, but not identified with the particular fact; sometimes, however, the general principle has to be discovered. In the former case we have the mere identification and relation of facts already known; in the latter, an actual addition to knowledge. Obviously the great scientific inductions are of this second type.

An example of the identification of a particular instance under a principle already known, but not at once apparent, is illustrated by the following instance cited from an observation in a high school class in literature: "Yesterday I visited the class of Mr. J——, who was teaching *Macbeth*," writes the observer, "and I was interested to note that he was trying to do something more than to teach the pupils mere facts; he was trying to make them think and feel. One thing that he aimed to do, and it seemed to me actually succeeded in doing, was to make them comprehend the meaning of the 'knocking at the gate.' I believe he accomplished this better,—that is, made his class really get some genuine understanding of this dramatic situation and some feeling for it,—than did our college instructor, in the class of which I was a member. Our instructor talked a long time about this scene, referred us to various commentators, and gave

us a fund of information, but I never actually appreciated the true significance of the situation until yesterday, when I visited Mr. J——'s class. This is how Mr. J—— got at the vital meaning of the scene:

"A boy was called upon to read the passage and he did it effectively. I think he was chosen by the teacher because he could read well. 'How does that scene make you feel'? asked the instructor. One member of the class thought it was 'funny,' and some others agreed. A bright girl said that it was too serious to be merely funny. It made her feel as if something was going to happen. Others were also of the same opinion, but no one could quite tell why it seemed terrible, as well as 'funny.'

"I concluded at this point in the lesson that nothing further could be obtained from the class in regard to the significance of the scene, but the instructor was resourceful. He related an instance of two men remote from civilization, lifelong friends and companions; of the temptation, greed, and treachery of the one, who deserted the other and intentionally left him to die because of the desire to secure the entire right in a rich mining claim that they had found. All went well with the wrong-doer until he returned to his own city. Here for the first time he realized what he had done, and although there was no fear of detection or punishment for his crime, his conscience, awakened by coming back to his home, would never give him a moment's peace; yet when he was remote from acquaintances, friends, and associates, in a wild country where he knew few people and had little regard for them, his evil deed had not seemed evil to him.

"By means of this incident, and several others of a similar nature, the class were led to see that the world in which we live sets the standard for our acts and holds us accountable for them. When we are remote from this world, when we are by ourselves, we may be overcome by our own selfish interests, forget our accountability, and lose our distinctions between right and wrong. When, however, we come back to this world, or as in the case of the 'knocking at the gate' this world comes to us, then arrives for us the real tragic situation.

"It should be said that this principle of human thought and feeling was not stated in the abstract manner in which I have presented it, but this was the general purport of the discussion. The

point that impressed me was that the class were led to discover the significance of the scene themselves by a process of inductive reasoning in which several particular instances ingeniously selected by the teacher, were made the basis of a generalization. In a vague way the class knew this general principle, but in this lesson it was raised from the twilight of subconscious feeling to the clear light of definite awareness. This part of the lesson occupied fifteen minutes. To some it might appear a waste of time, but I think that it was worth while. It had given to many of the pupils a taste of appreciative criticism of a great work of art; it had framed in concrete terms a fundamental moral law, and it had afforded as excellent a training in rational procedure as I have witnessed in any class in the high school, that it has been my privilege to observe. Indeed, I am of the opinion that much of the instruction in mathematics and science falls far below this particular lesson in English as a training in inductive reasoning."

In rigorous scientific reasoning the inductive process at times leads to the discovery of new and important laws and facts that before were unknown. When this principle of thought is applied to classroom instruction, it has sometimes been called the "Method of Discovery." Of this method Thorndike [1] says:—"Children are never left to discover the sciences and arts as they were originally discovered. They are always given advantageous knowledge and help in seeing what the problem is. But, even with these modifications, the requirement that pupils actually rediscover facts is still absurd. . . . Of course, save for the few individuals of great gifts, they do not, no matter what we pretend, rediscover important facts. . . . The method of discovery at its best is, in fact, a very bad title for methods in which the pupil is left to his own efforts so far as he can be without too serious detriment to the quantity and quality of the information and skill that he gets. . . . At its worst, the method of discovery is a name for pretense that the

[1] *Education*, pp. 195–196 (1912).

child is cultivating powers of originality and self-reliant investigation, while at the same time the facts are being smuggled into his possession as truly as in straightforward 'telling.'"

While it is true that pupils, even those of the high school age, seldom discover for themselves unaided any truth of importance, and while such truths even if discovered by them, have previously been reached by others, nevertheless, in a halting and imperfect way many pupils may employ inductive processes of thought and may get some insight into what scientific rigor and scientific methods mean. If they acquire little more than an attitude of examining facts and employing caution in arriving at conclusions, this is surely worth while.

An example of the method of scientific discovery as employed at times in high school instruction is found in the following class exercise in physics. The aim of the lesson is to give the class knowledge in regard to certain facts concerning magnetism. In this particular instance the teacher has not assigned to the class a lesson in a text that tells about these facts, neither has he informed the class concerning them. Of course, one of these methods would be the most direct and economical way of arriving at the result, if all that was desired was to impress for a brief time these facts on the minds of the learners. It is the purpose of the instructor, however, to help the pupils think for themselves, and further to impress as emphatically as possible on the minds of his pupils those matters which he considers important in the topic on magnetism. Hence, under his direction, the instructor attempts to lead the pupils to a discovery of these facts. The method that is used is first to present in a clear and emphatic manner several instances of the facts that he wishes the class to discover; second, to lead the pupils to analyze and compare the individual instances in such a manner that the important element in these instances will stand out and become evident to all; third, to have them state definitely just what this element is. For example, one of the specific matters to be taught in this lesson is that the magnetic needle points north and south, and when set in motion, tends to come to rest in that position. This simple fact could, of course,

easily be told in a few words, and demonstrated in a brief time. Perhaps two or three minutes would be sufficient to do this. The instructor, however, employs nearly a third of the class period in leading the pupils to find out and definitely formulate this fact. On his table are six standards, and attached to each of these, swinging freely, is a magnetic needle of such size as to be seen easily by all members of the class. These needles are all set in motion, and the class is asked to observe what happens when they come to rest. It takes some time, and some ingenuity on the part of the instructor to lead the class to see the simple fact that when they are at rest they all point in the same direction. Further time is consumed in discovering that the direction is north and south, and additional time in verifying the observations by subsequent experiments. This part of the lesson concludes with a consideration of the practical significance of this fact and its value in daily life.[1]

At times the inductive processes of reasoning are directed not toward the formulation of scientific principles, but rather toward the awakening of fundamental attitudes, feelings, and interest. In such cases, the result is what may be termed an "appreciative judgment."

As an example of the judgment of this type, the following instance may be cited: In a large class in first year English in a city high school, the pupils were reading Bullfinch's *Age of Fable*. They showed great interest in the narrative as a whole. One boy, however, remarked that he wished that the class might not be compelled to read poetry. He said that he did not like poetry, and there seemed to be a general agreement on the part of the rest of the class that poetry was dull and uninteresting. "Tell me," said the teacher, "the name of some poem that you remember." The boy thought for a moment, and then answered: "*Old Ironsides.*" "Ah," said the teacher, "Old Ironsides at anchor lay," and so on, repeating some of the most stirring lines of the poem. "Is there not another boy who can remember the name of a poem?" he next asked. Several hands were raised, and *Sheridan's Ride*, *The Chambered Nautilus*, *The Village Blacksmith*,

[1] For further examples of inductive reasoning see Appendix C, p. 418f.

and *Curfew Shall Not Ring To-night* were mentioned. In each instance, the teacher quoted brief passages from these poems, and brought out their most stirring qualities. The next ten minutes of the recitation period were spent in a similar manner. Over fifty poems were mentioned, and all were eager to make suggestions. It was because of lack of time, rather than lack of interest that the teacher was compelled to turn to other aspects of the work. He concluded this part of his instruction with the remark: "I see that you boys do not care for poetry." "Yes, we do!" said half a dozen in chorus, while the rest nodded their approval.[1]

[1] The aim of the lesson outlined on pp. 426–429 of Appendix C is in part to develop appreciative judgments.

CHAPTER XIV

THE METHODS OF THE CLASS PERIOD—ADDING NEW KNOWLEDGE THROUGH THE INDUCTIVE AND DEDUCTIVE DEVELOPMENT LESSON

The Five Formal Steps of Instruction.—In the history of educational method, the "inductive development lesson," as it has been termed, occupies an important place. It finds its best exemplification in the "five formal steps" of the Herbartians. These five steps are: (1) Preparation, with statement of the aim of the lesson. (2) Presentation. (3) Comparison and Abstraction. (4) Generalization. (5) Application. Although the methodology in connection with this device has been applied principally to the elementary school, it can be used with certain adaptations to advantage in high school instruction.

The Principles of these Five Formal Steps may be Applied in a Modified Form to High School Instruction.—(a) *It is true of all grades of instruction that the mind of the learner should be prepared in advance to receive the new material that is to be presented.*—Surely the high school teacher should see to it that the members of his class have the mental background to comprehend a new principle in algebra, a new formula in chemistry, a new construction in Latin, or a new set of facts in history. His pupils cannot think economically and profitably unless they have the necessary knowledge and comprehension to do such thinking. Every teacher should adopt as an important rule of procedure,—Prepare the pupil for all new material that is to be presented to him.

(b) *It is equally necessary for the pupil of whatever grade to know the main aims of the recitation period.*—There are, or should

be, certain objectives in each class exercise, and in any lesson of the thought type it is necessary for the learner to have before him the chief problems involved. "Today," the teacher of physics tells his class, "we are going to take up certain facts in regard to the transmission of heat, and attempt to formulate the various ways in which this transmission may take place." "The main points that we shall emphasize in this lesson in the *Sketch Book*," the teacher of English informs his pupils, "are Washington Irving's humor, and his love for country life. I want you to notice carefully all those passages that seem humorous to you, and to decide what makes them humorous. I want you likewise to observe Irving's descriptions of rural scenes and customs, and decide as well as you can what qualities make these descriptions so striking." "Keep in mind during this hour," says the teacher of German, "the use of the prepositions in the exercises that you translate. I want you to note particularly what prepositions govern the accusative and dative cases, and at the end of the hour I shall expect you to give me a rule based on what you have observed." So it should be in each and every recitation that seeks to do more than merely to test for knowledge and to drill. Call to the attention of the pupil the goal at which the lesson is aiming, and insist that the pupil think out the essential facts and principles in terms of this goal.

(c) *Facts must be considered in their relations.*—The pupil must do more than keep in mind the general aim of the lesson, in order to marshal properly his facts and give them significance. Facts in any subject when presented should not be considered as isolated facts. They must be compared with facts of a similar order so that their general bearings may be seen. This is secured by analysis and abstraction. In order that the essential elements of general importance may appear clearly the teacher must assist the pupil at this point in the inductive process. Thorndike [1] gives several important suggestions in this connec-

[1] *Education*, pp. 174–175.

tion. He sums up methods of analysis under the following laws: (1) Know what the element is that the pupil is to be able to respond to, and what response he is to make to it. (2) Dissociate the element. Do not expect it to emerge into clear thought of itself. (3) When it is possible, present the element itself before presenting the gross total situations in which it inheres. When the element cannot exist apart from concomitants,—(a) Begin with cases in which it is clear and impressive. (b) Have the pupil compare these with attention directed toward their elements. (c) Have him contrast with them cases similar, save in the absence of the element. (4) Provide an instructive name for the element. (5) Have the pupil respond to the element in new situations.

The significance of these laws will be made clearer by an illustration taken from the field of high school instruction. The teacher of German is attempting by the inductive method to impress on the minds of his pupils the fact that the preposition *in* is followed by the dative case after verbs of rest and by the accusative case after verbs of motion. In the first place the teacher must have in mind just what he wishes his pupils to do. Is the aim merely to have them translate the preposition properly when they meet it in their reading; is it to have them use it in written composition; in oral discourse; is it all of these three? It is clear that the emphasis will be somewhat different in terms of these different aims. In one instance the situation that they are to respond to is the reading situation, in another the writing situation, in the third the speaking situation.

When the teacher has decided just what the response is that he wishes the class to make, then he must present the situation in such a way that the particular fact that he desires to impress will stand out distinctly. It is not enough that instances be presented in which the preposition is used; it must be dissociated from the general context so that it will be clearly recognized. The pupils will not find out the principle involved if left entirely to their own resources. Not only should the teacher make the principle definite and clear but he should present it as free as possible from other matter. Hence he

will call the attention of the class to brief sentences which illustrate what he wishes to emphasize, rather than to complicated sentences in which many other facts and laws appear than the one that he is trying to teach. While it is impossible to give examples that do not have other concomitants, these concomitants can be made relatively few and simple.

To make the instances clear and impressive, he must use sentences with verbs that obviously express either motion or rest, such as: Ich *gehe* in die Stadt; ich *laufe* in das Zimmer, on the one hand, and ich *bleibe* in der Weite; ich *ruhe* in der Hängematte, on the other. Further, the pupil must compare the various sentences, with particular attention to the meaning of the verbs used, and the cases of the nouns that follow the preposition, contrasting carefully the cases in which a verb expressing motion is used, with those cases in which the verb expresses rest. When this is done the class should be able to formulate in a crude way the general rule, after which it should be stated with exactness and given a definite name by which it may subsequently be referred to.

Finally, it is extremely important that the facts arrived at should be put into use by the pupil as soon as possible. If the aim is to secure correct translation, numerous sentences illustrating the principle should be provided. The practice should follow immediately after the principle is formulated and definitely stated. If the aim is to teach the use of the preposition in written discourse, then, of course, the appropriate exercises should be at hand. In a similar way, if facility in conversation is the aim the practice should take this form. In any instance something should be *done* by the pupil.

(d) *Generalizations must follow from comparisons.*—Comparison and abstraction, the third step in the inductive development lesson, are never ends in themselves. They lead to the formulation of rules, principles, methods of procedure,—in a word to generalizations, the fourth step of the inductive process. Generalization is a fundamental tendency of the human mind. It is crude and inadequate as a rule, however. The teacher can perform no more important service for the pupil than to habit-

uate him in forming accurate and useful generalizations. The high school instructor would improve the quality of his teaching if he would frequently ask himself this question,—"What significant principle, what important rule, what comprehensive fact have I worked out with the class in this recitation?"

(e) *It must always be kept in mind that generalizations are valuable in proportion as they are useful. Hence, they must be at once commandeered into service.*—Application is essential to complete the inductive procedure. This is the fifth and final step. It is to be remembered that application may take various forms, all of which are important. In the manual training and household arts courses, a method of procedure is taught by the instructor and then the learner puts it into use by actually making something in which this method is employed; in mathematics the rule is applied in the solving of problems and the working out of examples; in science the application expresses itself in the laboratory technique; in language it is shown in accurate translation, correct speech, and careful composition; in literature and history in the interpretation of individual instances in terms of general principles.

It is further to be remembered that application is important not only because it is useful, but for the added reason that through application the general principle is made more definite and certain. It is only through use that meanings are acquired. As McMurry points out,[1] stopping with general principles may result in a mere verbal mastery of a subject. This application, he urges, should follow as soon as possible the mastery of the general principle. In the professional schools, practical courses are always connected with theory, and in this fact lies one of the chief educational advantages of such schools. In the elementary school and the high school, direct and immediate application is more difficult, yet some form of application is necessary even here, for if knowledge and skill are not applied

[1] *Op. cit.*, Chapter IX.

as far as possible in school, there inevitably arises a divorce between school and life. This is sure to work harm. Of course, this application need not always be "practical" in the narrower sense of the term, but the application to be most effective should in some way relate to human life and human interests.

In the High School it is Seldom Possible to Employ the Inductive Development Lesson in Detail, and with Formal Rigor.—The inductive development lesson, as we have already said, has been worked out as a method of elementary instruction, and it is here that its formal application is most in evidence. Rarely will the high school teacher find it desirable to use this method in all of its phases in the course of an hour's instruction. Nevertheless, there are frequent opportunities when various aspects of it may be used to great advantage. The following instances of its partial employment will illustrate its value:—

In a class in physics the instructor is presenting the principle of the lever for the first time. He begins by showing to the class a lever with an adjustable fulcrum, and with detachable weights at each end. Through a demonstration of the apparatus, and by comparison of the results obtained by changing the position of the fulcrum and the weights, he leads the class to formulate for themselves the most essential principles involved in the operation of this machine. The last ten minutes of the period are spent in testing out these principles to discover whether they apply to further cases. In the following lesson the different classes of levers are demonstrated and the pupils led to distinguish between these classes, and to name various applications of these three classes as they are commonly found in everyday tools and appliances, such as the balance, the crow-bar, and the oar. Subsequently the knowledge acquired concerning the operation of the lever is used as a preparatory step in presenting the operation of the pulley.

An observer reports as follows concerning a class in geometry,—"The remainder of the recitation was spent in developing the lesson inductively. The class had just begun the study of figures,—triangles, quadrilaterals, etc. In the place of having them learn the definition

of such figures, which in my experience is the common practice, the teacher employed this ingenious method of presenting the general facts to her pupils and leading them to see for themselves the essential principles involved. During the previous recitation she had directed her pupils to cut out of paper, isosceles, equilateral, right, and scalene triangles; quadrilaterals, parallelograms, rhomboids, squares, and similar plane figures. These were not named, however, or their properties discussed at that time. The work was simply in preparation for what was to follow at the next class period. On this day, with the aid of the materials previously prepared, the class were comparing, contrasting, and classifying the various kinds of plane figures that they had cut out, making their own rules, and framing their own definitions in their own words. They were next led to judge areas, cutting the paper figures when necessary, and also dividing them by folding them, or marking them with the pencil. I was impressed with several details in this class. In the first place, every member was attentive, interested, and curious. In the second place, all seemed to understand what the lesson was about. The meaning of the various plane figures seemed evident to all. And in the third place, they were eager to apply the knowledge that they had gained in various ways, some in working out problems in regard to the properties of triangles, polygons, etc., and others in finding some practical application of what they had learned to matters outside of the classroom. On the whole, these lessons that I attended in geometry seemed to me to be the most worth-while lessons that I observed in the entire school. Generally, as I have observed the teaching of geometry in other high schools, and other classes, I could not say this."

An observer of a class in history writes,—"About three-quarters of the whole period was more or less concerned with the inductive development of thought. The facts cited were brought up rather to show their general significance than to impress them upon the minds of the pupils, as mere facts. The discussion centered around the Hundred Years' War. The instructor started with some simple idea as presented by some member of the class, and gradually through question and answer in which the majority of the class participated, he arrived at the larger thought desired. When some of the more

general principles had been worked out and stated, the class were asked to point out how these principles applied to the Great War. In a way the lesson was crude, for the pupils were often halting and clumsy in their expressions, but I felt that, nevertheless, they got a good deal out of the recitation, much more, I believe, than if they had been merely told the facts, or had read them in a book."

The Deductive Development Lesson; the Final Step.—The final step in the inductive development lesson is, as we have seen, application. This step in itself is rather of the nature of deduction than induction. When this step is amplified and emphasized, it has been set over against the inductive lesson of which it is the natural culmination, and has been termed the deductive development lesson. Like the inductive lesson, it calls forth thought on the part of the pupil, and brings the general principle and the particular instance into relation, so that each may be better understood. Unlike the inductive lesson, the general principle is not arrived at by the learner wholly or partly through his own initiative. This principle is stated by the teacher or formulated in the words of a text-book. For this reason, this procedure lacks the completeness that the inductive lesson possesses when it is followed strictly through the five formal steps. Further there is a danger that a general principle when given to the pupil will not have the significance that it should possess, and which will of necessity attach to it when this principle is formulated by the learner himself.

The Deductive Lesson Possesses Certain Obvious Advantages over the Inductive Lesson.—This makes its use often desirable, and sometimes necessary.

(a) *In the first place, the inductive process is often long and time-consuming.*—There is seldom time during the ordinary class period to carry out any thorough-going inductive process. Adequately to develop even the most simple principles requires relatively extensive knowledge and careful comparison and analysis.

(b) *In the second place, and chiefly for the reasons just spoken of, there is slight opportunity for the learner to arrive at any scientifically valid inductions.*—The pupil has not sufficient facts at his command to justify any ultimate conclusion. What actually occurs is that the instructor selects carefully the most significant facts and arranges them in such a way that they suggest the conclusions desired. As a rule he takes a few typical cases and leads the pupil to see the general laws embodied in these cases. This is all very well, and entirely justifiable in itself. There is a danger, however, that the pupil will gain the impression that in actual scientific induction the process is as simple and direct as it is made for him by the teacher. The pupil must not be habituated in forming hasty hypotheses and "snap judgments."

There is particular danger of this happening in such a subject as history. Sometimes the "thought questions" asked cannot possibly be answered by the pupil on the basis of any genuine thought on his part. Often they are merely suggestive questions, the answers to which are obviously given in the form in which they are stated by the teacher. Neither pupil nor teacher should deceive himself into assuming that they involve genuine reasoning on the part of the learner. Some years ago a series of texts in history were prepared with the purpose of leading the pupils to arrive at historical principles by considering the significance of certain facts presented in the form of original sources. The pupils were to read these fragments selected from various quarters and then make general conclusions on the basis of these facts. The attempt could be nothing but a failure. Often no conclusions of any scientific worth could be drawn from the materials as presented, and when such conclusions could be drawn, they were for the most part suggested directly by the form in which the questions, framed to guide the pupil in his study of these fragments, were stated.

(c) *In the third place, and for reasons brought out in the above discussion, many of the inductions that the pupil is asked to make*

are extremely fragmentary and inconsequential.—They lead nowhere in the larger thought development, and afford no fundamental insights into the wider principles involved. Finally, there are many principles and far-reaching laws that have been formulated through long and extended research and analysis that pupils could not possibly discover for themselves, even under the most skilful direction of the teacher. It may be urged that such general principles are for this reason beyond the comprehension of the learner. This, however, by no means follows. The human race has received from its men of genius many principles of the greatest practical importance which are constantly being applied; yet these could not be derived by the majority who use them. A principle to have meaning must be applied; it need not necessarily be derived by the one who intelligently uses it. Obviously this statement applies to laws in physics, formulæ in chemistry, rules in language, and so on. They must be furnished to the pupil because he requires them, if he is to pursue the subjects to which they belong.

Phases of the Deductive Development Lesson.—Bagley [1] has divided the deductive lesson into four phases or steps; namely,—(1) the data, (2) the principles, (3) the inferences or conclusions, and (4) the verification. In the first place the teacher recalls to the mind of the pupil those facts that are necessary in order to set forth the general principle which they illustrate. Then from this principle certain inferences are made as to facts that seem to be true. Finally, the pupil is required to find out if the facts that appear to follow from the general principle actually exist.

An illustration of the deductive process as outlined above is found in the high school in its typical form in such a subject as algebra or geometry. The data, as Bagley points out, consist of the statement of the problem; the principles, in the general processes and rules that

[1] *The Educative Process*, page 308 (1905).

govern its solution; and the verification, in the conclusions reached in the form of a proof that tests out the accuracy of the results obtained. For example, the teacher shows the class various polygons divided into triangles and recalls to their minds the fact that the number of triangles in any polygon is expressed by the formula $n - 2$. The question is then asked:—"How many triangles are there in a pentagon; in a hexagon; in an octagon? etc." Verification may consist in requiring the class to test out their answers by construction of the figures under discussion.

In physics the teacher reviews with the class the facts in regard to heat capacity, and asks them to state the fundamental laws (previously learned). Then he asks the following questions,—"Which would be the more efficient foot-warmer, a rubber bag, containing five pounds of water at 80° c., or a five pound block of iron at the same temperature?" This step of application can be easily supplemented by a verification of the conclusions reached through a class or a laboratory experiment. Still keeping in mind the general principles previously brought out, the teacher asks,—"Will a drop or two of alcohol feel cold or warm to the hand?—Will the ground be more or less deeply frozen when it is covered by a blanket of snow?" In a lesson in which the effect of heat on the expansion and contraction of metals is the topic for formulation and discussion the following question is put,—"What would be the effect of stringing telegraph wires tight in winter and loose in summer? What would be the effect if the opposite were done?" Verification here can be easily secured through a class or a laboratory experiment.

In a class in history with Solon's reforms the main topic of consideration, the general fact of the cancellation of debts is considered. The teacher explains that any deliberate attempt to cheapen currency, as, for example, the move to introduce the free and unlimited coinage of silver at the ratio of 16 to 1, is in effect a partial cancelling of debts. With this principle in mind the class is asked what effect a great addition to the gold supply of the United States would have on the debtor class and on the creditor class. "Has there been such an increase in recent years?" is the question next put. "What would you expect the effects to be?" is a further query. When various answers have been given and discussed, and when it is seen that one

effect would be an increase in the price of commodities, the teacher refers the class to selected collateral readings, in order that the conclusions reached may be verified or disproved.

In a senior class in literary appreciation and criticism, typical examples of the poetry of Poe, of Lowell, of Longfellow, and of Whittier are presented and the fundamental characteristics and differences are pointed out. Later other examples of poems by these authors are given, and the pupils are asked to decide in the case of each poem the particular author who composed it. They are subsequently sent to the library and required to verify their judgments.

In the languages, the instances of the application of rules and principles to specific instances are numerous. Indeed, the greater part of thinking in these subjects is of this simple deductive type. A class learns a rule and is required to apply it in an exercise in oral or in written composition. Verification consists in a criticism and correction of the exercise. In a translation exercise a similar method is followed. Such questions as the following are numerous: "In what case is *viris?*" "Why do we have the ablative case here?" "How do you know that this statement is in direct and not indirect discourse?"

A more extensive attempt to apply general principles to particular instances is found in the following lesson in Latin, the plan of which is stated by the teacher as follows:—"The aim of this lesson is to emphasize the application of these rules and principles, namely,—the uses of the ablative of separation, of description, of comparison, and of difference; also the complementary infinitive, negative and positive clauses of result, and negative and positive clauses of purpose. The class is to find in the assigned lessons in the text one English and one Latin sentence to illustrate each of these points as enumerated above. In the class period, pupils will be called upon to translate sentences selected by them and to explain the rules involved. These sentences will then be discussed and corrected, and the judgment of the pupils verified or amended as the case may be." Obviously the method followed here in Latin is often employed in other foreign languages and in English as well.

The Two Functions of the Deductive Lesson.—Bagley in further discussion of the deductive lesson points out that it

serves two distinct functions, namely,—*it may anticipate a fact, or it may explain it.* In the illustrations given above, the simple questions in language are clearly of the explanatory type. The aim is to bring to the attention of the learner the reasons why these particular instances are as they are. Examples of the explanatory type of deduction in high school science are given by Bagley as follows:—

"In botany, for example, the principles of chemistry and physics are, or should be, called upon to explain the facts of plant physiology. Suppose a lesson to have as its subject-matter the upward movement of sap through the root and stem of a plant. The principles of osmosis and capillary attraction are at once suggested. The inference will be that some structure of the plant fulfills the conditions required for the operation of these principles. Needless to say, this topic may also be approached inductively; but if the principles of osmosis and capillarity have already been developed in physics, why redevelop them in botany? Here is a fact: the movement of a liquid in opposition to the law of gravitation. What principles have we discussed that will cover this phenomenon? Under what conditions? Then we must infer that these conditions must, in some way, be fulfilled by the plant structure. Let us examine the structure and see how they are fulfilled."

On the other hand, the lesson in regard to heat, outlined above, is largely of the anticipatory type, since it anticipates facts rather than explains facts already given. The anticipatory type is on the whole a more stimulating form of the deductive procedure, since it involves the element of curiosity.

Bagley calls attention to the fact that the anticipatory question has been criticised as consisting largely of shrewd guesswork. "The fallacy of this position," he writes, "lies in the fact that 'guessing' is assumed to be emphasized in the deductive lesson. As a matter of fact it is not the guessing that is made to appear important in the eyes of the pupil, but the verification. Nor is it guessing itself that is dangerous, but

rather the failure to recognize that a deductive inference is, at best, *only* a guess." It should be further added in this connection that the skilful instructor takes great pains to see that his questions are based on such clear principles and such abundant data that they do not stimulate guessing in the objectionable sense of the word, guessing that is based on no adequate consideration of the materials under consideration, guessing that is mere haphazard, random, and chance. To this sort of guessing science is strictly opposed; for science guesses only in the sense that its conclusions are not absolute, but always open to modification and revision. When the pupil has acquired the attitude of scientific "guessing," he has achieved a result of no mean importance.

Inductive and Deductive Processes of Thought are not Always Possible or Desirable.—In the preceding discussion in regard to the use of inductive and deductive methods in class instruction, emphasis has been placed on their value, and on the desirability of their use more widely than at present in high school instruction. Perhaps at this point a word of caution should be uttered to the over-zealous teacher who is convinced that the chief aim of the recitation period is to lead the pupil to think; and who for this reason spends the greater part of the class hour in discussing principles and drawing conclusions. Such a teacher should remember that there are in school practice obvious limits in the use of inductive and deductive methods.

The fact has already been pointed out that the inductive procedure is long and time-consuming; that within the limits of the class hour, it is difficult adequately to develop an inductive process; that it is seldom possible for the learner to arrive at any scientifically valid inductions, and that his inductions are often fragmentary and inconsequential. For these reasons, a cautious teacher will use the inductive method with discretion, and not strive to formulate with his class too many principles and rules, the understanding of which is often possible

simply by their statement and adequate illustration. He will further keep in mind the fact, in using both inductive and deductive methods of instruction, that principles without facts are barren and useless. There is no royal road to thinking. Reasoning depends as much upon resources as upon methods. The resources of thinking are facts, which the pupil must know accurately if he is to employ them intelligently. No valid conclusions can be arrived at in history, in literature, in language, in science, in mathematics,—unless the learner knows his facts, and to know them, he must meet them again and again, and have them impressed on his mind often through the laborious process of rigorous drill. At this point, the teacher must decide what facts are necessary in order that his pupils may arrive at an adequate understanding of the subject-matter of the course. And when he has decided upon what these necessary facts are, he must use every means in his power to make them a permanent content in the minds of these pupils.

CHAPTER XV

THE QUESTION AS A METHOD OF INSTRUCTION

The Question a Vital Part of the Recitation.—In Chapter XI. reference was made to the comments and questioning of the teacher as an important part of the oral lesson, and the fact was emphasized that the teacher as a rule consumes too much of the class period himself, and leaves to the pupil too small a share of the time devoted to the recitation. It was further pointed out that the comments and questions of the teacher are often fragmentary, haphazard, and without definite point. However, it should never be forgotten that well-organized and carefully planned questions are a vital part of the class exercise, indeed the most vital part. The efficiency of instruction is measured in a large degree by the nature of the questions that are asked and the care with which they are framed. No teacher of elementary or secondary subjects can succeed in his instruction who has not a fair mastery of the art of questioning. The most efficient teacher is more than a drill-master, a hearer of lessons, an expositor of facts and principles. He leads his pupils to think and to understand by arousing in them self-activity through the stimulus of his questions.

The Question has a Three-fold Function.—In discussing the nature and value of the question, we should keep in mind the fact that it has a three-fold function.

(a) *In the first place, the question serves the important purpose of testing the knowledge of the pupil.* Such questions, whether oral or written, should be framed with care. Not all facts are equally important. Many are merely incidental, some are trivial, while still others, valuable when considered in and of

themselves, are too difficult for the pupils to comprehend, or require too much time and effort in their mastery. Some are important for pupils living in certain localities, and relatively unimportant for pupils who live in others. In framing questions to test the knowledge of the pupil the teacher must carefully evaluate them in terms of the ultimate aims of the subject and the more immediate aims of the lesson.

In the writer's experience, the asking of incidental and trivial questions is a common fault in the teaching of literature. The teacher who asks many questions of this type lacks the stimulus and the corrective influence of large objectives. The big and vital problems have escaped him; consequently the facts that he seeks to bring out relate to the smaller matters. The meaning of words, the significance of unimportant allusions, the construction of phrases, sentences, and paragraphs, the detailed outline of the exposition or the narrative,—these loom large in his mind. They are the most obvious matters, the ones nearest at hand, and they require the least definite planning. Often, too, they are the very type of question that he has become familiar with during his college course. They doubtless have a place, but surely a subordinate and unimportant place in the teaching of literary comprehension and appreciation.

The writer has tabulated the kind of fact questions asked during the course of five class periods devoted to a consideration of Scott's *Lady of the Lake*. On the average, forty questions in each recitation were devoted to facts relating to the story, many of them going into details as to just what happened to this or that person in the narrative. Such a minute knowledge would have signified something if any subsequent use had been made of it, but the facts were treated as mere facts and left quite in the air. The teacher justified this type of questioning by asserting that it was one of his main aims to have the pupil "know the story well." In a second class that was studying Burke's *Conciliation*, sixty minutes out of a total of two class periods of ninety minutes were consumed in a elaborate test on the

construction of the speech, and of the remaining thirty, twenty were spent in testing the class on the historical setting. No adequate conception was given as to what the speech really signified as a human document, few vital facts were brought out concerning its bearings on the world history of the time, the author himself, or its relation to the American Revolution. The teacher said that his chief aim was to correlate the work with exposition and argumentation, and to afford the pupils an opportunity for analysis. These aims, of course, were not without a certain justification, which, however was considerably weakened by the fact that the assignment was to be studied essentially as a masterpiece of literature. In a third class in "literature," a total of one hundred and eighty minutes were devoted to the teaching of *Julius Cæsar*. During this time three hundred and seventy-six fact questions were asked, distributed as follows:—meaning of words, 117; historical facts, 92; syntax, 43; outline of story, 42; rhetoric, 23; prosody, 21; mythology, 19; plot, 13; connection with present life, 6. It would be interesting to know to what extent questions of this character are motivated by the necessity of padding.

In another class in English, however, in which one hundred and twenty minutes of teaching were observed and in which one hundred and three questions were asked the number of fact questions was only fifty-nine. Fifty of these served as a basis for developing subsequent thought questions. Only nine were of the "incidental" type. In a second class (in history) observed for five recitation periods, the number of questions was one hundred and eighty-six, an average of less than forty questions for each class period. All but seven of the fact questions asked were used as a basis for developing the main topics of these lessons.

Questions in history are often at fault because the teacher makes no distinction between the relative worth of the facts recorded in the text-book. A critic teacher who has had under his charge many novices in the teaching of history finds that one of the greatest difficulties that he encounters in training these beginning teachers in a proper method is due to the circumstance that they do not easily recognize the difference be-

tween the important facts and those of little significance. In the writer's experience, older teachers are not altogether free from this fault.

In the course of a lesson observed by the writer on the development of a spirit of national unity in Greece the main theme was lost sight of through over-emphasis of small details. Ninety-five questions were asked in the class period, and ninety-two concerned facts touched on in the text. Of these, twenty-five related to the names of poets, the dates of their birth and death, the places in which they lived and fragmentary and uncertain details of their lives. Thirty-two questions of a similar nature were asked concerning the early Greek philosophers. Twenty questions were devoted to the Eleusinian mysteries and touched on stories from mythology, and the nature of the Eleusinian rites and ceremonies. The remaining questions concerned details of the Olympian games. In all of these questions only one related definitely to the service of the poets, the philosophers, the religious festivals, and the athletic contests in giving the Greek people a common national spirit. The facts were treated as mere facts, all of the same importance and significance.

In the teaching of history it is not uncommon for the instructor to attempt to bring out facts that are important, but which the pupil cannot easily comprehend. The writer of the historical text has included these facts because they seemed to him an essential part of the complete narrative, as doubtless they are. However, their importance for the pupil is a matter somewhat apart from their importance in the historical account. No matter what their value as such, they have no place in the lesson if they do not serve the ends of instruction.

It is not uncommon to hear such questions as the following asked by teachers who are thinking more of the subject than they are of the capacities of the boys and girls that they are teaching,—"What did Plato mean by 'ideas'?" "Why is he considered more of a theologian than a man of science?" "What are the essential features of a

Corinthian capital?" "What are the main principles in the Roman conception of law?"

In teaching science it is necessary to keep in mind the local environment in selecting the facts to be emphasized. Teachers often lose sight of the value of bringing the science studied home to the pupil. In an agricultural community the facts in physics and chemistry should have some reference to soils and their treatment; in a manufacturing community a different set of facts should be emphasized.[1]

In a class in general science, the topic for discussion was fisheries and their economic importance. The locality was in close proximity to a large fishing industry. However, the teacher discussed cod fishing off the Great Banks, oyster culture in the Chesapeake Bay, salmon fishing on the Pacific coast, and barely mentioned the fact that within a few miles of the school there were hundreds of fishermen engaged in supplying the local markets with the fish with which the pupils were acquainted.

In a class in botany, the lesson considered plants useful to man. A great deal was said about tropical fruits, the cacao tree, the tea plant, and the olive tree. On the other hand, only passing mention was made of the pea, the potato, the apple, the pear, and the plum. The general impression left on the class seemed to be that the plants of value to man were mostly located in remote regions of the world, far away from the life with which the pupils were intimately acquainted. In another class observed by the writer, an opposite method was employed, the teacher selecting for special discussion the huckleberry among fruits, and the bean among vegetables.

(b) *In the second place the question serves the purpose of making emphatic facts already known to the learner.*—This type of question does not aim primarily to discover what the pupil knows. It seeks to impress upon him more emphatically that with which he is already acquainted. It is a method of oral drill. It cannot be justified as a method of instruction unless it realizes

[1] See Chapter XI., p. 232.

ends other than those of mere drill for the pupil who is being questioned, since it is extremely wasteful when directed toward the individual as distinguished from the class. As we have already seen, the drill question must be asked in such a way that it secures the mental response of the group as a whole, not merely of the pupil who is reciting. Further than this such a question finds an added justification when it emphasizes difficulties and mistakes that a class as a body frequently make. These mistakes must clearly and definitely be brought to the attention of all of the pupils in such an emphatic manner that all may distinguish between what is correct and what is incorrect.[1] In order that the entire class may participate in this drill, it is desirable that the question should be put to the class, and after a brief pause some individual should be called upon to reply, others being held responsible for his mistakes. Further, these drill questions should be distributed rapidly among the various members of the class, no one pupil being called upon to give an extended answer. The same procedure should be followed when brief oral questions that aim to test knowledge are asked. Indeed, there is often little distinction between the drill question and the question that seeks to test the knowledge of the pupil.

Drill questions find their most common exemplification in classes in foreign language. In many recitations of this type a large part of the class period is occupied in drilling individual pupils orally in vocabularies, idioms, paradigms, and rules. We have already seen in Chapter X. how great the waste may be in exercises of this sort. When the whole class is alert and eager to learn, as sometimes is the case in a superior group of pupils, or in a class in a vocational subject, such as stenography, this type of drill is effective. However, under any circumstances the teacher should strive to make his questions serve a wider purpose than that of merely testing and training the individual.

[1] See Chapter IV., p. 66.

As a rule, better results are obtained when the response to drill questions is made by the entire class in a written exercise.

(c) *In the third place, the question serves the purpose of stimulating thought.*—This should be the chief function of the oral question. The skilful teacher seeks by this means to stimulate the entire class in order that they may arrive at new facts and principles through their own initiative. In contrast to the fact question and the drill question, the thought question requires reflection and deliberation. The response to a fact question or a drill question should be ready and immediate; the response to a thought question should be a delayed response. A ready response to a thought question indicates that for the pupil responding, the question is in reality not a thought question. Obviously there are all degrees of thought questions, ranging from those that require but a moment's hesitation to those that demand genuine deliberation. Thought questions should be asked not only by the teacher; they should be asked by the pupils as well. In other words, the employment of thought questions by the teacher should lead to a general participation on the part of the class in the discussion of the most important problems of the day's lesson. When this takes place, we find the "conversation method" of instruction, as it has been called.

Many thought questions are so merely in form. Miss Stevens [1] says in this connection,—"If you ask teachers of history why they are teaching it, the most customary answer is, that 'history develops judgment.' In hundreds of classrooms where I have made observations of the questioning, I have found very few questions so framed by teachers of history that they called for any individual judgment. . . . I have found such questions as this: 'Was the king right in imposing the stamp tax upon the colonists?' This sounds like the appeal for a possible judgment by the pupils, but it cannot be a real judgment when the pages of all of the texts distinctly reveal marked censure of the king. 'In what respects would you call the

[1] *Op. cit.*, p. 59.

War of 1812 a second War of Independence?' appears to be a question involving the pupil's judgment; but when the text-book lesson prepared at home contains the sentence, 'The War of 1812 has been often and truly called the Second War of Independence, which should be understood to mean not merely independence of other nations, but of the conditions of colonial life,' the answer was obviously colored by the author's statement, and hence it could not be a judgment of the pupil. It seems a paradox to say that there are times when a judgment question is not a judgment question, but if we attempt to analyze so-called judgment questions in history, we can find many illustrations to corroborate the statement. Analysis of the six stenographic lesson reports on history reveals the fact that, by classifying as a judgment question every one which could possibly involve the element of judgment, the highest attainment is twenty-eight in a total of one hundred and twenty-five, while the lowest record was three in sixty."

In contrast to these facts brought out by Miss Stevens, the following may be cited,—In a number of classes in history the writer has found as large a proportion as sixty per cent. of thought questions asked during the hour. While many of the thought questions required no great reflection on the part of the pupils answering them, they did require a mental reaction of a higher type than mere memory. Many teachers of history are evidently attempting to do more in their courses than to drill their pupils on bare facts.

At times "thought questions" are so superficial that they require but the briefest and most trivial judgment. In foreign language classes as a rule, the questions which are asked that require any genuine analysis and careful deliberation are rare. Problems relating to the construction of words and the subsumption of particular instances under general rules are the ones most commonly encountered, while matters of deeper significance, involving insight and reflection are woefully ignored. The relatively simple linguistic judgment is emphasized, while the profounder judgments and insights are slighted or entirely passed over.

In this connection Moore [1] has made the following comments: "I once entered a classroom while the class was engaged upon that passage of the oration for Archias in which Cicero attempts to make the thoughts of his auditors rise to the nature of the poet's mission. To do this he refers to 'our Ennius,' the author of the *Annals*, the father of Latin poetry, 'who calls the poets holy, for they seem, as it were, to be approved to us by a special gift and favor of the gods.' This is a tremendous saying, and I waited with eagerness to hear what sort of question the teacher would ask on such a passage. It came, 'Why is *videantur* in the subjunctive mood?' I visited another classroom in another school, while the class was reading the fourteenth chapter of that first book, in which Cæsar tells of a conference which the German chieftain Divico and his retainers attended and how Cæsar addressed them, urging them to be peaceable and to send him hostages as a guaranty that they would be. Whereat the German chieftain arose and gave expression to but one sentiment, 'Our fathers have taught us to receive and not to give hostages,' and with that broke up the conference. I waited intently for the question that the teacher would ask, for from that German love of liberty which would not submit to be crushed out by mighty Rome herself, much that we hold dear has come down to us, and there in that remote forest two majestic conflicting forces in civilization faced each other for a moment and expressed their opposing ideals,—and the question came, 'What mood follows *uti?*' I went into still another classroom in still another school where students who were just beginning their study of the Latin grammar were engaged in writing a synopsis of the verb upon the blackboard. All went well until one student committed the mistake of attempting to write a perfect imperative, that disturbed the peace of the occasion. When the teacher saw it, her reproof took the form: 'You know there is no such form in the book. You must follow your authority. Watch it closely, and don't let this happen again.' There was no calling attention to the impossibility of giving an order today and having it carried out yesterday. Like Mr. Spencer's committing of geometry and Professor Mann's verbal repeating of the definitions of physics, what I have seen in many places leads me to believe that these are examples of the typical

[1] E. C. Moore, *What is Education?* pp. 198–200 (1915).

teaching of Latin. They tend to convince one that we get poor results because we do not go after better ones."

If this picture drawn by Professor Moore is typical, and it appears to be at least in part, it illustrates the fact that our teaching of Latin, and to a considerable extent of other foreign languages, has overemphasized the necessity and the value of formal grammar and mere linguistic drill. The humanism of the classics has for generations been lost sight of by many teachers, and the idea that modern languages are literatures, that they are human documents, giving expression to facts and thoughts of profound interest, seems never to have entered the mind of those high school instructors who teach these languages largely as linguistic puzzles.

Common Faults in the Questioning of High School Teachers.—As we have already seen, high school teachers frequently ask too many questions. They occupy too large a part of the class period, and leave too little time to the pupils. Miss Stevens found that in some classes as many as two hundred questions were asked and answered during the course of a forty-minute recitation.

Questions and answers of this type are illustrated by the following, taken from Miss Stevens' stenographic report of a lesson on the *Lady of the Lake:*—

Teacher. As a rule do the characters seem lifelike?

Pupil. Yes.

T. Which is the most lifelike one to you, Mr. J.?

P. I think Fitz James.

T. How many suitors had Elaine, by the way?

P. Three.

T. Who are they?

P. Graeme, Rhoderick Dhu, and Fitz James.

T. Are those men distinct, three suitors or three distinct men?

P. Three distinct men.

T. From the beginning has the story flagged, or has it gone on rapidly?

P. I think it has gone on rapidly.

T. No halt at any place, nothing to retard the story?
P. No.
Later in the same lesson the teacher asks,—Is it (the description) put in there just as a scene, or for some distinct purpose?
P. Distinct purpose.
T. And in this case it was ——?
P. Contrast.
T. What other descriptions?
P. Nature.
T. Very much space taken up with the descriptions of nature?
P. Yes.
T. Have you a pretty fair idea of the country?
P. Yes.

The greater part of lessons of this type is composed of "rapid fire" questions, and abbreviated answers, for the most part calling for little reflection, and directed toward no particular conclusion. The whole procedure seems somewhat lacking in purpose and reveals no main objectives. Such questions are seldom carefully planned. They are too frequently, as we have previously pointed out, fragmentary, haphazard, and without definite point.

In addition to the faults discussed above, the questions asked by teachers are sometimes to be criticised because of the following errors:

(a) *The questions are not well phrased.*—Teachers may ask questions that are not only in poor English form, but fragmentary and incoherent. Among teachers of ability this fault is relatively infrequent, as shown by the reading of Miss Stevens' stenographic reports, which are for the most part free from this type of error. However, among young and inexperienced teachers, particularly among those who lack poise and who are unduly nervous, such questions are by no means uncommon. While questions that are incomplete and poorly phrased appear much worse in the printed report than in the give-and-take of

the class exercise, they should be reduced to a minimum. The beginning teacher can well afford to spend some time in advance of the class in definitely formulating the main questions that he is to ask during the recitation period.

(b) *They are repeated or rephrased.*—Some teachers fall into the habit of repeating a question one or more times before pausing for an answer, while all teachers occasionally do this. As a habit this procedure cannot be justified, though as an exception for a definite reason it may be permitted. The obvious objection to this repetition is that it consumes time. The excuse usually offered is that it makes the question emphatic. However, pupils should be accustomed from the outset to habits of attention. They should be expected to know what the teacher says. If the instructor makes it a rule to repeat his questions the natural result is that the pupils soon acquire the attitude of ignoring the question when it is first asked, and of paying attention only when the teacher repeats his words. Thus nothing ultimately is gained, and much is lost.

The following are examples of such questions, observed during various class exercises:

"What would he have to pay; what would he have to pay; what would he have to pay?" (asked in a hurried and nervous manner).

"Do they combine, I wonder? That's what I want to know—do they combine, I wonder?" (asked with emphasis and with the evident purpose of holding the wandering attention of the class).

"Can you prove that, Mary? Can you prove that?" (suggestive of nervousness).

"Now can you tell me what a lever of the second class is? a lever of the *second class,* of the *second class?*" (evidently repeated for emphasis).

The rephrased question is generally asked because the teacher is not satisfied with the first form in which the question is put. Obviously it is desirable to ask a question in one form, and that the best. While this cannot always be done, the teacher who takes the time to think out before the class the main questions

that he intends to ask, and the manner in which they shall be phrased, will reduce to a minimum the necessity of rephrasing his queries. The rephrased question, as a rule lacks clearness, and since it is stated in various ways often leaves the class in doubt as to what is intended.

The following are examples of rephrased questions, which fortunately are not numerous in the instruction of the average teacher, though they are frequently found among those of poor ability and inexperience:

"How about the advantage of getting started on time? Isn't there a great advantage there? Doesn't it help a great deal?"

"This is what? What have we here? What kind of an ion would you call it?"

"We can say what, Ralph? Can you tell us now what we should say? Does that action run to completion? Does the reaction stop?"

"How did he do that? What was the form that promise took? What was it called? What was it called?"

"A calorie; does anyone know what a calorie is? Does anybody happen to have that in physics? Do you know under what topic in physics it is found?"

"How would you charge a Leyden jar? Which end? Would you charge it through the tinfoil? How would you do that?"

"What is a Leyden jar for? How does it work? What does it come under? Under electrostatics? What would you call it?"

"What was the greatest achievement of Charlemagne? What title did the Pope confer on him?" (From Miss Stevens' report.)

"Do you think that the Germans were very mild or gentle? Why do we think this battle of Poitiers was such a great benefit? Why was the saving of Christianity to the world better than if it had been converted to Mohammedanism?" (From Miss Stevens.)

"That is just right. They were coming to reflect upon things; and what was another thing that went with that? As you reflect upon what you have done and upon what you are going to do and upon what your neighbors are doing, and what you think they ought to do, you grow wise. But what is preliminary to that?" (From Miss Stevens.)

"Would that be accurate to put down everything that everybody told you? What was the difference between Herodotus and Thucydides? Was the man himself upright? Did he keep strictly to what he knew was true?" (From Miss Stevens.)

There are circumstances under which what may be termed the "multiple questions" may be used as a legitimate device of instruction. The teacher first asks a general question intended merely to turn the thoughts of the class in a certain direction, and then asks more specific and pointed questions, only the last of which is to receive a definite answer. The purpose of a multiple question of this type is first to prepare the mind of the pupil, in order that he may be ready for a comprehension of the final question of the series.

The following are examples of the multiple question:—Are treaties between nations always lived up to? Can you recall instances in which they have been disregarded? What justification is sometimes given for breaking treaties? Do you think under certain circumstances it is right to break a treaty? (In the above instance, the class in current events knew definitely the answers to the first three questions, which were asked by the teacher for the sole purpose of forming an intelligent basis for a consideration of the fourth.)

Have you ever seen steam coming out of a kettle? Have you ever seen mist rising from damp ground or a pond at night? Is the air outside the kettle colder or warmer than the air inside? Is the air at night colder than the water on the ground or in the pond? How can you explain the formation of the steam and the mist? (Here again the replies to the first questions are obvious? It is the last question that requires thought).

Have you observed in what direction these magnets point when they finally come to rest? What do you notice that is the same in the action of all of these magnets? How can you explain this action?

(The first two questions call attention to certain specific facts in regard to the magnets. The third is the thought question, demanding reflective reasoning.)

(c) *They are asked in a hurried manner.*—The teacher at times is guilty of preventable wastes. Again, he gives the impression that he has not a moment to lose. He rushes on at express speed, permitting no opportunity for pause or reflection. There are occasions when "rapid fire" questions are desirable in oral drills and in tests on simple facts. Such questions, however, are never permissible when any degree of comprehension or judgment is called for.

The writer has in mind particularly three teachers, in most respects of excellent ability, who largely because of extreme interest allowed their enthusiasm at times to run away with them. On such occasions they went from point to point at break-neck speed. The first was a teacher of history, whose chief aim was to make his pupils think. He asked numerous thought questions, provocative of interest, and calling forth eager responses. However, he often failed to give his pupils adequate time to formulate their replies, and as a consequence, before one point was made definite and emphatic, he had hurried on to another. The second was a teacher of modern languages, who used the direct method with unusual effect, but who because of his facility of expression and great interest in his work, failed on occasions to practice correct habits. The third was a teacher of English who possessed a wealth of information and an abundance of excellent ideas, but who in his zeal tried to impart too much during the forty-five minutes of the class period. As a consequence, there was undue hurry and bustle. He failed to make a definite impression at some important points, simply because he did not allow time for such impressions to sink in. These three teachers because of their many excellencies of disposition and intellect, were saved from making a failure of their work. For the mediocre teacher, however, such haste would end in complete disaster.

(d) *They are indefinite or obscure.*—The pupil is forced in answering questions of this type to guess at the answer. This guessing is the result of one of two main causes. Either the question is asked in such a general form that the pupil has no means

of knowing toward what specific points it is directed, or in the case that the general aim is evident, the facts in the possession of the pupil are not sufficient to enable him to give a discriminating answer.

The following are examples of indefinite questions due to the first cause:

"What do you know about Edward the Third?"
"What facts may we observe about this polygon?"
"What do you see when you examine this plant?"
"What can you say about this demonstration (in physics) that has just been presented?"
"How would you try to make your listener feel as you feel about something that you are describing?"

The fault in these questions lies in the fact that the attention of the pupil had not been previously directed toward any specific details concerning Edward the Third; toward any essential aspects to be considered in observing the polygon; toward any given set of traits to be noted in the examination of the plant; toward any logical scheme for observing the demonstration in physics; or toward any methods of imparting to others the emotions that the writer possesses. In the language of psychology, a specific problem-attitude had not been created. The pupil had not the proper apperceptive background on which to base his replies.

The following questions taken from Miss Stevens further illustrate the indefiniteness arising from a general question that has not a specific point to which the pupil can respond:—

"Name all of the things in Marmion that are characteristic of the Middle Ages."—(This question did not bring the desired response, and was later rephrased,—"What things does Scott bring into this poem that make you feel that it is the Middle Ages and warlike times?")

"What do you consider the real weakness in Marmion's character?" (in terms of the teacher's aim the question would have been more effectively put as follows:—"What do you consider the weakness in Marmion's character which led to his downfall?")

"What do you think are the strong points in Marmion?" (This question was not answered by the pupils. Then the teacher asked,—"How many feel that the descriptions are capital?" Thus the teacher in the form of an interrogation answered his own query. It is often the outcome of the general question that it is finally answered by the teacher.)

"What were the chief characteristics of Cimon?" (This question proved too general to be answered. It would have been more definite if it had been asked in the following form, "What do you know about the soldierly qualities of Cimon?" This was the real point at issue.)

The questions that follow are examples of questions that are indefinite because the pupil has not sufficient knowledge to answer them with discrimination:—

"What dangers are there for a people in a highly centralized form of government?"

"What almost invariably happens to a conquering people who conquer a race greater numerically than theirs?"

"What always becomes of a civilization when a barbarian invasion occurs?"

"How can you tell good air from bad air?"

"What influence had the life of Spenser on the character of his poetry?"

"What characteristics in the writings of Hawthorne show him to be a master of style?"

Such questions as these may be occasionally justified, particularly when asked of pupils of superior ability. In all cases, however, when questions requiring a wide knowledge and discriminating judgment are asked they should be introduced by a series of carefully prepared steps, and should at times be given in connection with a written exercise, rather than as an oral quiz to be answered on the spur of the moment. Generally questions

of this type are not answered at all by the pupils, or they are answered because the pupils have been told in advance either by the teacher or by the text-book the very replies that the questions seek to bring out.

The following questions brought out few intelligent responses when asked as a part of an oral lesson in one division in ancient history. When asked in another division (one of no greater ability) as a part of a written test many excellent replies were received:—

"Can you think of any ways in which the geographical position of the United States has influenced its development?"

"What fault in the Roman democracy did the wars between Marius and Sulla show?"

"What would the failure of Cæsar to suppress barbarian invasions have meant to us today?"

(e) *They are leading and suggestive.*—Not infrequently the teacher asks a question in which the answer desired is clearly indicated. Suggestive questions are permissible and even desirable chiefly when they are employed to make emphatic some fact already known. The teacher should, however, recognize the function of such questions, and not assume that they are genuine thought questions.

The following are in reality only questions in name; they are declarations put in the form of an interrogative.

"Is Shelley's poetry musical?"

"Did Whittier have an intimate knowledge of country life?"

"Was Washington a great general?"

"Have we the right to injure the feelings of others?"

"Was the religion of the Hebrews better than that of other ancient peoples?"

"Is it right to cancel an honest debt?"

"Was Dickens interested in social reforms?"

(f) *They require no further answer than assent or denial.*—"Yes and no questions," as they are commonly called, are not

of the thought producing type. Further they do not require a discriminating knowledge of facts. For this reason such questions should seldom be asked, and then only for the evident and clear purpose of emphasis.

The questions given under the immediately preceding topic are of this type. Further examples, taken from Miss Stevens' report, are the following:

T. What else, generosity?
P. Yes.
T. Do the characters seem lifelike?
P. Yes.
T. Nothing to retard the story?
P. No.
T. Anything that seems at all forced?
P. Yes.
T. Would that be an especial charge to his chivalry?
P. Yes.
T. Very much space taken up with the description of nature?
P. Yes.
T. Have you a pretty fair idea of the country?
P. Yes.
T. Superstition used much in this story?
P. Yes.
T. Does Scott love action?
P. Yes.
T. What sort of story, then, is it interesting?
P. Yes.

The writer has attempted to make an estimate of the frequency of such questions in the average high school class. He selected at random twenty different classes and made a rough record of the percentage of yes and no questions asked. In these twenty classes a fourth of the questions required practically no response except affirmation or denial. A large percentage of the answers were in the affirmation form, about nine out of ten. In some classes in English the proportion of these questions ran very high. Next in order of frequency stood history with science and foreign language somewhat

lower, and mathematics at the bottom of the list. Further, there was an inverse relation between the number of thought questions asked during a recitation period and the number of yes and no questions.

(g) *They stimulate only superficial and pseudo-judgments.*— Genuine thought questions, requiring any extended reflection or discrimination cannot be numerous. For this the teacher is as a rule not primarily at fault. The time allowed for the class exercise does not afford an opportunity for much critical judgment. Further, many pupils are not capable of making such judgments. The teacher should, however, aim to ask an increasing number of genuine thought questions as he develops his subject with his class. He should now and then give opportunity in the recitation period for the class to think out such questions. More frequently he should give these questions as a part of the assignment to be answered at the next recitation. To these genuine thought questions he will find many who are not capable of making an intelligent response. However, he is justified in asking such questions in order that the pupils of superior ability may have an opportunity to give their attention, occasionally at least, to things that stimulate their intellectual interests and challenge their abilities.

(h) *They insist on answers that cannot be readily given.*— Bagley, in particular, has pointed out the undesirability of what he terms the "pumping question." In a previous chapter we have likewise pointed out the folly of attempting to force the pupil to answer when he has not the inclination or ability to do so. Teachers not infrequently make the mistake of demanding a reply from a member of the class who asserts that he does not know. They seem to take it as a challenge to their ability to force an answer from the pupil. Obviously, there is no justification in asking a pumping question when such questions are a test for knowledge. On the other hand the pumping question has a certain justification when it is directed

toward making the pupil think. If instruction were individual the pumping question of this type would have a considerable place in teaching, but it should never be used as a means of stimulating the thought of a dull or indifferent pupil to the detriment of the class as a whole. No teacher should be so strong an adherent of the "Socratic Method" that he refuses to tell anything that by hook or crook can be dragged out of the pupil. The rights of the class as a whole are paramount.

The Essentials of a Good Question.—In the discussion of the preceding pages we have enumerated various faults found with some frequency in the questioning of most high school instructors. From a review of these faults we can characterize the good question as possessing the following essentials:—

It should be in correct form and to the point, being sufficiently definite to indicate to the pupil the object aimed at by the teacher, but not so framed as practically to state the answer expected. All questions should be adapted to the knowledge and experience of the pupil. They should not be asked over his head. Questions should be asked with reasonable deliberation, the "tempo" being much more rapid for the fact or drill question than for the thought question. As a rule, the question should be asked but once and in the best possible form. It should seek for a more extended and explicit answer than that of yes or no. It should be a question that is aimed at bringing out an important rather than a trivial fact, and if asked for the purpose of stimulating thought, should deal with materials worthy of consideration. The question should be one that can be justified from the standpoint of the class as a whole, and hence should not be used to drag from the individual pupil facts about which he has no information or ideas that he can only with great difficulty formulate.

In addition to these characteristics, the good question should be addressed to the class rather than to a single individual.

Hence, unless there is a clear reason to the contrary, the question should be stated before an individual is called upon to respond. If the question requires thought, a considerable interval should elapse between the formulation of the question and the assigning of it to a particular pupil. Questions should be asked in no regular order, and should be distributed over the entire class. A few pupils should not be permitted to do all the reciting. On the other hand not all pupils should be expected to answer all questions. The more difficult thought questions should be directed toward those only who can be reasonably required to answer them. Essential fact questions should be asked of all indifferently.

The question should as a rule be so framed as to draw forth a complete thought. In discussing this point Miss Stevens says,—"When we ask a question calling for an association of ideas, we have no way of measuring the potency of the question except by the answer. The answer must fully reflect the result of the association called for or else we are in danger of fostering superficiality when we aim to develop accuracy and thoroughness." Teachers, however, may err at times in the opposite extreme by requiring too carefully framed answers, thus consuming an undue amount of time in the mere formal aspects of expression. The teacher of English who made it his principal aim in teaching *Julius Cæsar* to obtain complete statements from his pupils in their replies to his questions, surely had not in mind the main objectives in the study of Shakespeare.

The thought question should be developed with the class. For this reason the answer should not be completely determined by the teacher in advance. Quite frequently the pupil gives an intelligent answer to the question put by the teacher, but an answer that the teacher is not expecting. The teacher should accept such an answer at its face value, and not demand that the exact words sought be given. When the teacher insists on a predetermined answer, this gives the impression that

the pupil is merely exercising his ingenuity in guessing what reply the teacher wants. The following taken from Miss Stevens, illustrates this point:—

Teacher. How did it make the Greeks feel to conquer the Persians?
Pupil. Very proud.
T. Very proud. There is a better word than that.
P. Vain.
T. I think I should not say vain.
P. Satisfied.
T. Isn't there a better expression?
P. Independent.
T. That is good, independent, but there is still a better one.
P. Self-confident.
T. That is just what I wanted—self-confident.

Further, it should be kept in mind by the teacher that the answers to his questions should be addressed to the class, and not to him alone. Finally, as a rule, the answers should not be repeated by the teacher. It is frequently the custom of the teacher to restate to the class the replies made by the pupil that is reciting. In general the justification for this procedure is based on the plea that such repetition makes more definite and emphatic the answer that has been given. Sometimes this is the case, but frequently the pupil has framed his answer in such a manner as to make repetition unnecessary. Generally, when the pupil's answer is not satisfactory, it is desirable to get the correct answer from some other member of the class, if this can be accomplished without too much waste of time. If the answer is satisfactory, but is not given distinctly, then the pupil should be required to repeat it for the benefit of the class. Only by insisting that the pupil shall answer in such a manner that the class as a whole can get the benefit of his replies, is it possible to make the class understand that the recitation is not primarily designed for the purpose of discovering what the in-

dividual knows, but rather for the purpose of learning new facts, and gaining new insights through coöperative activities, in which teachers and pupils alike contribute their part to the work of the entire group.

CHAPTER XVI

THE LESSON PLAN

The Elements of a Carefully Prepared Lesson Plan.—It is obvious that success in any important form of human endeavor depends on a definite plan of action. The more carefully considered and clearly formulated the plan, the greater its practical value. Nowhere is such a plan more necessary than in teaching. No teacher, least of all the novice, can safely dispense with a plan for conducting his class work. This plan should be worked out in detail and reduced to writing, to serve as a guide during the recitation.

The plan should first of all consider the ground to be covered during the recitation period. This naturally falls into three parts,—namely, *the review, the advance, and the assignment.* The review takes up those matters that have been touched on in previous lessons. There are several considerations that determine the nature and extent of the review. In the first place those parts of the work in which the pupils are weak should be reviewed. Again, points that need emphasis should be recalled from time to time, and finally those facts and principles that must be kept in mind in order to make the advance intelligible should be called to the attention of the class by means of review. The review must be systematically arranged and the exact amount of time to be devoted to it should be determined.

The advance has to do with the lesson that has been prepared, in part or as a whole outside of the class, and is now taken up for full discussion for the first time. In planning for the advance, the teacher must decide just what points are to be emphasized during the recitation and must attempt to evaluate

them in terms of the general purpose of the lesson. In the plan, the advance work may often best be stated in the form of an outline of topics to be considered. As in case of the review, the teacher should determine the amount of time to be devoted to this part of the lesson.

The assignment is a most important part of the recitation. Here, likewise, the points to be taken up should be carefully worked out by the teacher and adequate time should be given for this phase of the lesson. It should never be left to chance.

These three parts of the lesson vary in proportion from day to day. At times the work may be entirely review, sometimes the advance may occupy the chief attention, and again as in the case of the "unprepared lesson," the entire hour may be taken up in considering the assignment. Further, it is to be remembered that advance and review do not always occupy separate parts of the lesson period. Not infrequently the advance is made intelligible through recalling during the course of the new lesson that which has previously been learned. In any case, however, the teacher should decide beforehand with as great accuracy as possible the proportion of the lesson that is to be devoted to these various phases of the work, the points to be considered under each head, and the amount of time that is to be given to each.

The Aim is the Pivotal Point of Every Lesson Plan.—The subject-matter to be taken up, the emphasis that is to be given to the various parts of the lesson, and the time to be spent on each must be considered in reference to the aim. This is the pivot on which the entire lesson turns. No one can teach effectively unless he clearly determines what he wishes to teach, and why he wishes to teach it. He must have a conscious objective that gives point and method to his teaching. Otherwise he is quite at sea.

As a rule, the teacher should have a hierarchy of objectives. He should have a general, or ultimate aim, under which should

be arranged in a descending order proximate aims, terminating in the specific aims of the immediate lesson that is to be taught for the day. The ultimate and the more general proximate aims are not the objectives to be kept in the focus of attention. The aim before the teacher, which determines the method that is to be employed in each specific lesson, must be related to the "higher" proximate aims and to the ultimate aim, but they cannot be substituted for it. The aim which serves as the direct point of attack must be immediate and relatively simple.

(a) *The ultimate aims of instruction should serve to give the teacher a broad and generous view of his calling, and inspire him to practical achievement.*—Although the detailed aims of the daily recitation are essential, they are not in themselves sufficient. The final aims of teaching should be somewhere in the background of the teacher's consciousness; they are inspirational and also practical, giving validity to the objectives that are nearer at hand.

Perhaps the teacher considers that the final reason for teaching his subject is to make the pupil socially efficient. Again he may say that it is to develop character, or give happiness, or mental alertness, or a broad knowledge of life and its problems. Whatever it may be, if the teacher sets out to accomplish this aim, he is given a conception of teaching that removes his instruction from the pettiness of a daily routine, and that makes it possible for him to evaluate his more immediate aims, giving them due weight and proportion. The teacher who has such final standards of achievement, is more likely to criticise his work from day to day, to revise and improve it, than the teacher who has nothing in view beyond the detailed objects of the subject he is teaching.

The good teacher asks himself, "What am I really trying to do for the boys and girls in teaching them history, or English, or science, or French? To teach them these things means to teach to some purpose. What is that final purpose?"

The instructor who teaches history with the aim of giving his pupils a view of human life and its significance must teach facts (yes, even dates), but he must select these facts according to some principle and teach them in reference to some meaning. Such a conception will influence the aim of each and every lesson, make it more definite and more practical.

The teacher of physics may conceive the ultimate aim of education to be a preparation for daily living. He will then ask himself what shall be the proximate objectives to achieve this result. "What facts and principles shall I teach," he asks, "that will be of the greatest use to the average boy and girl? How shall I make these seem real to my pupils? What methods of laboratory technique shall I insist on to realize my purpose?"

The teacher of English who believes that the ultimate goal of instruction is to give the learner a broad and sympathetic attitude toward life and its duties, will find these aims reflected in the choice of the material which he uses. Thus many of the petty details that others may insist on he will pass over, and those things which give insight, that create ideals, that inspire conduct, will loom large in his teaching.

The teacher of French may believe that the value of an education is measured largely in terms of the training that it gives the mind, and he will accordingly pay less attention to the practice that makes pupils fluent in speech and ready in translation, and more attention to the linguistic phases of his subject, than will another teacher who sets up the standard of use as the end of instruction. Indeed it is this conception of education as mental discipline that has up to the present time determined too often the materials of instruction and the method of dealing with these materials in our foreign language courses in our high schools and colleges. It makes a vast difference in the teaching of this subject, or of any subject in the curriculum, whether the ultimate aim is mental training, practical use, insight, knowledge, or cultivated and enlightened taste. It often happens because different teachers of the same subject have different conceptions of the purposes of instruction, that there is real confusion in the minds of the pupils, as they progress in their course and work under various teachers, as to what they are supposed to accomplish.

(b) *The relative justification of practical, disciplinary, and cultural aims in teaching.*—These three aims, general in their character, have determined very largely the more immediate aims of instruction. They can hardly be justified as ultimate aims, but they are among the most general of proximate aims, and are so important that a further word should be said concerning them at this point.

Practical aims may be interpreted in a broad or a narrow way. As commonly understood, practical aims mean those things that can be definitely realized in the occupations and professions of life. In this sense the manual and domestic arts, the business courses, courses preliminary to teaching, and the like, are considered practical, while on the other hand the more academic subjects are thought of as not being practical. In the writer's opinion this conception of the practical is inadequate. Practical means useful, and use goes far beyond the mere earning of a living. History is practical if the facts, notions, and ideals developed in the study function in the life of the pupil. If the study of history makes the pupil a better member of the community, if it "humanizes" him, so to speak, then it has a practical worth. If on the other hand, it teaches him nothing that immediately or remotely influences his conduct, then he has been spending his time in a useless way. What is true of history is equally true of literature, science, language, and mathematics. No subject should be introduced into the curriculum, and no subject should be kept in the curriculum unless it can be justified in terms of this broader practicality. No teacher should attempt to teach anything unless he has some conception of how it may be used.

Disciplinary and cultural aims do not primarily emphasize use, though that which disciplines the mind, that which broadens and enriches it, may be of the greatest use in the daily living of the pupil. The conception of discipline that is ordinarily current seems to the writer to be misleading and dangerous. In spite

of the very clear findings of educational psychology, the view is still common that one of the chief values of education is to be found in the cultivation of such mythical powers of the mind as reason, attention, imagination, discrimination and the like.[1]

The fallacy in this point of view lies in the fact that there is no all-round ability to reason, or to attend, or to imagine, or to discriminate. A pupil may very well learn to reason in mathematics and fail to reason in history; he may cultivate a vivid imagination in literature and acquire no skill in projecting a plan in carpentry, or foreseeing a result in physics. Further than this, when he graduates from high school and goes out into life, his reasoning ability, his imagination, his discrimination, acquired in his school tasks may be little in evidence in the office, the shop, or the factory.

However, it would be wrong to assume that the discipline gained through study has no value in after life. Frequently, doubtless, it has great value, but just how extensive this value is in any given case, and how it will manifest itself, is a matter so difficult to predict that mental discipline should never be made either the sole or the principal aim in teaching. It should be regarded as a by-product that comes of necessity when a subject is taught well and taught for a specific purpose. The aim of the teacher should be broadly practical. Then if he does his work well in terms of such an aim, he may be sure that in doing this he has trained the minds of his pupils.

The same is true of culture as an end of instruction, if we mean by culture a kind of mental adornment, an attitude of mind which finds pleasure in knowledge and intellectual skill merely for the sake of that knowledge and that skill. Like those who seek happiness, those who make culture the chief end of learning seldom find it. The highest culture comes to a person who has learned something useful and who has the skill to apply

[1] For a typical statement in regard to disciplinary values see, "The practical value of Latin," *Classical Assoc. of the Atlantic States*, April, 1915.

what he has learned. Hence, the wise instructor teaches history not from the standpoint of imparting entertaining information, but for the purpose of showing his pupils what human life means, and not only what it means, but how it should be lived. If he keeps this practical motive in view, he may be sure that his pupils will acquire a culture far more genuine than if they had been intent on gaining a kind of knowledge that is merely for the satisfaction of the knower.

Rational enjoyment is often put forward as an important aim of education. This may be thought of as one aspect of culture, but it is attained in no other way than by learning those things that are worth while, that are practical in the sense that they work out the life of the individual in helpful ways. To enjoy good books is surely worth while, but not for the reason that such enjoyment is purely individual and selfish. Through the reading of good books the pupil's conduct is moulded for the better. It is significant that we do not set up enjoyment as such as an aim of education, but only rational enjoyment, meaning by this, enjoyment that influences the conduct of the individual in helpful ways. It is not the enjoyment in itself that we seek; it is the practical consequences of this enjoyment. Thus in the end we can safely set up for ourselves only practical aims; aims that seek to realize in the conduct of the individual useful kinds of behavior.

(c) *The nature of immediate aims.*—As we have already said, not only must we formulate aims of a more or less general character to give point to our teaching, but we must set before ourselves very definite and immediate aims to direct the work of each lesson. No instructor who stops with general aims can hope to get the best results. His attitude in teaching a specific lesson must be very concrete. These concrete aims may result in impressing a body of facts which are necessary for the achievement of a more general aim; in the comprehension and interpretation of such facts; in the acquisition of a definite amount

of skill; in gaining notions of methods of procedure and in acquiring interests, insights, and attitudes of appreciation.

The following are examples of aims that seek to impress specific facts:—

"The aim of this lesson (in history) is to bring to the attention of the class the five arts as developed in Egypt, namely,—architecture, sculpture, building, literature, and science."

"The aim of this lesson (in physics) is to show that the resultant of two forces is a maximum when the forces are parallel, and act in the same direction; that the resultant decreases as the angle between the forces increases, until it is a minimum when the forces are in opposite directions."

"The aim of this lesson (in algebra) is to emphasize the rule for the subtraction of fractions, and further to show the fact that the removal of a parenthesis after a minus sign is in reality performing a subtraction."

"The aim of this lesson (in physics) is to show some of the practical devices used to determine specific gravity."

"The aim of this lesson (in algebra) is to emphasize the fact that in solving the equations for x, we never find x in terms of x, but always in terms of some other letters or figures; to emphasize also the fact that we must multiply each term in the numerator by the common denominator in clearing of fractions."

"The aim of this lesson (in Latin) is to give a knowledge of the various forms and uses of verbs of the third conjugation, and also a knowledge of the essential differences between this conjugation and the first and second conjugations."

"The aim of this lesson (in chemistry) is to present the properties and uses of chlorine and its methods of preparation."

The following are examples of aims that seek to secure the comprehension and interpretation of facts:—

"The aim of this lesson (in history) is to bring out the main reasons for the decline and fall of the Roman civilization, and to compare conditions in Rome with similar conditions in America today."

"The aim of this lesson (in history) is to show why Rome's policy of expansion was more profitable than Greece's policy."

"The aim of this lesson (in history) is to bring out the contrast between Rome and Carthage and to show how the superiority of Rome meant in the end the downfall of Carthage."

"The aim of this lesson (in physics) is to impress upon the class the distinction between the three classes of levers, and to show the application of the principles involved to machines of common use."

"The aim of this lesson (in English literature) is to consider the noble qualities in the character of Lancelot, and what influence they had in determining his conduct."

"The aim of this lesson (in general science) is to show the meaning of the term 'natural selection' and its significance in the evolution of various existing species; likewise, to contrast natural selection with artificial selection, bringing out the resemblances between these two principles and their essential differences, through discussion and illustration."

"The aim of this lesson (in German) is to give the class an idea of the ways in which time of day is expressed, and to show as far as possible the reason for the expressions used, contrasting them with the English idioms of a like character. Facts are not merely to be impressed, but as far as possible they are to be 'rationalized.' "

The following are examples of aims the main purpose of which is to secure from the pupils a certain amount of skill:—

"The first aim in this lesson (in Latin) is to stimulate the class to read the assignment more rapidly and with fewer errors than they read yesterday's assignment of similar length and difficulty. Yesterday the assignment was read in sixteen minutes, and each pupil made an average of three errors. Today I shall attempt to cut down the time by at least two minutes, and urge the pupils to read with greater care, as well."

"The main aim of this exercise (in chemistry) is to give the pupils some familiarity with the method of purifying water of volatile substances by the application of heat, and to afford individuals practice in this method until they can use it practically."

"The aim of this lesson (in French) is to encourage the pupils to talk more freely in the language than they have, up to the present, been doing. I wish to give them some confidence and a moderate degree of fluency if possible."

"The aim of this lesson (in history) is to secure from the class a rapid response in connecting the twenty important dates that have been learned up to the present time with the most essential facts to which these dates are related. These dates will be repeated in random order and immediate replies will be expected."

The following aims emphasize methods of procedure, rather than facts or principles;—

"The aim of this lesson (in algebra) is to help the class in solving problems."

"The aim is to show the class how to study a lesson in geometry."

"The aim of this lesson is to show the pupils how to read German intelligently."

"The aim of this lesson (in algebra) is to show the class the special method of obtaining the square and cube, and the square root and cube root of monomials."

"The aim of this lesson (in physics) is to make clear the method of analysis of a problem, with special emphasis on reading the problem so as to find out its meaning."

"The aim of this lesson is to show the pupils how to read ancient history in order to get out of the text the most important ideas and to arrange these in their proper order."

The following aims seek to arouse interest, to secure appreciation, and to develop desirable attitudes:—

"The aim of this lesson (in English) is to make the class comprehend Thoreau's keen observation of Nature, to understand his sympathy with his neighbors in the wilderness, and to lead the pupils to feel the value of this observation and this sympathy."

"The aim of this lesson (in English) is to make the pupils realize the state of mind of Lady Macbeth after the murder of the king, and to impress upon them the frightful consequences of evil."

"The aim of this lesson (in English) is to get the pupils to appreciate the delicate humor in *A Rill from the Town Pump* by Hawthorne."

"The aim of this lesson (in English) is to make the class realize in reading Benjamin Franklin's experience with the whistle the value of being conscious of one's mistakes."

"The aim of this lesson (in English composition) is to stimulate

alertness on the part of the class, in criticising original stories read by various members of the class."

"The aim of this lesson (in history) is to lead the pupils to understand that the motives of different men and different races are fundamentally the same, and thus to impress an attitude of tolerance toward others."

"The aim of this lesson (in physics) is to make the class feel that it is necessary to employ exact measurements and definite technical methods, if results that are worth while are to be obtained."

"The aim of this lesson (in Latin) is to give the pupils some appreciation of the exact use of words, and its value in expressing thought."

"The aim of this lesson (in geometry) is to impress the pupils with the proper attitude in attempting to solve originals."

"The aim of this lesson (in geometry) is to make the class realize the value of business-like methods in demonstrating propositions."

(d) *Some common faults found in the statement of immediate aims by teachers.*—As a rule teachers, particularly the novice, find difficulty in adequately conceiving and stating the immediate aims of their class instruction. The most commonly noted faults, according to the writer's experience, are the following: [1]

(1) *The teacher states his aims in too general and indefinite terms.* These two faults are as a rule closely related. As we have already seen, it is necessary to have general aims in order to give scope, organization, and significance to the detailed work. However, each lesson must have a few very definite and relatively simple objectives.

The following are examples of general, vague, and indefinite aims:—

"To further consider multiplication."

"To give an introduction to the subject of triangles."

[1] For examples of aims and methods which in the main are free from the errors pointed out in the following discussion, see Appendix C.

"To give the pupils an insight into the reign of Louis XIV."

"To get as much fun as possible out of the story of the *Seven Vagabonds*."

"To make the *Legends of the Province House* as intelligible as possible."

"To bring out interesting points in Hannibal's career."

"To develop an appreciation of the *Lady of the Lake*."

"To introduce the class to the study of letter-writing."

"To discuss some of the modern things in ancient civilization."

"To interest the pupils in the works of some of the best modern authors."

"To give the class (in geometry) a sure foundation for future work."

"To clear up any difficulties (in German) of the pupils."

"To review everything in the last two lessons."

In contrast to these general and vague aims, the greater practical value in teaching the daily lesson of such aims as the following, is apparent:

"The aim of this lesson is to impress upon the class the present, imperfect, and future tenses, passive voice, of *rego*, and *capio:* and to bring out the points of difference and resemblance between the active and passive forms of these two verbs."

"The aim of this lesson is to show the pupils that although an adjective agrees with its noun in gender, number, and case, the adjective does not necessarily have the same ending as the noun. For example, if an adjective is joined with a masculine noun of the first declension, the endings of the noun and adjective will not be the same."

"The aim of this lesson is to emphasize the principle that in the addition of fractions, if a factor of one denominator is the negative of the same factor of another denominator, we may change the signs of one of these factors if we change the sign before the fraction; also, that in the addition of fractions and integral expressions, before proceeding we must place the integral expression as it stands over a denominator and place before this expression a plus sign."

"The aim of this lesson is to make clear to the class the necessity of simplifying equations involving a parenthesis, before solving."

"The aim of this lesson is to consider calcium and calcium oxide in relation to form, occurrences, preparation, properties, and uses."

(2) *The teacher formulates aims that are beyond the understanding of the pupils or are so large and comprehensive that they cannot be grasped easily.* Examples of such aims are the following:—

"The aim of this lesson (in English) is to show the versatility of the genius of Shakespeare."

"The aim of this lesson (in Greek history) is to give the pupils a conception of the growth of moral ideals."

"The aim of this lesson (in science) is to impress upon the pupils the fact that all the phenomena of the universe are interrelated, and that determinism is the unvarying rule of Nature."

The above aims undoubtedly give expression to certain desirable objectives in teaching, but as stated they cannot be readily grasped by the average pupil.

Examples of aims more adapted to the pupil's understanding are:—

"The aim of this lesson (in English) is to impress upon the class the skill with which Mark Antony plays upon the emotions of his audience in the funeral oration."

"The aim of this lesson (in Greek history) is to emphasize the military methods and ideals of Sparta, and to contrast them with those of Athens."

"The aim of this lesson (in general science) is to give the pupils some idea of the meaning of the term 'conservation of energy.'"

(3) *The teacher sets up aims that are largely formal, and so obvious that they are of no value in the actual teaching of the lesson.* —The form which this fault takes is often that of stating the assigned work as the object of the lesson. The following are illustrations:—

"The aim of this lesson is to introduce the class to the new subject, the geometry of circles, as treated in the assignment for the day."

"The aim of this lesson (in geometry) is to consider the proof of propositions XXV. and XXVI."

"The aim of this lesson is to prove that any two rectangles are to each other as the product of their bases by their altitudes."

"The aim of this lesson is to prepare potassium nitrate."

"The aim of this lesson is to prove the following proposition:—If the circumference of a circle is divided into any number of equal arcs, the chords joining the successive points of division form a regular inscribed polygon; and the tangents drawn at the points of the division form a regular circumscribed polygon."

"The aim of this lesson is to teach the complete inflections of *volo*, *nolo*, and *malo:* and the use of the dative with such verbs as *believe*, *favor*, and *help*."

On the other hand the following aims attempt to do more than merely state the content of the assigned text:—

"The aim of this lesson (in geometry) is to furnish the pupils with a definite idea of the meaning of the terms radius, diameter, circumference, arc, chord, and tangent."

"The aim of this lesson (in physics) is to show the fact that sound is transmitted through the air in the form of waves."

"The aim of this lesson (in Latin) is to make clear to the class the various uses of the ablative absolute as illustrated in the translation exercises,—Latin to English, and English to Latin."

(4) *The teacher sometimes sets up the same aim day after day.*— This generally results from the fact that the aim is so general that it constitutes an objective which may determine the teaching of a large part of the course. One teacher, for example, week after week states that one of his aims in teaching English, is the arousing of interest in the literature read; another, as a rule, states that one of his aims is emphasizing the value of a complete answer to every question put; a third, repeats constantly in his lesson plans the object of impressing upon his pupils the necessity of accurate and logical statements in geometrical demonstrations. Of course, no one can deny the value of interest as an objective, the desirability of accurate replies to questions, and of logical statements in proving propositions. Clearly the fault here consists in not having worked out in more

detail the more immediate aims by which these larger ones may be realized.

(5) *The teacher attempts to realize too many aims in the course of a single lesson.*—This is in part due to the fact that he does not sufficiently recognize the desirability of emphasizing a few of the more important details of the lesson rather than of attempting to cover a large amount of ground in a hasty and hazy manner. It is better to teach a few things well than to teach many in an obscure fashion. The following are examples of the fault of having too many aims:—

"The aim of this lesson (in algebra) is to discuss the four fundamental operations of addition, subtraction, multiplication, and division; the removal of signs of grouping, and the solution of problems involving more than one unknown quantity."

"The aim of this lesson (in ancient history) is to emphasize the important features of the home-life of the Phœnicians, the characteristics of these people in general, the chief Phœnician cities, with an accurate notion of their location and industrial life, and finally the important gifts that the Phœnicians left to posterity."

"The aim of this lesson (in history) is to discuss the causes of Edward's peaceful reign; the relations between Normandy and England during his reign; the activities of the rival claimants to his throne after his death; Harold's struggle to maintain the kingdom; William's methods that led to his complete conquest of England; and finally to summarize the two great conquests of the tenth century, and show the importance of each."

On the other hand, such aims as the following seek to realize one main objective:—

"The aim of this lesson (in algebra) is to make clear the principles underlying the factoring of the following expressions,—

$a^2 + 2ab + b^2$; $a^2 - 2ab - b^2$, $a^2 - b^2$; $a^2 + 2ax + 2ay + x^2 + 2xy + y^2$; $a^2 - 2ax - 2ay + x^2 + 2xy + y^2$; $a^2 - x^2 - 2xy - y^2$."

"The aim of this lesson (in history) is to make clear the effect of the Russian campaign on the ultimate overthrow of Napoleon."

(6) *The teacher at times fails to unify the various aims of the lesson in terms of some larger purpose, that determines and includes the more specific objectives.*—The teacher should aim as far as possible to have a distinct goal for each lesson taught, rather than to bring out a large number of relatively unrelated facts and principles. In the examples cited under the preceding topic most of the aims quoted are to be criticised for lack of unity as well as for an excessive amount of detail. One further example will perhaps tend to emphasize this fault of lack of coherence in specific aims:

"The aim of this lesson (in German) is to give the boys practice in forming simple sentences in answer to questions; to make sure they all profited by the reading yesterday; to bring to their attention the principles of indirect discourse; also certain idioms explained under paragraph 154; further to stimulate interest in the subject; to impart knowledge about Germany; and to improve pronunciation, reading ability, and vocabulary."

(7) *The teacher does not distinguish between an aim and a method.*—Theoretically such a distinction is easy enough to make; practically it is often difficult. The teacher, however, will be helped in remembering that aims concern the *what* and the *why* of instruction, and methods the *how*. Probably at times it makes but little difference whether this distinction is absolutely held to or not. It is, however, important that the teacher should not set up a method as an ultimate end of instruction. This is likely to result at times in a barren formalism.

In elementary instruction, some teachers have conceived the Five Formal Steps of the Herbartians as aims, rather than means by which important results may be obtained. Such teachers have felt that it makes little difference what is taught or why it is taught, if each lesson is developed in the form of "Preparation," "Presentation," "Comparison and Abstraction," "Generalization," and "Application." Manifestly, not

all lessons lend themselves to this form of procedure. Even in those cases in which they do, it is not possible to decide what should be taught by considering a method of teaching.

Again, teachers are often impressed with the necessity of conducting instruction in the form of the question-and-answer method, and consequently keeping this object in view, they at times go to unjustifiable and ridiculous extremes.

The high school teacher is not prone to these errors, since often he knows but little about the methodology of instruction. His chief danger consists in thinking of tests for knowledge and processes of drill (methods of obtaining definite results) as in themselves objectives of instruction. This is generally a fatal error. At times, too, he regards methods of presenting new facts, through development, lecture, demonstration, discussion, and the like, as ends rather than means. Of course, the teacher should be conscious of his methods, and seek to criticise and perfect them. However, during the conduct of the recitation, emphasis should be on what is being accomplished rather than on the means of accomplishment. To use an analogy, the skilled marksman must develop his technique to an extraordinary degree, but the target at which he is aiming must be in the focus of his consciousness, if he is to hit the mark.

The following are examples of aims that emphasize primarily the how of instruction, rather than the what or the why, and hence are in reality methods of attaining certain desired results:

"The aim of this lesson (in English) is to apply the principles of grammar recently studied, in reading the selections for the day's work."

"The aim of this lesson (in chemistry) is to correlate the laboratory work with the text-book work."

"The aim of this lesson (in German) is to find out how much the class knows in order to plan out future work." (Comment,—the latter part of this statement is the object which the teacher has in

view; the testing of the knowledge of the pupil is merely a means for obtaining this object.)

"The aim of this lesson (in physics) is to test the knowledge of the class, and to explain the problems." (Comment,—to test, and to explain are primarily methods.)

"The aim of this lesson (in Latin) is to put into use the principles of the previous lesson; to give a thorough review on the first three lessons, and to drill on new forms." (Comment,—what object has the teacher that leads him to use these methods of instruction?)

"The aim of this lesson (in history) is to drill the class on the facts concerning courts, the feudal system, taxation, the Great Charter, the power of the king, and certain changes in the English language."

"The aim of this lesson (in history) is to develop with the class the reasons for Athenian supremacy." (Comment,—why "develop" rather than test the class as to what it knows about Athenian supremacy, or tell the class the essential facts?—Obviously the teacher must have some aim that is better realized in his opinion by developing the facts than by using other methods of instruction.)

The Methods by which the Aims of the Lesson are to be Realized is the Second Essential of a Well-constructed Plan.—As we have already pointed out in our previous discussion, the three general methods of instruction are testing the knowledge and skill of the pupil; drilling the pupil until a desired perfection in both knowledge and skill is obtained; and acquainting the pupil with new facts, principles, and methods of procedure. Since these phases of instruction have been extensively discussed, they need no further elaboration. There are, however, several important principles which concern method that may properly be taken up at this point. Some of these considerations have been indirectly touched upon in discussing the nature of a good aim.

(a) *Like the aim, the method is often poorly thought out and inadequately formulated.*—Sometimes it is stated in such a formal and obvious way as to be of little or no value to the teacher, as for example,—"I shall ask a few questions in order to bring out

the principal points," or "I shall go over the proofs as set forth in the day's lesson." Again, the method like the aim may be too general; that is, not outlined in sufficient detail, as for example,—"For the most part, my method is by question and answer," or "I intend to bring out the important points in the myths of to-day's lesson by oral work on grammar and by oral composition," or "I shall attempt to train the ear by the reading of Davis' *Gallegher*." Surely the teachers who have outlined these methods have expressed in no clear way the practical steps in their procedure.

The method may also have little coherence and organization, the various steps having slight relation and developing in no certain direction; as for example,—"My method will consist in a test for knowledge; in blackboard work; in questions asked of various pupils to lead them to think, and in drill on some of the points that seem to be obscure." Often, too, the method may consist of an amplification of the aim, and not of a clear outline of the procedure by which the aim is to be attained.

For example, the aim in teaching a lesson in mechanics may be to consider the principles involved in the operation of the lever, but the statement that this object will be accomplished by a presentation of the nature of levers is not properly a description of method. It is simply a more detailed statement of the aim and gives no adequate idea of the how of instruction. On the other hand, the statement that the principles of the lever will be brought out by a class demonstration of the mechanics of a balance, a crowbar, a nut-cracker, etc. gives some definite idea as to how the instruction is to proceed.

In a like manner, the aim in teaching a lesson in English literature may be to help the class form a vivid picture of the scenes in *Snow-Bound*. However, the further statement that this will be accomplished by calling the attention of the class in detail to certain stanzas of the poem is only a more definite statement of the aim. The method concerns itself with *how* these details are to be presented. Perhaps pictures may be used; perhaps pupils will be asked to recall in imagina-

tion winter scenes that they have experienced; perhaps they will be asked to make a rough drawing of the scene around the fireplace, or will be required to state in their own words the picture as they perceive it; or, finally, to make a list of the descriptive adjectives employed, and to explain their meaning.

(b) *On the whole, the most important characteristic of a good method is that it shall carry out in sufficient detail the aims of the recitation.*—Teachers differ greatly in their ability to formulate clearly their methods in terms of the objects of the lesson. Some give a most indefinite and general statement, often having little bearing on their avowed aims; while others have a certain genius in formulating the means by which their purposes are to be achieved. The following examples are illustrations of methods that are carefully related to the aims of the lesson and worked out in reasonable detail:—

Aim.—The subject of this lesson is taxation as a cause of the French Revolution. My aim is to make the pupils understand in the first place, what taxes are; in the second place, what they are used for; in the third place, how they are raised; and finally, why taxation should sometimes be a cause for war.

Method.—When the class assembles, I shall pass out sheets of paper for the purpose of having a short test. This test will require about fifteen minutes, and will be based upon the reading assigned to be done outside of the class. The following questions will be asked:—(1) Give proofs that the burdens of taxation were unevenly distributed. (2) Name the different kinds of taxes in France at the time of the French Revolution. (3) What were the direct and indirect taxes?—Explain and give examples of each. After the test is over, I shall begin the explanation of taxation by saying that the city of ——— has a yearly expense of about $8,000,000.00. I shall then ask how this money is expended, so directing the questions that I shall receive such answers as the following: "To keep the city streets clean;" "to pay the salaries of city officials;" "to maintain the public schools;" "to provide the enforcement of sanitary rules and regula-

tions;" "to maintain a fire department, and a police force." I shall then ask the question,—"How does the city secure money to pay for these things?" and I shall naturally expect the answer: "Through taxes." I shall then ask about methods of assessing taxes and securing their payment, and I shall compare such methods with those employed in France before the Revolution. I shall finally bring out through various questions the fact that the people of the city under discussion do not as a rule feel that taxation is a heavy burden, and that the poor are practically exempt from direct taxes. On the basis of these questions, I shall attempt to contrast the condition of the French people with that of those in the local community, and to show how excessive and burdensome taxation causes discontent and may ultimately lead to social revolution. In emphasizing this last point, I shall call the attention of the class to the burdens of taxation that are being placed on the shoulders of the people of Europe in the Great War, and suggest possible results after the conclusion of peace.

Aim.—The subject of this lesson in algebra is factoring, and the specific aim that I have in mind is to show in detail the method of factoring the sum of two cubes.

Method.—I shall recall with the help of the class all the previous work relating definitely to this topic (it would have been well if the teacher had here stated what definite points in this previous work he intended to emphasize). I shall then with the suggestion of the class multiply at the blackboard factors by our rules of special products, and show that these factors will be the factors of the sum of the cubes. I shall do several examples this way and next I shall take the sum of two cubes and discover the factors. Then we shall state in our own words the principle involved. I shall devote the remainder of the hour to written work, with the pupils at their seats, after the plan of supervised study.

In contrast to these definite statements of method in terms of aims the following example shows the uselessness of methods that have no clear connection with the avowed objects of the recitation:—

Aim.—My aim in this lesson (in algebra) is to bring out the significance of the absence of the sign between two parentheses.

Method.—I shall first give the class a brief written test upon the examples for today's work. I shall then do any examples of any

kind that are asked for; and I shall use up the rest of the time by asking such questions as these:—"What must we remember to do first in all examples?" "What must we remember in addition?"

(c) *The method should further give a statement of the most important questions to be asked.*—It should distinguish between questions that are mainly for the purpose of testing the knowledge of the pupil, or for emphasis and drill, and questions that aim to develop thought. It should also give in some detail a statement of illustrations to be used, and demonstrations to be conducted, as well as the method of procedure in these demonstrations. It should further describe exactly how tests are to be given and drill exercises to be conducted.

The Statement of the Result is the Third Essential of the Lesson Plan.—As soon as possible after the lesson the teacher should record the results obtained. In some instances, it will be possible to state definitely just what has been accomplished; more often, only general impressions can be given. There are two main reasons why the results should be recorded. In the first place, it is highly important that the teacher should form as clear an idea as possible of just what he has accomplished during the class period. He should set down all definite results, record all impressions, and subject himself to a frank criticism. In the second place, the recording of the results constitutes an important summary of achievement to which he may refer from time to time as the work progresses. It is valuable for him to know just what happened last week, last month, or last year, if he is properly to understand and measure his progress.

The recording of results varies from setting down fragmentary details and impressions, to rather definite statements. The following examples illustrate a rather wide range in records of this character:—

"The results were very satisfactory today." (Comment,—not particularly valuable or suggestive.)

"The great difficulty in this class seems to be to keep the whole class working all the time. The lesson today was a hard one on me, because I made an effort to keep everyone attentive." (Comment,—more detailed and helpful.)

"The attention is very good, but the work is poor. The same pupils that recite poorly are handing in correct examples done by a different method than the one that I demonstrated. The conclusion is obvious."

"The results in this class were appalling. Some failed to distinguish between east and west. I must admit that the map was far from being clear; however, the work at the map was so slow that I covered the work of neither the advance nor the review. The pupils seem to lean on me when they say proper names. The spelling and pronunciation of these are bad. I must evidently revise my method somewhat with special reference to these weak points."

"I found in the preparation of today's lesson that some pupils spent two hours on the work; others only twenty or forty minutes. I find that those that do the best work are those who report spending on the average of from an hour to an hour and a half in preparing the day's lesson."

"I repeated a mistake made by one of the pupils. I know that I should not have done this. In declining a neuter noun, a pupil made a mistake in giving the accusative; when I asked the gender, the mistake was immediately corrected. Would it not have been better to have asked the gender in the first place?"

"In the work of the laboratory, pupils have found it hard to keep in mind the object of the experiment while performing it, so I have tried the following scheme for the past two weeks: I have written upon the blackboard the object, and other information necessary to the formulation of a proper report, and I have taken pains to emphasize what I have written. The results so far have been good; more of the pupils seem to realize that the experiment actually has an object; the reports are written up in a more satisfactory fashion, and in subsequent discussions, the pupils seem to have a rather clear idea of what they have been doing."

The Prerequisites of a Good Lesson Plan.—In our previous discussions, we have emphasized in considerable detail, the

objects, nature, and methods of construction of an adequate lesson plan. In concluding this chapter, it may be well to consider the preparation and equipment of the teacher as related to his ability to construct such a plan.

(a) *An adequate lesson plan is based on a comprehensive and scholarly view of the subject taught.*—We have already considered the fact that a thorough knowledge of the subject is essential to good teaching. Nowhere is this knowledge more important than in the making out of a daily lesson plan, since this plan must form an integral part in the development of a course as a whole. Hence, the teacher, as we have already said, must know the text-book on which the work is to be based before he begins the course. He should likewise acquaint himself with other standard texts in the field and carefully note their contents and plan of presentation. He should be familiar with other books bearing on his subject, and as far as possible acquaint himself with the latest developments of his subject, which perhaps are not yet recorded in book form. In terms of such knowledge, he can then decide what facts are most essential for a proper understanding of the subject, and on this basis determine in part what he shall present to his class and what emphasis he shall give to the various materials presented.

(b) *It is based on a knowledge of the interests, needs, and capacities of the pupil.*—This again is a matter that has been previously discussed, but its importance is so great that there is little danger of making it too emphatic. Not all facts that are desirable to know can be impressed on the pupil. Those that do not interest him, and those in which he can be made to have interest only with great difficulty, if at all, must be rejected. Many things, too, that the learner might find attractive but which will probably be of little use to him, must be rejected, for interest must be considered as a means to an end rather than a final goal of instruction.

(c) *It is based on a knowledge of method.*—Many high school

teachers today have a satisfactory knowledge of their subject, a considerable number have a conception of the nature and limitations of the minds of their pupils, both as individuals and as members of a group, but relatively few have given adequate consideration to the best form of presenting their subject. Apparently many teachers of language have no knowledge of the "direct method," or, if they have such knowledge, they have acquired no skill in its use. Much has been written in recent years about teaching science and the manual arts by "projects." How many high school teachers can define this term, or give concrete illustrations of its use? Just at present there is much agitation in regard to individual methods of instruction. How far has this discussion influenced the average high school teacher in the conduct of his classes?

How should geometry be taught? As an independent subject, or in connection with algebra? What amount of time should be given to construction; to training in perception of spatial relationships, proportions, and magnitude; to application through concrete problems, and so on? Has the teacher of mathematics considered these matters?

What amount of time should be given to instruction in oral English and how should it be taught? Should the approach to English literature be through the English classics, or through modern poetry and prose? How should expression be related to appreciation? These are a few of the questions that every English teacher should comprehend and consider.

What place has the "library method" in teaching history? How can this subject be made more vital to the pupil? How should local history be taught? What relation has history to civics and economics? Such problems as these should at least be familiar to the teacher of this subject.

In physics, chemistry, and biology, what relation should there be between the recitation and the work in the laboratory? What is the best and most economical technique in the labora-

tory exercises? What is the function of the note-book? How and when should it be written up? What form should it have?

There is no subject in the high school curriculum that does not present its definite problems in methods of presentation. The teacher should acquaint himself with these problems and the manner of their solution. He need not try every suggestion that is brought forth, but he should know something about the most important of these suggestions, and if opportunity offer he should try out those that seem to be the most promising. Perhaps after learning about the direct method, he will still keep to the grammatical method of teaching German or French or Latin, but he should in his own mind justify his choice. He may read the many discussions concerning the teaching of high school mathematics, and end as he began by treating geometry purely as an exercise in logic, but he should have a clear reason for doing this. Projects in general science may appear to him as too difficult and time-consuming to warrant their use, but at least he should know why the project method is sometimes used, and what results are claimed for it. Not all new things are the best things, but a knowledge of these new things cannot safely be dispensed with.

For this reason, as has previously been urged, the teacher must know the educational literature in his special subject. He must be acquainted through books and journals with what his colleagues are thinking and doing. Even though he does not have such an acquaintance, he may teach well, but he will teach blindly. If he does plan his work effectively under such circumstances, it will be because of lucky chance, rather than because of insight and systematic comprehension; and he should remember that, as a rule, chance is a blind alley.

CHAPTER XVII

SUPERVISED STUDY

The Teacher's Function is Broader than that of a Hearer of Lessons.—At various points in our previous discussions we have pointed out the fact that the teacher conceives his function too largely as that of a hearer of lessons, and too little as that of a director of the intellectual activities of his pupils.

In a discussion in *The Ladies' Home Journal* [1] a correspondent reports a conversation between a widow and a school superintendent in which the widow says, "I have four little girls attending your schools. I am up at five o'clock in the morning to get them off to school and to get myself off to work. It is six o'clock in the evening when I reach home again, pretty well worn out, and after we have had dinner and have tidied up the house a bit, it is eight o'clock. Then, tired as I am, I sit down and teach the little girls the lessons your teachers will hear them say over on the following day. Now, if it is all the same to you, it would be a great help and favor to me if you will have your teachers teach the lessons during the day, and then all I would have to do at night would be to hear them say them over."

This brings out a most essential and fundamental point. It is the teacher who should aid and lead his pupils in their scholarly pursuits; he should not appear, more than is absolutely necessary, as an umpire in the game of learning, or as a taskmaster, who exacts his due. More and more it is being recognized that the teacher must be a teacher in the only meaning in which the word can be justly used,—namely, in the sense of one who

[1] January, 1913.

helps those under his instruction to secure knowledge, to acquire skill, to obtain insight, and to gain appreciation. During the conduct of the recitation such help shows itself in properly conducted and economical drill, in telling, explaining, and illustrating important facts, in demonstrating methods of procedure, and developing with the class ideas, principles, points of view, and attitudes of thought and feeling.

Until recently the help that the teacher gave his pupils has been largely confined to these above-mentioned objects. However, it is being seen more and more clearly that the most important aid that the teacher can give to his pupils is to show them how to go about their work in the most efficient manner. Hence, we are hearing much today about supervised study, about the reasons for it, the methods to be used and the results to be achieved. As a consequence, in some high schools, though as yet in but a few, organized attempts are found to make supervised study one of the important functions of teaching.

Reasons for Supervised Study.—There are various reasons why supervised study in the high school is desirable. Among these the following are important:—

(a) *The physical conditions of the home often make concentration on the assigned lessons extremely difficult, and at times practically impossible.*—In a previous chapter we have discussed the fact that in many instances the pupils live in cramped and squalid surroundings. The home has but a few rooms, and these are used for general purposes. They are poorly lighted, badly heated and ventilated, and inadequately furnished. Worse than this there may be several or many persons in the room in which the pupil is trying to do his work. Thus the pupil has no place in which to study. No business man could do efficient work under similar conditions. It is a wonder that pupils in such homes accomplish anything at all. But not only in the homes of the poor do we find unsatisfactory physical conditions. It is probably an exception that the high school pupil has a room

entirely to himself in which he may do his studying. Often he sits around the library table with his brothers and sisters, doing his school work. His parents are also frequently present, and there are many distractions and interruptions. Under such circumstances he finds it extremely difficult to get down to work, and to keep at his tasks with concentrated and sustained effort. Thus, he wastes much time and acquires undesirable habits of study.

(b) *Home study tends toward irregular habits of work.*—The pupil who does his work at home as a rule studies when it fits into his other plans and those of his parents. Often he has no regular study hours. At times he postpones his work until the last minute, and gets what he can in a feverish hour of effort, sometimes before breakfast or even during the meal itself. On some evenings he may study; on others he goes out with his friends, or "takes in a show." When he remains at home his work is often interrupted by visits from companions. Frequently his parents are away and he is left to his own devices. All of this irregularity makes against proper habits of work. It is a wonderful aid to study to have a definite place and a fixed time for doing school tasks. The learner soon gets accustomed to work under systematic conditions of study, and the difficulties of getting down to his lessons are correspondingly diminished. When once he has achieved a habit of regular work it is an easy matter to do this work at the customary time and in the customary place. He thus acquires a propensity for work, just as he acquires a propensity for procrastination when he has no fixed habits of study.

(c) *When the pupil is not directed in his work he often acquires blundering and wasteful methods of study.*—In all learning blind trial and error is an extremely wasteful and unsatisfactory method of acquisition. It is wasteful, since much unnecessary energy is consumed in getting results that could be obtained equally well in much less time, if the learner had some idea of

how to go about his work. It is unsatisfactory, since rarely does the learner under these conditions of undirected effort acquire the best methods of study. He blunders on ways of doing his school tasks, but seldom knows whether or not they are the best methods. Indeed, he seldom considers the question of using proper methods. The problem is usually one of which he has little comprehension. Consequently inefficient habits of study result from haphazard methods hit upon by the student who is working without guidance.

(d) *The learner is often given unwise aid by parents or friends.*—At times, when the pupil is not left to his own devices, he is aided by parents or friends. It is a common practice for the pupil to ask the aid of his father or mother in preparing his work for the next day. Frequently this aid consists in the helper's doing the work in whole or in part for the pupil, not in showing him how to do the work himself. Such aid is clearly undesirable. Instead of impressing knowledge, developing skill, and stimulating ability, it smothers initiative and kills effort. Pupils who rely on others to do their tasks for them are as a rule poor pupils. Frequently classmates get together to work out their lessons. This again is seldom productive of the best results. When several are working together, much is apt to be discussed that does not concern the lesson. Further, the bright pupils are sure to do most of the work, while those of less ability or zeal follow or copy. For the bright pupil this is generally a waste of time, and for the dull pupil a barrier to self-activity.

(e) *Individual differences in capacity demand individual methods of help.*—One of the most striking results in recent investigations in educational psychology is that pupils of the same age and grade differ greatly in general and in particular abilities. The teacher may profitably spend a part of each recitation period in instructing the class as a whole in methods of work for the next day's lesson, but under these conditions his instruction is directed toward the entire group; it cannot consider indi-

vidual capacities and needs. It is desirable to give this general help, but the problem of individual aid cannot be solved in the group assignment. In the supervised study period the teacher has the opportunity of directing his attention toward individuals.

(f) *Recent investigations have clearly shown the value of supervised study.*—Not only do the observations of daily experience and the conclusions of common-sense clearly indicate the desirability of supervised study, but the findings of experimental education give support to these observations and conclusions. The majority of pupils do better work when their study is properly directed. In particular the medium and the poor pupils show decided improvement under supervision.

Minnick [1] taught two classes in plane geometry, in one of which the work was supervised and in the other unsupervised. The weekly averages of recitation grades over a period of fifteen weeks showed the division which had supervised study to be superior. Mid-term and final examinations also showed the same fact. Wiener [2] found great advantage in using divided sixty-minute periods, thirty minutes of which were devoted to study under supervision. Principal Brown of Joliet, Ill., who for some years has employed supervised study in his high school says,—"Tabulation is made of all these teachers' reports at the close of the semester and an opportunity is given for comparing one semester's work with another for the past four or five years. The past semester which ended in June, 1914, showed thirty-eight different classes in which there were no failures. It shows that the percentage of failures is gradually being reduced to a minimum." [3]

Other investigators have arrived at conclusions similar to those cited above.

Objections to Supervised Study.—Although there is general agreement among those competent to judge that supervised

[1] *School Review*, Vol. XXI., pp. 670–675 (1913).
[2] *Ibid.*, Vol. XX., pp. 526–531 (1912).
[3] *School and Home Education*, February, 1915, p. 207.

study is desirable, certain objections have been raised against this reform in our prevailing school practice. Among these objections the following most merit consideration:—

(a) *Supervised study does not promote self-reliance on the part of the learner.*—This is an objection that is often heard from teachers who are not in sympathy with the reform. "The pupil should do his work himself," they affirm, "and not have some one constantly at his elbow to help him." This objection is based on a misunderstanding of the aims and methods of supervised study, which seek to acquaint the learner with the details of correct procedure, to train him in proper habits, to clear up his misunderstandings, and to help him overcome difficulties that he cannot surmount unaided. Supervised study does not aim to do the pupil's work for him. From what we have already said in regard to the unsatisfactory conditions of home study it is evident that the pupil who is left to his own devices is more in danger of receiving undesirable forms of aid than is the pupil who does his work under the direction of his teacher.

(b) *It consumes too much of the teacher's time.*—"How is it possible," it is asked, "for the teacher to do the work required of him in other particulars and still to give a considerable part of his time to directing the study of his pupils?" There are two answers to this objection. In the first place, supervised study should be considered a part of the teacher's regular duties, a part as important as his class instruction, and in making out the teacher's schedule, the principal should recognize this fact. He should not demand additional work from the teacher, he should merely distribute it differently. In the second place, much of the time now devoted to the recitation may be eliminated when supervised study is introduced, since during the supervised study period some of those things can be accomplished that are at present given over to the recitation.

Testing for knowledge and individual drill, both of which are important parts of the typical high school recitation, may be

largely assigned to the supervised study period. Testing the knowledge of the pupil is for the most part made necessary because of the fact that by this means alone can the teacher find out the progress of the pupil, discover his difficulties, and hold him down to work. In the supervised study period the teacher has a direct means of acquainting himself with what the learner is accomplishing. Under these circumstances the teacher is certain that what the pupil is doing is being done on his own initiative and with adequate concentration. Indeed, these results can be better secured by supervised study than by means of the ordinary recitation. Further, when the teacher finds during the study period that the pupil is weak in certain particulars, the necessary drill can be given him to overcome his weakness,—a much more economical procedure than giving him this practice during the recitation at the expense of the other members of the class. Thus, testing for knowledge and individual drill will be largely eliminated from the recitation when supervised study is systematically developed, and the class period, considerably reduced in length, will be devoted to those matters that more particularly concern group instruction.

(c) *It imposes an additional expense on the school, since it requires a larger force of teachers.*—This is a practical objection that has been urged against supervised study; however, it is an objection that is not without an answer. In the first place, increased expense should not be considered as the determining factor in educational progress. If supervised study is highly desirable, means should be secured for providing it. In the second place, the cost of establishing supervised study would not be great in most instances. Much can be accomplished by dividing the recitation period into two equal parts, and devoting half of it to supervised study. This change would necessitate no additional teachers. Again, when supervised study is installed, the general study hall becomes obsolete, and the time of the teacher who has this study hall in charge is left free for

genuine supervised study. Here again there is no additional expense incurred. It is probable that in most medium-sized and large high schools, the addition of from five to ten per cent. in the teaching force would be adequate for the installation of a thorough system of supervised study.

(d) *It increases the length of the school day.*—There are two different answers to this objection. It may be urged with much justification that such an increase is desirable; that it would be much better for the pupil if the high school were an all-day school; if all his activities, whether physical or mental, were under the supervision of his teachers. Since, however, it is not probable that the all-day high school will soon be established, we must meet the objection by denying that under a rationally conducted system of supervised study, any considerable increase in the school day would be made necessary. Many high schools have at present a session of from five to six hours, and with a six-hour session it is quite possible to install an adequate system of supervised study. The average high school pupil at present has four recitation periods a day of forty-five minutes each, consuming a total of three hours. He has, perhaps a half hour for lunch and recess, and the remainder of his time is occupied by study and laboratory work. Assuming that the school day covers six hours, five hours and twenty minutes of this could reasonably be devoted to intellectual work. Thus, if the pupil had on the average four lessons a day, eighty minutes could be devoted to each subject, from twenty to thirty of which could be given to the group recitation, and the remainder to study. Probably few high school pupils spend over an hour in effective work in preparing the average assignment, and if this is true, fifty minutes of supervised study ought to be ample for the preparation of most lessons. When the class period is freed from those activities which could easily be much better performed in the supervised study period, a half hour will prove an adequate time for the recitation.

(e) *It necessitates additional school rooms.*—Here again is a practical objection of considerable importance. In many school buildings there are recitation rooms which are capable of holding approximately one hundred pupils. Under present conditions, these are frequently used as study halls. There are also smaller rooms in which one class recites while another group is studying. Under any well-conceived plan of supervised study, preparation of lessons in the large hall and in the rooms in which a recitation is being conducted will be discontinued. The latter practice is, of course, the more objectionable, since the teacher, the pupils who are reciting, and the pupils who are studying are subject to distraction, and since further the teacher can give no attention to the study pupils, who work without direction.

The difficulty in most of our high schools today is not so much a lack of room, as a lack of its proper distribution. The difficulty of adequate space for supervised study is in part overcome by the scheme of extending the recitation period and devoting one part of it to the ordinary functions of the lesson, and the other part to supervised study. When the large study halls are used, the pupils may be divided into several groups, and a teacher assigned to each group. Such devices as these should be considered as temporary expedients, however. In the plans of new high school buildings, there should be provision for an adequate number of small rooms, rooms seating not more than thirty-five pupils. Such rooms may be used either for recitation or for supervised study. Larger rooms may be provided for lectures, demonstrations, drill classes, and school assemblies.

Forms of Supervised Study.—In practically all high schools, pupils have free periods which they are required to devote to study. In a few schools there is such a free period for all the pupils at the same time, but as a rule these free periods are distributed throughout the school day, and in individual in-

stances are determined by the pupil's program of study. Consequently at any hour in the day, some pupils will be reciting in the classroom, or working in the laboratory or shop, while others will be engaged in study. Study under these conditions is supervised only in the sense that a teacher is present to maintain order, and in rare instances to answer questions and give aid. As we have already said, this study is generally conducted in a large room known as a study hall, or in smaller rooms in which a recitation is at the same time being held. In the latter case, however, there is no question of supervision in any sense of the word. The teacher gives attention to the study pupils only when there is a positive breach of order. He has no opportunity to give them further consideration.

Any real aid that is given to pupils in preparing their work under conditions such as those described above is usually effected by keeping certain pupils after school. Only those pupils are required to remain who show clear evidences of not doing their work well. Further, this device is regarded by most pupils in the light of a punishment, rather than as a kindly office on the part of the teacher. Thus, the attitude with which the pupil approaches his study is often negative, and at times partly rebellious. The teacher, too, is apt to consider this part of his work as a burden, and consequently to confine it to those who most need it. He cannot extend it to all pupils who would receive benefit from it. At best, it is a makeshift, and cannot properly be considered as a systematic attempt to supervise study. Of the devices that definitely seek to direct the learning activities of the pupil, the following are the most important:—

(a) *The unprepared lesson.*—This device has great merit, but is not sufficient to meet the needs of the learner. It is commonly employed in such subjects as foreign language, history, or English, although it may be used in any subject in the curriculum. In these subjects, the class usually recites in the conventional manner on four periods during the week, but on the

fifth period, they assemble to consider an advance lesson that has not been previously studied. The period of the unprepared lesson is frequently used by the teacher for the purposes of a general assignment, during which methods of study may be emphasized.

The writer recalls in particular an unprepared lesson of this type in a class in Latin. The instructor, a man of great skill and long experience, spent the entire hour in showing the class how to read a passage in their text at sight. There was unusual interest in the work, and the results were excellent. Unprepared lessons of this same general nature were common in this school, and by means of them the pupils were given substantial training in the technique of study.

(b) *The general study period.*—We have already mentioned the fact that in some schools a single period a day is set aside at which all the pupils engage in study. This may be developed into an effective though limited means of supervised study by requiring the teachers to take charge of their home rooms during this period, and to assist the pupils who are there assembled. Under this plan, pupils are allowed to leave their home rooms in order to get assistance from teachers of the special subjects which they are preparing during this study period.

(c) *The divided period.*—Under this device, the recitation period is cut into two parts of approximately equal length, one half of which is devoted to the group recitation, and the other half to directed study. This plan has been effectively worked out by Principal William Wiener of the Newark, N. J., High School, and by Professor Merriam of the University High School at Columbus, Mo. It has been adopted in a considerable number of high schools, in some instances being accompanied by a slight extension of the class period. It has the merits of not interfering with the regular school program, and of being flexible and adapted to the varying needs of the class.

(d) *The double period.*—This plan has for some time been employed by Principal J. Stanley Brown of the Joliet, Ill., High School. In general "the first period of the two, each forty minutes long, is spent in the conduct of the recitation; the second period is spent in directed study, with whatever assistance may be found necessary, according to the need developed either during the preceding recitation or the examination of the lesson for the following day. . . . The amount of the teacher's work, under the new plan, is no greater than under the old plan, but the effectiveness of the work is its main point of defense." [1]

Purposes for which the Period for Supervised Study may be used.—The period of supervised study may be used by the teacher for several purposes, among which the following deserve particular consideration:—

(a) *The period may be devoted in part or as a whole to a general assignment.*—At times when a new topic of considerable importance is being taken up, the teacher can spend to advantage an entire period in properly preparing the class for the study of the topic. On such occasions previous work relating to and leading up to the new work may be briefly reviewed, important points may be emphasized, difficulties explained, and methods of study outlined. While such an extended assignment is not often necessary, there are occasions when it is extremely important.

(b) *It may be used as a means of summarizing and fixing the lesson that has just been taken up in the class.*—It would perhaps be well to devote the first few minutes of most supervised study periods to a recall and organization of the main points in the recitation just finished. This is an excellent device for making clear and fixing in the mind the most essential topics of the recitation period. It is particularly important in those subjects

[1] Quoted from Dr. Brown's description, *School and Home Education*, Feb., 1915.

which require the taking of notes that these should be organized and reduced to intelligible and permanent form as soon after the class period as possible.

(c) *It may be used to habituate the learner in the technique of study.*—This is one of the most important functions of the supervised study period, and one that should find particular emphasis in the case of first year high school pupils, and of pupils taking up a new subject. Few learners of high school age have any adequate idea how to go about their work. Pupils in the beginning of the study of history, for example, should have a definite notion of how to read and comprehend intelligently an assignment. The class should be drilled in selecting the main thoughts, and in properly relating the essential facts. They should be accustomed to making outlines, they should be taught to formulate problems, and be trained in exercising historical judgments. We have already spoken of the importance of using in a foreign language supervised study periods for the purpose of training the pupils in intelligent and economical methods of translation. In mathematics, too, it is obvious that one of the most important phases of instruction consists in developing methods of procedure. In geometry, in particular, much time is wasted by the average pupil when he learns the propositions as they are worked out in the text-book. If study periods were properly supervised, the pupil could develop the proofs under the guidance of the teacher and thus get something from the study of geometry that resembles training in thinking. History, foreign language, and mathematics, however, are not the only subjects of instruction that require emphasis on the methods of study. There is no subject in the curriculum that does not have its special technique, and with this technique the learner should be made familiar.

(d) *It may be used in discovering individual needs and in giving individual aid.*—No teacher can do his best work unless he understands his pupils as individuals. By observing how

the learner works, the teacher can definitely find out just what the pupil is able to accomplish, and where his difficulties lie. Thus the teacher discovers the nature and direction of the pupil's errors, and consequently can aid him at those points at which he most needs help. It is the function of the teacher to explain to the learner those things that are obscure, to call to his attention those facts, principles, and methods of procedure that are not comprehended, and finally to drill him on those things in which he is weak.

Equally important for the teacher in directing the pupil's work is the knowledge of the things in which the pupil has attained the desired efficiency, for in these things the learner may be left to his own resources. The teacher should further gain a clear idea of the accomplishments of the superior pupil, and will on the basis of this knowledge assign to him work that is a real test of his ability. Thus, the bright pupil will be freed from the treadmill activity of going over those things that he already has mastered, and will be given an opportunity for the intellectual growth which under the present system of class instruction is too often lacking.

Fundamental Principles to be Emphasized in the Technique of Learning.—It has already been said that one of the chief functions of the supervised study period is the habituation of the pupil in correct methods of learning. This is so important, that a somewhat detailed analysis of the fundamental principles involved in the technique of learning is desirable at this point.

(a) *The teacher should first of all make sure that the physical conditions of the study room are such that the pupil can do his best work.*—It is hardly necessary to emphasize the fact again that well-lighted, properly heated, and adequately ventilated school rooms are essential for high grade intellectual effort. There are other physical conditions that must be kept in mind. The pupil should be comfortably seated, with the materials that he requires for his work well arranged and immediately available

for use when needed. There should be no unnecessary distraction. Indeed, everything should be so ordered, that the learner may give the maximum amount of attention to the essential elements of his work.[1]

(b) *The teacher should furnish the pupil with an incentive for doing his work rapidly and accurately.*—The pupil must be made to feel that the study period is an opportunity for him. The teacher may properly urge the learner to do as much as possible at this time in order that the pupil may be free to do other things when the school is dismissed. If the pupil finds that it is to his advantage to concentrate his attention upon his school work during the study period, he will in all probability study with zest and determination. His definite reward for good work will be his freedom from school tasks at the completion of the school day. This is a compelling motive.

The pupil will discover further that under efficient direction he can accomplish much more in a given time, then he can when he studies by himself; and this should furnish an added incentive for serious effort during the study hour. However, the teacher must remember that unless the learner does his work faithfully and well, he may find but little advantage in working under direction, and therefore may place but slight importance on the value of the study period.

An additional motive for study may be found if the teacher sets before the pupil a certain desired standard of achievement,—so many facts to be mastered in history, so many lines to be translated in a foreign language, so many problems to be solved in algebra, and so on, during the prescribed time for work. Likewise, the teacher may stimulate the zeal of the learner to increase the amount accomplished day by day, until at length the pupil is able to cover the entire assignment during the study period. Such incentives as these are among the most important. There are others, of course, that may be used from

[1] See Chapter VII., p. 130.

time to time with various groups and individuals, and the teacher should be constantly alert to the necessity of motivating in every legitimate way the pupil's habits of study.[1]

(c) *The teacher must insist that the learner begin his work promptly.*—One of the greatest wastes in home study is caused by the fact that many pupils have no idea of how to get started. It may take the learner ten, fifteen, or twenty minutes actually to begin to study. Not infrequently he consumes a third of his time in "warming up." The teacher should use every device to insure at the opening of the study period a prompt beginning. We have already mentioned the fact that the tools and materials for work should be at hand. There should be no necessity for the sharpening of pencils, sorting of papers, and rummaging through desks for books and supplies. Again, the pupil should be habituated in beginning at once those more mechanical parts of his work that do not require highly adapted attention, sustained thought, or penetrating analysis. He may not be able immediately to concentrate his mind on the details of a proof in geometry, but he can at least draw the figure, and see what the construction signifies; he may not be able to get his mind down to translating his language assignment, but he can start his lesson by learning vocabularies and forms; he may not at the outset be sufficiently alert to begin the composition of his theme in narration, but he can commence by jotting down the events that are to form the basis of his writing.[2]

It has already been suggested that the first part of the study period may be devoted to a review and summary of the lesson just finished in the class. This review is something that the pupils can begin on at once, since it requires no new orientation or adaptation of attention, and no original thought. Under all circumstances, the teacher must see to it that the pupils make a beginning, even if it involves a little more than going through

[1] See Chapter II., pp. 27, 31–35 and Chapter IV., pp. 72–80.

[2] See Chapter IV., pp. 62–64.

certain physical motions, and that they do not spend a large part of their time in the agony of getting started.

(d) *The teacher must require the pupil to maintain sustained effort until the close of the study period.*—Not only do many learners waste time in getting started, but they slow up in their work, as the time to end their task approaches. Studies of the curve of work show, however, that when the learner is aware of the approach of the end of his task, and when he desires to make a good record, he puts forth additional effort toward the end. If the pupil has a motive for wishing to do efficient work, he will increase his activities as the study period approaches its close. The teacher should strive to provide the pupil with an incentive for finishing at top speed, and should impress upon him the desirability of an "end spurt." Like a prompt beginning, high grade effort at the end becomes a habit when insisted on by the teacher, and when practiced by the pupil.

(e) *The teacher must demand that the pupil concentrate on his work under all circumstances.*—While concentration always results from a motive for work, and while the teacher should do all in his power to motivate the study period, he should insist on an attentive attitude on the part of the pupil even when no adequate motive for study is present. By merely emphasizing an attentive attitude, the teacher impresses the pupil with the idea of sustained effort, and this idea may ultimately develop into a permanent attitude of attention ingrained in a habit.

(f) *The teacher should make sure that the pupil, before he begins the detailed study of a lesson, knows in general what the lesson is about.*—At times the main purpose and aim of the lesson is developed in the assignment. This is generally the most desirable way of bringing this aim to the attention of the pupils. When, however, the assignment has not been carefully developed the teacher should at least call the attention of the class to the most important points involved in the new lesson. The learner

should not work in the dark; he should have the main objects of his study definitely before him.

(g) *The teacher should accustom the pupil to read a lesson over as a whole, before he concentrates attention on various elements and details.*—This is particularly true, as we have already said, of such a subject as history or literature, but it also applies in a measure to every subject in the curriculum.[1] There should be a preliminary orientation of the work to be done even in studying a lesson in algebra or geometry, or in the translation of a foreign language. It is often desirable to show the pupil how to translate the assignment as a whole before he works out detailed difficulties. Study by wholes emphasizes relationships and general aims, while study by parts clears up special difficulties, but often obscures the significance of the whole. The rule in study should be to learn by wholes at the start, then to concentrate the attention on individual difficulties, and finally to go over the entire work again in its totality, thus linking together the various elements, and securing a comprehensive view of the entire subject of study.

(h) *The teacher should afford the pupil an opportunity at the close of the study period to review the most essential details, and fit them together in a significant scheme.*—This follows of necessity from what has been said in the preceding paragraph. A final review and synthesis is necessary for any adequate understanding of the details previously studied. The most economical time for this review is at the completion of a period of relatively detailed study.

(i) *During the study period, the teacher should emphasize the practice of recall by the learner.*—Learners often make the mistake of confining their entire attention to the book before them or the materials immediately at hand. They bury themselves to such an extent in the materials, that they do not adequately comprehend the meaning of these materials, or find out where

[1] See Chapter IV., p. 66.

their difficulties lie. A learner may read over an assignment in history again and again and yet have no clear idea of what it signifies. If he would stop for a moment, shut the book, and try to recall the essential facts therein contained, he would impress these facts more surely on his memory and would more adequately comprehend their relation. Some facts, too, he would find that he could not recall at all, while others would be hazy and uncertain. Such facts he would then study more in detail and with greater emphasis until he had mastered them. Similarly in other subjects of the high school curriculum, judicious recall from time to time serves as an important aid in their mastery.

(j) *The teacher should assist the pupils in making an outline of those topics of study that contain important facts and principles with subordinate details.*—Often such an outline is best worked out when the learner sets down in each paragraph read the main topic of discussion, then seeks to find the subordinate ideas that are related to this topic and endeavors to arrange them in their proper sequence. At times an elaborate system of outlining may be necessary with main topics, sub-topics, and detailed items under these. In general, however, a detailed analysis is not necessary. A scheme that is over-logical and minute may defeat its own purpose. Sometimes the best kind of outline is obtained when the learner underscores the main topics in his text, or writes out a marginal analysis.

Parker [1] in his discussion of the outline points out the fact that it may serve the purpose of getting the attention immediately adapted to the work in hand. He says, "The practice of making an outline on paper is another habit of going through the motions that helps in securing attention in studying. For example, in beginning this chapter about half-past seven one evening I was possessed with the idea of going to a neighboring minstrel show. I couldn't get the thoughts of the singing and eccentric dancing permanently out of my

[1] *Op. cit.*, p. 407.

mind. But I also wanted to get to work on the chapter. So, at a favorable moment, when the thought 'write the chapter' was dominant, I started to make the appropriate motions by jotting down some headings in the outline. The thought 'go to the show' kept coming back, but the outlining motions helped to inhibit it. Suddenly it occurred to me to look at my watch, and it was nine o'clock, too late to go, and I had made considerable progress in thinking out the chapter. Similarly, students will find that the outlining of assigned readings will serve as an important mechanical aid to attention."

(k) *The teacher should accustom the pupil to memorize ideas rather than mere facts; however, when verbatim memory is necessary, he should insist that it be exact and complete.*—As a rule, the high school pupil is woefully lacking in ability to select the essential facts and principles contained in the book that he reads, or the materials that he manipulates. As he progresses in his school course, he acquires greater power in this respect, but there is never a time when he does not need wise and careful guidance. The teacher must do all in his power to lead the pupil to see the important facts that lie behind words and objects, and give these their meanings. Rote memory at this stage of learning plays but a small rôle. However, there are times when not only meanings are important, but the words in which these meanings are expressed. When such rote memory is required, the teacher should impress upon the learner its necessity and value. The high school pupil should never be above learning by heart.

(l) *The teacher should impress upon the learner the necessity of looking for concrete examples and applications of general principles, and of interpreting isolated facts in terms of broader meanings.*—In our discussion in regard to reasoning, we emphasized the fact that the general must find significance through its exemplification in particulars, and that particular instances must acquire a meaning in relation to general principles. To make the pupils understand the importance of this relation-

ship of the general to the particular and the particular to the general, and to accustom them to the interpretation of the abstract through the concrete, and the opposite, is one of the most important habits which the teacher can inculcate through supervised study.[1]

(m) *The teacher should show the pupil how to use in the most economical way books for reference and collateral reading.*—Few pupils at the beginning of their high school course have any idea how to run down a topic in the books assigned to them for collateral reading, or how effectively to use books of reference. Since this is an important part of their school work, they should learn its technique as soon as possible. They should know how to get information from encyclopedias, dictionaries, almanacs, gazetteers, and indexes. *Poole's Index*, in particular, should be familiar to them. Pupils who are doing general reading should be carefully instructed as to the most effective method of taking notes on such reading, and of writing these notes up in a convenient and intelligible form.[2] The older pupils may be introduced to the technique of taking notes on cards and working them up into a personal reference system.

The Indirect Results of Supervised Study Constitute one of its Chief Values.—While the main aim of supervised study is to aid the pupil in his learning and habituate him in effective methods of work, there are certain indirect results that should be kept in mind in estimating the value of this proposed innovation in high school practice.

In the first place, the teacher through the medium of the supervised study period is brought into contact with his pupils as individuals. In this way he gets vital insights in regard to their attitudes, habits, interests, knowledge, and skill. He learns to know his class as he never could know it through the medium of the recitation alone. Thus he acquires the ability of dealing with individuals as individuals. This knowledge of

[1] See Chapter XIII., p. 288. [2] See Chapter XI., p. 228 f.

the pupil's mind is important not only in its application during the supervised study period, but also during the recitation. Frequently teachers make the mistake during the classroom exercise of treating all pupils as if they were exactly alike, and of expecting the same thing from each and every one. This is unfortunate not only as far as the individual pupils are concerned, but also unfortunate from the standpoint of the class as a whole. The best recitation is that in which each and every pupil is doing those things that he can best do in terms of the needs and abilities of the class as a whole, thus attaining the ideal to which we have often referred in previous pages, the ideal of the coöperative class.

In the second place, when supervised study becomes an essential part of high school instruction, the conduct of the recitation will be entirely changed, much to its advantage. We have frequently discussed the time wasted in testing the pupil's knowledge and in giving individual drill exercises during the class period. As we have seen, it will be possible for the teacher during the study period to determine very accurately just what each pupil knows, and what he can do. It will also be possible to drill each pupil on those points where he shows particular weakness; hence it will be no longer necessary to spend the time of the recitation for this purpose. Supervised study means the elimination of lesson-hearing, so often the bane of high school teaching today. When the necessity for testing the knowledge of the pupil and for drilling him during the class exercises no longer exists, then the teacher will be compelled to use the recitation to realize the main purpose for which it is intended, namely,—for the stimulation of interests, for the acquiring of insights and appreciation, and for the development of reflective thinking. When this purpose is achieved, the millennium in high school teaching will be at hand.

SELECTED BIBLIOGRAPHY

The following list of books and articles is not intended to be a complete bibliography of the literature relating to the topics discussed in the foregoing pages. The aim of the writer has been to select some of the most important discussions concerning the problems of the high school, as a basis for the student's wider reading.

Books for General Reference

The following books should be kept on hand for constant reference:—

Brown, J. F. *The American High School* (1909).

Judd, C. H. *Psychology of High School Subjects* (1915).

Monroe, P. *Principles of Secondary Education* (1914).

Parker, S. C. *Methods of Teaching in High Schools* (1915).

The School Review, University of Chicago Press (particularly recent volumes).

Bibliography for Chapter I

Bolton, F. E. *The Secondary School System of Germany* (1900).

Boynton, F. B. A six-year high school course. *Ed. Rev.*, Vol. XX., pp. 515–19 (1900).

Briggs, T. H. Possibilities of the junior high school. *Education*, Vol. XXXVII., pp. 279–89 (1917).

Brown, E. E. *The Making of our Middle Schools* (1903).

Brown, H. A. The reorganization of secondary education in New Hampshire. *Sch. Rev.*, Vol. XXII., pp. 145–56; 235–48 (1914).

Brown, J. F., *The American High School.* Chapters I., II., III., and XIII.

Brown, J. S. Present development of secondary schools, etc. *Sch. Rev.*, Vol. XIII., pp. 15–18 (1905).

Brown, J. S. The Joliet Township High School. *Sch. Rev.*, Vol. IX., pp. 417–32 (1901).

Cooley, E. G. *Vocational Education in Europe* (1912).

Cubberley, E. P. Does the present trend toward vocational education threaten liberal culture? *Sch. Rev.*, Vol. XIX., pp. 454–65 (1911).

——— *Changing Conceptions of Education* (1909).

Davis, C. O. *High School Courses of Study* (1914).

Dewey, J. The educational situation. *Univ. of Chicago Press*, 1902, pp. 50–79.

——— The high school of the future. *Sch. Rev.*, Vol. XI., pp. 13; 17–20 (1903).

Eliot, C. W. Changes needed in American secondary education. *General Education Board* (1916).

Farrington, F. E. *French Secondary Schools* (1910).

——— *Commercial Education in Germany* (1914).

Flexner, A. A modern school. *General Education Board* (1916).

Gray, A. A. The junior college in California. *Sch. Rev.*, Vol. XXIII., pp. 465–73 (1915).

Hall, G. S. The high school as the people's college vs. the fitting school. *Ped. Sem.*, Vol. IX., pp. 63–73 (1902).

——— *Educational Problems*, Vol. II., Chapter XXIII. (1911).

Hinchman, W. S. *The American School* (1916).

Hollister, H. A. *High School Administration* (1909).

——— *High School and Class Management* (1915).

Inglis, A. J. A fundamental problem in the reorganization of the high school. *Sch. Rev.*, Vol. XXIII., pp. 307–18 (1915).

Johnston, C. H. *High School Education* (1912).

——— *The Modern High School* (1914).

Judd, C. H. *Psychology of High School Subjects.* Chapter XIX., pp. 473–508.

——— The junior high school. *Sch. Rev.*, Vol. XXIII., pp. 25–33 (1915).

——— The meaning of secondary education. *Sch. Rev.*, Vol. XXI., pp. 11–25 (1913).

Lyttle, E. W. *et al.* Report of the committee on a six-year course of study. *Proc. N. E. A.* for 1908, pp. 625–28.

McLane, C. L. The junior college. *Sch. Rev.*, Vol. XXI., pp. 161–70 (1913).

Monroe, P. *Principles of Secondary Education.* Chapters I.–VI., pp. 1–245; Chapter XXI., pp. 745–74.

Norwood, C. and Hope, A. H. *The Higher Education of Boys in England* (1909).

Parker, S. C. *Methods of Teaching in High Schools.* Chapter II., pp. 5–24.

Russell, J. E. *German Higher Schools* (1899).

Sachs, J. *The American Secondary School and Some of its Problems* (1912).

Sisson, E. O. College students' comments on their own high school training. *Sch. Rev.*, Vol. XX., pp. 649–64 (1912).

Smith, F. W. *The High School* (1916).

Snedden, D. The high school of to-morrow. *Sch. Rev.*, Vol. XXV., pp. 1–15 (1917).

——— Problems in Educational Readjustment (1913).

Stout, J. E. *The High School.* Part I., pp. 1–87 (1914).

Strayer, G. D. and Thorndike, E. L. *Educational Administration*, pp. 165–75 (1913).

U. S. Bureau of Education, Statistical Division. Public and private high schools. *Bulletin No. 22* (1912).

Wheeler, G. The six-year high school. *Sch. Rev.*, Vol. XXI., pp. 239–45 (1913).

Whitney, F. P. Differentiation of courses in the seventh and eighth grades. *Ed. Rev.*, Vol. XLI., pp. 127–34 (1911).

Young, J. R. Reorganization of the high school curriculum. *Ed. Rev.*, Vol. LIII., pp. 122–36 (1917).

Bibliography for Chapter II

Atkinson, F. W. The capacities of secondary school students. *Sch. Rev.*, Vol. V., pp. 642–52.

Bernheimer, C. S. and Cohen, J. M. *Boys' Clubs* (1914).

Bigelow, M. A. *Sex Education* (1916).

Blount, R. E. The responsibility of the teacher with regard to the teaching of sex-hygiene. *Proc. N. E. A.* for 1914, pp. 470–75.

Blount, M. P. Sexual reproduction in animals; the purpose and methods of teaching it. *Proc. N. E. A.* for 1912, pp. 1324–27.

Brown, J. F. *The American High School.* Chapters VIII. and XI.

Burnham, W. H. Suggestions from the psychology of adolescence. *Sch. Rev.*, Vol. V., pp. 652–65 (1897).

——— The study of adolescence. *Ped. Sem.*, Vol. I., pp. 174–95 (1891).

Earhart, L. B. *Types of Teaching.* Chapter XI., pp. 130–49 (1915).

Fender, C. W. Some experiments in the teaching of sex-hygiene in a city high school. *Sch. Sci. and Math.*, Vol. XIV., pp. 573–78 (1914).

Fish, E. V. *The Boy and the Girl* (1911).

Forbush, W. B. *The Boy Problem* (1907).

Hall, G. S. *Adolescence* (1907).

——— *Youth* (1906).

James, W. *Principles of Psychology.* Vol. II., pp. 383–441 (1890).

Judd, C. H. Psychological characteristics of the immediate grades. *School Review Monographs*, No. 3 (1913).

King, I. *The High School Age* (1914).

Kirkpatrick, E. A. *The Individual in the Making*, pp. 216–54 (1911).

Monroe, P. *Cyclopedia of Education.* Vol. I., pp. 44–45 (1911).

——— *Principles of Secondary Education.* Chapters VII. and VIII., pp. 246–355.

Perry, A. C. *Problems of the Elementary School.* Chapter X., pp. 199–220 (1910).

Slaughter, J. W. *The Adolescent* (1911).

Strayer, G. D. *A Brief Course in the Teaching Process.* Chapter XII. (1911).

Strayer, G. D. and Thorndike, E. L. *Educational Administration.* Pp. 46–53; 69–73.

Swift, E. J. *Youth and the Race* (1912).

Thorndike, E. L. *Educational Psychology.* Vol. I. (1914).

Bibliography for Chapter III

Bagley, W. C. Professional training of high school teachers. *Proc. N. E. A.* for 1912, pp. 686–91.

Book, W. F. The high school teacher from the pupil's point of view. *Ped. Sem.*, Vol. XII., pp. 239–88 (1905).

Boyce, A. C. A method for guiding and controlling the judging of teaching efficiency. *Sch. Rev. Monographs*, No. VI., pp. 71–82 (1915).

Bolton, F. E. The preparation of high school teachers. *Sch. Rev.*, Vol. XV., pp. 97–122 (1907).

Brown, E. E. The need of better preparation of teachers for secondary schools. *Education*, Vol. XXXIV., pp. 201–06 (1913).

Brown, J. F. *The American High School*, Chapter VI.

Clapp, F. L. Scholarship in relation to teaching efficiency. *Sch. Rev. Monographs*, No. VI., pp. 64–70 (1915).

Coffman, L. D. The rating of teachers in service. *Sch. Rev. Monographs*, No. V., pp. 13–24 (1914).

——— Relation between supply and demand for high school teachers *Proc. N. E. A.* for 1912, pp. 681–86.

Cratz, H. E. Characteristics of the best teacher as recognized by children. *Ped. Sem.*, Vol. III., pp. 413–18.

Cubberley, E. P. *The Portland Survey.* Chapters IV. and V. (1915).

Dutton, S. T. *School Management.* Chapters II. and III., pp. 16–47 (1908).

Elliott, E. C. *et. al.* The education and training of secondary teachers. Fourth Year Book, Part I., *Nat. Society for the Study of Education* (1905).

Jacobs, W. B. Characteristics of a secondary school teacher. *Sch. Rev.*, Vol. XII., pp. 706–15 (1904).

James, H. R. *Training of Secondary Teachers.* Superintendent of Government Printing, Calcutta (1909).

Johnston, C. H. Facilities for teacher-training in colleges and universities. *Sch. Rev. Monographs*, No. VI., pp. 7–17 (1915).

——— Progress of teacher training. *Report of Commissioner of Education* for 1913, Vol. I., pp. 499–551.

Kendall, C. R. The training of high school teachers. *Sch. Rev.*, Vol. XXI., pp. 92–102 (1913).

Learned, W. S. *The Oberlehrer* (1914).

Luckey, G. W. A. Professional training of secondary school teachers in the United States. *Teachers' College, Columbia Univ. Press* (1903).

McFarland, R. Present facilities for the training of secondary school teachers in New England. *Education*, Vol. XXXIV., pp. 207–12.

Palmer, G. H. *The Teacher* (1908). (See essay on The Ideal Teacher).

Report of the Committee of Seventeen on Professional Preparation of High School Teachers. *Proc. N. E. A.* for 1907, pp. 523–668.

Robertson, C. B. The training of secondary school teachers. *Sch. Rev.*, Vol. XXI., pp. 225–34 (1913).

Russell, J. E. Professional factors in the training of the high school teacher. *Ed. Rev.*, Vol. XLV., pp. 217–36 (1913).

Stout, J. E. *The High School.* Chapter XXIII., pp. 289–304.

Strayer, G. D. and Thorndike, E. L. *Educational Administration.* Part II., pp. 77–146.

U. S. Commissioner of Education. The Training of Teachers. Report for 1915, Vol. I., Chapter VII., pp. 169–84.

Bibliography for Chapters IV, V, VI

Andrews, C. B. *An Introduction to the Study of Adolescent Education.* Chapter II., pp. 41–55; Chapter V., pp. 118–35 (1912).

Arnold, F. *Textbook of School and Class Management.* Chapter IV., pp. 66–92 (1908).

Bagley, W. C. *School Discipline* (1915).

Brown, J. F. *The American High School*, pp. 285–302.

Cronson, B. *Pupil Self-Government* (1907).

Dewey, J. *Interest and Effort in Education* (1913).

Dutton, S. T. *School Management.* Chapter VII., pp. 86–97.

Healy, W. *Honesty*, particularly Chapter V. (1915).

Hughes, R. E. *School Training.* Chapter IV. (1905).

Monroe, P. *Cyclopedia of Education.* Vol. V., pp. 282–86; p. 540 (1913).

Morehouse, F. M. *The Discipline of the School* (1914).

Munroe, J. P. *New Demands in Education.* Chapter XII (1912).

Norwood, C. and Hope, A. H. *The Higher Education of Boys in England*, pp. 307–20.

Parker, S. C. *Methods of Teaching in High Schools.* Chapter XIV.
Perry, A. C. *Discipline as a School Problem* (1915).
Puffer, J. A. *The Boy and his Gang* (1912).
Puller, E. *Your Boy and his Training* (1916).
Smith, H. B. *Boys and their Management in School* (1905).
Stableton, J. K. *Diary of a Western Schoolmaster* (1900).
Stout, J. E. *The High School.* Chapter XXI., pp. 255–273.
Strayer, G. E. *A Brief Course in the Teaching Process.* Chapter XV., pp. 157–66.
Taylor, J. S. *Art of Class Management and Discipline* (1903).
Thorndike, E. L. *The Principles of Teaching.* Chapter XI., pp. 179–205 (1906).

Bibliography for Chapter VII

Baker, J. H. Economy of time in education. *Bureau of Education, Bulletin* No. 38 (1913).
Bray, W. J. A new locker system for chemical laboratories. *Sch. Sci. and Math.*, Vol. XV., pp. 206–08 (1915).
Committee on Economy of Time in Elementary Education. *Proc. N. E. A.* for 1913, pp. 217–46.
Gilbreth, F. B. and Gilbreth, L. M. *Fatigue Study* (1916).
Gilbreth, L. M. *The Psychology of Management* (1914).
Geer, W. C. The teaching of chemistry in secondary schools. *Sch. Rev.*, Vol. XIV., pp. 282–86 (1906).
Monroe, P. *Cyclopedia of Education.* Vol. I., pp. 390–94.
O'Shea, M. V. *Dynamic Factors in Education.* Chapters XVI., XVII., and XVIII. (1906).
Parker, S. C. *Methods of Teaching in High Schools.* Chapter III.
Perry, A. C. *Problems of the Elementary School.* Chapter VII.
Rice, J. M. *Scientific Management in Education* (1913).
Roark, R. N. *Economy in Education* (1905).

Bibliography for Chapter VIII

Bagley, W. C. *Classroom Management.* Chapter XV. (1907).
Boring, E. G. The marking system in theory. *Ped. Sem.*, Vol. XXI., pp. 269–77 (1914).

Colvin, S. S. Marks and the marking system as an incentive to study. *Education*, Vol. XXXII., pp. 560–72 (1912).

Courtis, S. A. Educational diagnosis. *Educational Administration and Supervision*, Vol. I., pp. 89–116 (1915).

Finkelstein, I. E. The marking system in theory and practice. *Educational Psychology Monographs*, No. 10 (1913).

Hanus, P. H. Measuring progress in learning Latin. *Sch. Rev.*, Vol. XXIV., pp. 342–51 (1916).

Johnson, F. W. A study of high school grades. *Sch. Rev.*, Vol. XIX., pp. 13–24 (1911).

Kelley, T. L., Educational guidance. *Teachers College Contributions to Education*, No. 71 (1914).

Monroe, W. S. A test of the attainment of first year high school students in algebra. *Sch. Rev.*, Vol. XXIII., pp. 159–171 (1915).

Parker, S. C. *Methods of Teaching in High Schools*. Chapter XXII.

Rice, J. M. Educational research, causes of success and failure in arithmetic. *The Forum*, Vol. XXXIV., pp. 451–52 (1903).

Rugg, H. O. The experimental determination of standards in first year algebra. *Sch. Rev.*, Vol. XXIV., pp. 37–66 (1916).

Rugg, H. O. and Clark, J. R. Standardized tests and the improvement of teaching in first-year Algebra. *Sch. Rev.*, Vol. XXV., pp. 113–132 (1917).

Seashore, C. E. Measurement of musical talent. *Musical Quarterly*, Vol. I, pp. 129–48 (1915).

Starch, D. *Educational Measurements* (1916).

——— Reliability and distribution of grades. *Science*, Vol. XXXVIII., pp. 630–36 (1913).

Steele, A. G. Training teachers to grade. *Ped. Sem.*, Vol. XVIII., pp. 523–32 (1911).

Stockard, L. V. and Bell, J. C. A preliminary study of the measurement of abilities in geometry. *Journal of Ed. Psychol.*, Vol. VII., pp. 567–580 (1916).

Strayer, G. D. and Thorndike, E. L. *Educational Administration*. Pp. 207–49.

Thorndike, E. L. Educational diagnosis. *Science*, Vol. XXXVII., pp. 133–42 (1913).

Thorndike, E. L. Testing the results of the teaching of science. *Sch. Sci. and Math.*, Vol. XI., pp. 315–20 (1911).

Bibliography for Chapters IX, X

Brown, J. C. An investigation on the value of drill work in the fundamental operations of arithmetic. *Jour. of Ed. Psy.*, Vol. II., pp. 81–88 (1911).

Colvin, S. S. *The Learning Process.* Chapters I., II., III., IV., IX., X., and XI (1911).

——— The practical results of recent study in educational psychology. *Sch. Rev.*, Vol. XXI., pp. 307–22 (1913).

Kirby, T. J. *Practice in the Case of School Children* (1913).

Ladd, G. T. and Woodworth, R. S. *Elements of Physiological Pscyhology*, pp. 572–82 (1911).

Monroe, P. *Cyclopedia of Education.* Vol. V., p. 542.

Parker, S. C. *Methods of Teaching in High Schools.* Chapter VIII.

Strayer, G. D. *The Teaching Process*, pp. 41–50.

Thorndike, E. L. *Educational Psychology.* Vol. II.

Bibliography for Chapter XI

Monroe, P. *Cyclopedia of Education.* Vol. III., p. 456, p. 671; Vol. IV., p. 553; Vol. V., pp. 576–78.

Parker, S. C. *Methods of Teaching in High Schools.* Chapter XVII.

Strayer, G. D. *The Teaching Process*, pp. 107–13.

Thorndike, E. L. *Education*, pp. 161–67 (1913).

Bibliography for Chapter XII

Adams, J. *Exposition and Illustration in Teaching* (1910).

Bagley, W. C. *The Educative Process*, pp. 247–55, 278–80 (1905).

Colvin, S. S. *The Learning Process.* Chapter XII.

Curtis, E. W. *The Dramatic Instinct in Education* (1914).

Dakin, F. A. Ways in which Latin may be brought into vital relation with the school life of to-day. *Classical Weekly*, Vol. VII., pp. 193–99 (1914).

Davis, H. N. Bridges as illustrative material on the parallelogram of forces. *Sch. Sci. and Math.*, Vol. XV., pp. 185–98 (1915).

Finlay-Johnson, H. *The Dramatic Method of Teaching* (1911).
Henry, N. E. Illustrative material for Latin teachers. *Classical Journal*, Vol. VIII., pp. 115–17 (1913).
Herts, A. M. *The Children's Educational Theatre* (1911).
Hodges, E. B. The general value of graphs. *Sch. Sci. and Math.*, Vol. XIV., pp. 214–16 (1914).
Monroe, P. *Cyclopedia of Education.* Vol. IV., pp. 523–28.
Perry, A. C. *Problems of the Elementary School.* Chapter VI.
Vallance, C. A. Inspection of chemical industries by students in the secondary schools. *Sch. Sci. and Math.*, Vol. XII., pp. 381–87 (1912).

Bibliography for Chapters XIII, XIV

Bagley, W. C. *The Educative Process.* Chapters XIX. and XX.
Blanchard, A. A. Elementary chemistry teaching as a means of developing the power of independent scientific reasoning. *Sch. Sci. and Math.*, Vol. X., pp. 382–87 (1910).
Colvin, S. S. *The Learning Process.* Chapters XX., XXI., and XXII.
Dewey, J. *Democracy and Education.* Chapter XII. (1916).
——— *How We Think* (1910).
Earhart, L. B. *Types of Teaching.* Chapters V., VI.
Monroe, P. *Cyclopedia of Education.* Vol. II., p. 173; Vol. V., pp. 123–25.
Moore, E. C. *What is Education?* Chapters VIII. and XI. (1915).
Parker, S. C. *Methods of Teaching in High Schools.* Chapter IX.
Strayer, G. D. *The Teaching Process.* Chapters V. and VI.
Thorndike, E. L. *Principles of Teaching.* Chapters IX. and X.

Bibliography for Chapter XV

Betts, G. H. *The Recitation* (1911).
Keatinge, M. W. *Suggestion in Education* (1907).
Parker, S. C. *Methods of Teaching in High Schools.* Chapters XVIII. and XX.
Stevens, R. *The Question as a Measure of Efficiency in Instruction* (1912).

Strayer, G. D. *The Teaching Process.* Pp. 114–28.
Yamada, S. A study of questioning. *Ped. Sem.*, Vol. XX., pp. 129–86 (1913).

Bibliography for Chapter XVI

Brown, J. F. *The American High School.* Chapter IX.
Earhart, L. B. *Types of Teaching.* Chapter XV. and Appendix (1915).
Heck, W. H. *Mental Discipline and Educational Values* (1909).
Moore, E. C. The doctrine of general discipline. *Education*, Vol. XXXVII., pp. 312–24 (1917).
Parker, S. C. *Methods of Teaching in High Schools.* Chapter II.

Bibliography for Chapter XVII

Bagley, W. C. *Classroom Management.* Chapter XIV. (1907).
Breslich, E. R. Supervised study as a means of providing supplementary individual instruction. *Nat. Soc. for the Study of Educ.*, Thirteenth Year Book, Part I., pp. 32–72 (1914).
——— Teaching high school pupils how to study. *Sch. Rev.*, Vol. XX., pp. 505–15 (1912).
Dearborn, G. V. N. *How to Learn Easily* (1916).
Earhart, L. B. *Systematic Study in the Elementary Schools* (1908).
Giles, F. M. Investigation of study habits of high school students. *Sch. Rev.*, Vol. XXII., pp. 478–84 (1914).
Hall-Quest, A. L. *Supervised Study* (1916).
Home Study Symposium, *Journal of Education* (1913).
Jones, O. M. Teaching children to study. *Education*, Vol. XXX., pp. 236–44 (1909).
——— *Teaching Children to Study* (1909).
Judd, C. H. *Psychology of High School Subjects.* Chapter XVIII.
Kennedy, J. *The Batavia System* (1914).
Kitson, H. D. *How to Use Your Mind* (1916).
Lunt, F. S. Some investigations of habits of study. *Journal of Educational Psychology*, Vol. I., pp. 344–48.
McMurry, F. M. *How to Study* (1909).

Minnick, J. H. An experiment in the supervised study of mathematics. *Sch. Rev.*, Vol. XXI., pp. 670–75 (1913).

Parker, S. C. *Methods of Teaching in High Schools.* Chapters XVI. and XXI.

Ruediger, W. C. Teaching pupils to study. *Education*, Vol. XXIX., pp. 669–77.

Sandwick, R. L. *How to Study and What to Study* (1915).

Watt, H. J. *The Economy and Training of Memory* (1909).

Whipple, G. M. *How to Study Effectively* (1916).

Wiener, W. Home-study reform. *Sch. Rev.*, Vol. XX., pp. 526–31 (1912).

APPENDIX A

PROBLEMS OF THE NOVICE IN TEACHING

During the past few years, the writer has obtained written statements from one hundred high school teachers at the end of their first year of service as to their most important problems. These papers have been written in response to the question,—"What are the essential things that a beginning teacher should keep in mind?" A review of the replies to this query shows some interesting general tendencies and important facts.

In the first place, the problem that stands out most definitely in practically all of these papers is that of discipline. This is shown by the circumstance that in ninety-two of the papers this problem is referred to directly, while in a large majority of the papers, it is given an important place in the discussion. Among the details of discipline considered, the following are most emphasized in the order named. Stated as maxims, they would read:—

Start right, insisting on proper habits from the outset (thirty-eight papers).

Be fair (thirty-one papers).

Meet situations as they arise, with vigor and determination (twenty-eight papers).

Insist on a respectful attitude; never tolerate insolence (twenty-three papers).

Don't be sarcastic (twenty-two papers).

Don't act rashly; reflect (twenty-one papers).

Talk the offense over with the pupil, give him advice and counsel (eighteen papers).

Be watchful (seventeen papers).

Don't get angry (sixteen papers).

Be firm (fourteen papers).

Demand obedience (eleven papers).

Use punishment only when other means fail (ten papers).

Other factors entering into discipline are mentioned by various writers, but not with sufficient unanimity to show any general tendency of opinion.

Closely connected with discipline, is the personal attitude of the teacher, which is mentioned by seventy-seven writers; the details emphasized read as follows:—

Seek to stimulate interest (fifty-five papers).

Be enthusiastic about your work (fifty-two papers).

Be sympathetic (forty-four papers).

Have an objective attitude; don't take matters too personally (thirty-two papers).

Seek personal contact with your pupils (twenty-four papers).

Don't be a "know all" (seventeen papers).

Strive to adapt yourself to conditions (fifteen papers).

Try to learn from your pupils (thirteen papers).

Don't get discouraged (eleven papers).

Don't be too critical (ten papers).

No other quality entering into the attitude of the teacher toward his work is mentioned in more than seven papers.

Sixty-nine papers refer to the importance of method in teaching, and in particular mention most frequently the following:

Have a plan, prepared in advance of the recitation (forty-three papers).

Set a reasonably high standard of achievement, but one to which the average pupil can attain (thirty-four papers).

Make pupils think (twenty-seven papers).

Economize time (twenty-four papers).

Supervise pupils' work (twenty-two papers).

Consider individual needs and difficulties (twenty papers).

Don't merely hear lessons, teach something (eighteen papers).

Don't blindly follow the methods you were accustomed to in college (seventeen papers).

Emphasize the assignment (seventeen papers).

Know the subject (sixteen papers).

Mechanize routine (fifteen papers).

Frame questions in advance with great care (thirteen papers).

Don't talk too much (thirteen papers).

Check up results, to know just what is being accomplished (eleven papers).

No other item is mentioned in more than nine papers.

Thirty-four papers call attention to the fact, that teachers to succeed should be progressive, and mention as essential to such progressiveness continued study after leaving college, the reading of educational literature, and attendance at teachers' gatherings. A number say emphatically that the teacher should not be content with the education he has received. He should be sensible of his ignorance in regard to subject-matter, the minds of his pupils, and methods of instruction. Several declare that no teacher should be complacent in regard to his achievements, but should constantly criticise his results, and seek to improve his work.

Of the other matters touched on in these papers there is not sufficient unanimity to warrant their consideration.

By way of summary it may be pointed out, that these beginning teachers are chiefly conscious of four main problems, namely,—that of the control and discipline of their classes; that of their personal attitude toward the class; that of methods of teaching; and that of their own inadequacy and need of self-improvement. The papers that discuss discipline clearly indicate that in most instances the writers have had no serious trouble with their classes, though practically all have found that their pupils need some control and direction. The control discussed is chiefly by indirect methods. Only thirty-two papers specifically mention punishment, and these indicate that in the

opinion of the writers it should be employed only when other means fail.

Concerning the personal qualities that a teacher should possess there is a very substantial agreement in regard to the ability to arouse interest. The possession of enthusiasm for the work and a genuine sympathy with the pupil are considered indispensable by many of the writers.

A very large percentage of those who discussed problems of instruction insist on the importance of a plan, prepared in advance of the lesson. On the other hand, it is interesting to note that relatively few of the writers have felt that an extended knowledge of subject-matter is a prime pre-requisite for successful teaching. This lack of emphasis on knowledge of subject-matter is all the more noteworthy when we remember the fact that when they graduated from college probably the majority of these teachers had the point of view that such a knowledge was the prime essential in teaching. This lack of emphasis on the importance of knowledge of subject-matter, by teachers who have had seven or eight months' experience in the high school, would seem to indicate either of two facts, namely,—that the teachers were so well prepared in college that they find themselves masters of their subjects, or that a high standard of scholarship is not demanded from them, either by principal or pupils, and that they get along comfortably with a modicum of knowledge. Since many of these hundred teachers were giving instruction in some subject on which they had not specialized in college, it would seem that the latter alternative is important in this explanation. That young teachers are not made more often to realize their ignorance is probably unfortunate. It indicates on the whole a relatively low grade of attainment on the part of the pupils, since apparently few teachers had difficulty in keeping ahead of the class, and it also indicates low standards of excellence in scholarship on the part of supervising officers.

On the other hand, it is clear that in the minds of the teachers reporting, the problem of method has acquired large significance during their first year of teaching. This surely indicates the importance of this aspect of instruction, particularly when it is remembered that the majority of these teachers had little knowledge of, and small interest in, methods of instruction when they began to teach. The fact that many of these teachers have become definitely conscious of their deficiency in instructional skill and are as a rule oblivious of their lack of knowledge of subject-matter needs no further comment.

Following are three papers taken from the entire group of one hundred received. In the main, they are typical papers, and show the general nature of much that was discussed by the hundred teachers replying.

Paper I

I believe that the teacher who can practice the following rules will be a success:—

1. Look at pupils' acts objectively.
2. Be patient; however poor a pupil's work is, he is not completely hopeless.
3. Begin the routine work definitely at the beginning.
4. Have the lesson well in hand; there will be less conscious exertion to maintain discipline.
5. Be firm and definite in demands at all times.
6. While doing any necessary clerical work, have the pupils busy with definite work.
7. Get the pupils into an attitude of work at a definite time, and have them remain in that attitude until a definite time.
8. Know your pupils as individuals; real acquaintance with the pupil makes harmony surer.
9. Keep up a spirit of enthusiasm. Be an optimist!
10. Be approachable, but also dignified and firm.
11. Maintain a smooth temper.

Paper II

I think the most important thing for the beginning teacher to know is the value of a good beginning. The teacher does well to make clear to the pupils at the very outset what kind of work, what kind of conduct is expected of them and to let them know what specific offenses against good order will not be tolerated. The teacher would do well to know also that pupils will probably not do good work, and give good order, simply because it is expected of them. They will probably want to test her ability to hold them to the standards set, and the teacher should be ready to meet all such tests.

I have found it helpful to select one problem at a time for attack, whether in presenting class work or in trying to improve discipline. Concentration of effort on one thing at a time carries one farther than divided effort in many fields.

Perhaps not necessary to all, but surely helpful to me was this bit of advice: "Don't be easily discouraged." I made the mistake of expecting big results, and I was disappointed. I remembered the failings that my German professor told me all secondary school pupils brought to college with them, and I thought: *My* pupils shall not make these mistakes. It was discouraging to find them making them right along. On several occasions when results seemed very meager, a certain homely old saying prevented me from feeling extremely dissatisfied with myself—I was reminded that: "You can't make a silk purse out of a sow's ear." But even though the teacher may not be able to produce a quantity of silk purses, she ought not to regard her pupils, either, as so many sows' ears. It seems to me that the colleges set too high a premium on intellectualism,—I was expecting too much, at any rate—and I found that the intellectual lights in a large city high school are not many. There ought to be some other means of judging the teacher's work beside the examination papers. She ought to strive for character building as much as for intellectual attainment, and have reason to be pleased with moral results if she gets them.

Finally, I should say that the beginning teacher ought to have a great deal of determination and will. She ought to start out with a fairly definite mode of procedure in mind, make up her mind what

she wants accomplished, and then stick to it. Unless the will of the class is stronger than that of the teacher, or there is inability on one side or the other, she ought to be successful.

Paper III

The only question of really serious importance, assuming a well-educated and sensible teacher, is that of discipline. This must be gained before regular classwork can be done at all satisfactorily.

At first, be extremely and inflexibly severe, much more than you wish to, or intend to throughout the year. Do not let the slightest infraction of a very rigid idea of discipline occur without first a word of warning, then a simple punishment (staying after school), then sending from the room. Later, when you are certainly and obviously in control, it is best to overlook minor lapses unless (as you will have found out by then) they are indicative of more serious trouble.

Certain things must be nipped in the bud: whispering, and all willful making of trouble. For these, punishment may be immediate, without warning, as pupils know they are wrong, and previously made rules should not be expected. Indeed, rules of all kinds should be avoided as much as possible, since they tend to form a cumbersome, inflexible mode of control.

Treat pupils from the start as if you really expected them to do right; do not at least show that you are looking for trouble. Use the same consideration you would with adults, until in special cases you may be forced to abandon it.

When cases of disciplinary trouble arise, take pupils one at a time, never as a group, or even by twos and threes. A personal talk, in this way, will usually have excellent and lasting results, and saves an often unnecessary punishment. Where this method, and general appeals to reason, the right, and the pupil's better nature fail, summary punishments must be used, rapidly increasing in severity should light ones fail. Enlistment of parental aid often helps a great deal if cases get extreme, but diplomacy as well as strict adherence to absolute truth in recounting affairs is evidently necessary.

In classes so hard to discipline at first that there is noticeable disorder, do not try to get good recitations; conduct the class in such a

way that all your attention is on behavior, not on recitations. Close watching, and sure punishment of offenders, will stop class-wide misbehavior. Reseating pupils so that groups of offenders are broken up, and the worst ones either put in the front, directly in your sight, or at the back, where their eccentricities will not be seen and soon lose their "heroic" character, often suffices.

If there are several offences, such as shuffling of feet, tapping of pencils, and whispering, take them one at a time, insisting on that one's being stopped until a proper habit is formed. Of course this does not mean that any flagrant disturbance be overlooked.

When any trouble arises, make your decision a quick one. While you wait, the class may be getting a start on you. It may be best to make mistakes rather than hesitate. Experience will soon show how to act in most cases that arise.

Do not consider that what pupils do is directed against you personally. It is merely a general desire for a good time, and naturally takes the first opportunity; while they have nothing against you personally, they are thoughtless, and if they see they can bother you, will continue to do it.

Individual class work is a sure, if temporary, cure for disciplinary troubles, and usually gets pupils into right habits of application.

Be friendly with pupils; make use of the personal touch outside of the classroom. Do not let friendliness degenerate into familiarity. At all times the teacher should have some reserve, should never let the class feel they understand his motives, thoughts, or feelings, should have some "margin of incomprehensibility."

Coolness and fairness must be scrupulously attained. In this respect, it should be noted that pupils are very critical, and the teacher should take great pains to seem, as well as be, impartial.

A detail often effective: if pupils kept after school want to be excused, double the time the next day. It is hardly possible to investigate excuses, and this plan automatically punishes offenders.

Finally, do not give up. Lapses may keep occurring for weeks or months; they should be uniformly and inevitably attended to. On the other hand, do not be over-confident. The class may seem to be—and actually be—under control, and a week of "letting down" before their habits are surely formed will break the habits up entirely.

Now, as to the lessons themselves. In the beginning of a new subject, go very slowly and surely for a while. Review and drill until every pupil is entirely familiar with the foundations. This is absolutely necessary, even if for a time it seems that no progress is being made; that the class is standing still.

Talk slowly and distinctly. If nervous, consciously go even more slowly; pupils do not know your feelings if you act composed and take your time. Not only the subject-matter, but discipline, too, seems to suffer if all the pupils do not hear you well.

Plan concretely for all the time in a period; for every single minute if, after one or two experiences, you find yourself at a loss what to do. Write out the program just as you intend to follow it and have it handy—say in a book—where you can refer to it readily and without embarrassment. It is usually safe to depart from a minute program, if the recitation seems to tend that way.

Never let a pupil feel for a minute that he is out of the class. This can be avoided in several ways. The best, of course, is to make the subject interesting. Another, get the class on the *qui vive* by calling unexpectedly, or stopping at odd moments to give a brief quiz; if they see this is a custom, they'll not dare not to pay attention. A quiz at the end of a period frequently makes the poorer pupils try to get all they can during a recitation, and by proper choice of questions will appeal to all. Call on the inattentive ones; this enlists, as a rule, the important factor, social pressure, since a failure caused by "day-dreaming" usually causes a smile over the class. Individual class work makes all pupils keep busy.

This plan,—individual work in class, pupils working separately at their seats, doing another problem as soon as one is finished, with the teacher going about the room helping, noting weaknesses, getting ranks if desired,—is a very good one. It is economical, since all work all the time, the best and the poorest; it is helpfully adjusted, since the teacher gives each the aid he needs; it relieves disciplinary strain, since the teacher's attention is released so that he can if necessary give exclusive attention to it. Pupils seem to be interested in this method.

Use a great deal of illustrative material; if you must use the deductive method (as in geometry) be sure to follow the general theorem

by concrete problems, especially numerical ones, even if as simple as: "A square has one side 4 ft. long. How long is the next side?" Do not stop with merely giving the illustration, as it is a tendency to do. Make the pupils give some of their own, or re-explain yours. The best of illustrations go in one ear and out the other (pursued at no great interval by the general fact intended to be illustrated) unless the pupil feels he is held to some minimum which he will be considered accountable for.

After all, most of your advances in discipline and in teaching proper will come through experience. Advice at best is general, or if specific, suited only to some special teacher and some special situations. Concrete and detailed knowledge of what to do in every situation is an ideal, and can be gained only by meeting and coping with such situations; other methods are unsatisfactory although helpful to a degree. The feeling, "I've been here before," gives one poise, sureness, and swiftness in the worst of situations, that can be gained in no other way.

APPENDIX B

AN OUTLINE FOR STUDENT GUIDANCE IN OBSERVATION IN THE GRADES AND IN THE HIGH SCHOOL

(Read and carefully consider the entire outline before making any observations. In reporting your observations give your chief attention to the topics indicated below. However, do not confine yourself exclusively to these topics or the order in which they are presented. Whatever seems to you to be important in your observations in any class should be commented on.)

A. The Grades

Observation. I. *External conditions* of the classroom.—Effective school work cannot be done unless the external conditions are satisfactory. The teacher should consider carefully these conditions and do all that he can to make them optimal. Observe particularly the following points:—

(a) *Lighting.*—Describe the number and location of the windows, notice how far they are from the ceiling, observe whether they are shut off from the light by surrounding walls or buildings. Do you think that the lighting is adequate for all of the pupils?

(b) *Heating and ventilation.*—As you enter the room observe the temperature and the air. Is the room too warm or too cool for comfort; is the air fresh? How is the room ventilated?

(c) *Seating of the pupils.*—Do the seats and desks seem to be adapted to the pupils? Do the pupils sit in awkward and uncomfortable positions? Is this due to improper seating or to improper habits on the part of the pupils? Does the teacher attempt to correct improper postures?

(d) *The mental atmosphere of the room.*—Is the room quiet and orderly? If any of the pupils are restless and inattentive notice

what effect this seems to have. Observe particularly the attitude of the teacher. Is she calm and at ease, or does she seem to irritate and annoy the pupils? Notice particularly the quality of her voice; her posture while standing or sitting; her methods of enforcing discipline. Also comment on her general disposition. Is it sympathetic and patient? Observe further whether she is vital and energetic, or whether she seems worn down and depressed by the day's work.

(e) *Summary.*—Is your general impression that this classroom is well suited for excellent work? Give reasons for your answer to this question.

Observation. II. *Waste in the classroom.* The ideal recitation is secured only when all of the class is working all of the time under conditions that secure the greatest efficiency. There are many sources of waste, among which the following are particularly to be observed:—

(a) *Loss of time in beginning the recitation.*—Does the recitation start promptly?—Note causes of delay and suggest how they may be avoided.

(b) *Confusion and delay in passing materials* (paper, pencils, books, corrected exercises, etc.).—Does the teacher have a plan in distributing materials? Describe it. Can you suggest any better methods?

(c) *Careless use of the blackboard.*—Can the part of the blackboard used be seen by practically all of the class? Is the front board used in preference to the boards at the sides and back of the room? Are many pupils sent to the board at once? Do they have ample space to work in? Do they write clearly and neatly? Do they pass promptly and do they begin their work at once? Is the work of the individual pupil brought to the attention of the class as a whole? Is a large amount of incorrect work written on the board? Is this carefully and emphatically corrected?

(d) *Lack of a definite plan for conducting the lesson.*—Does the teacher seem to have a clear aim or set of aims in teaching the lesson? State these aims if you can discover them. Does she keep to these aims, or does she permit irrelevant questions, wandering discussion, and the emphasis of unessential details? Does she bring the lesson to a proper conclusion, or does she break it off in a hurried and unsatisfactory manner? Are the main points clearly emphasized and summarized?

Observation. III. *Waste in the classroom* (continued).

(e) *Unclear statements.*—Does the teacher make vague statements? (These may be due either to lack of thought and skill in framing these statements or to the use of words not clearly understood by the pupils.) Does the teacher permit such statements to be passed by when made by the pupils?

(f) *Statements too general and abstract.*—Does the teacher make general and abstract statements without concrete and definite illustrations? Does she permit pupils to make such statements without requiring them to give examples?

(g) *Undue consumption of time by the teacher or by a few pupils.*—Is the class kept mentally alert by all being called upon frequently to participate, or does the teacher consume a large amount of the time in talking? Does she permit pupils to make long recitations? Does she spend time in asking pupils "pumping questions," in trying to drag information out from them? Does she drill pupils singly, or the class as a whole?

(h) *Unskilful questioning.*—Does the teacher tend to repeat her questions, or does she ask the question once, definitely, clearly, and so that it can easily be heard by all members of the class? If she repeats her questions, why does she do it? Does the teacher repeat the answers of the pupils? Why does she do this?

(i) *Summary of the two preceding periods of observation.*—Assuming that the maximally efficient class is one that is mentally active during the entire recitation, each individual member being occupied on something that is distinctly worth while for the entire period, estimate the efficiency of the class or classes you have observed during the last two periods. Enumerate the greatest sources of waste as you have observed them.

Observation. IV. *Methods of instruction.*—The lowest grade of teaching is "hearing a lesson." In fact this is not teaching in any real sense of the term. The hearing of a lesson is justified to a limited extent in that it gives the teacher knowledge of what the pupil knows and where his mistakes lie. It is also justified to the extent that it serves as an incentive for the pupil to study. Few lessons should be devoted merely or largely to tests for knowledge. The next higher grade of teaching consists in intelligent and systematic drill. The

highest grade of teaching consists in developing the lesson through demonstration, illustration, explanation, and question and answer. The chief aim of the teacher should be to give new meanings and to establish facts, principles, and methods of procedure during the recitation period. In connection with methods of instruction the following should be particularly observed:—

(a) *Testing for knowledge.*—What proportion of the lesson is devoted to finding out what the pupil knows? What use does the teacher make of this test for knowledge? Does she use it chiefly for marking the pupil, or does she make it a basis for developing the lesson, bringing new knowledge to that which the pupil already possesses? Does she further use the test intelligently to correct the pupils' errors?

(b) *Drilling for efficiency.*—What proportion of the total recitation is devoted to drill? How is the drill conducted? Are pupils drilled one at a time, or is the drill directed toward the class as a whole? Note the kind of questions asked in a drill exercise. Are they "rapid fire questions," or are they deliberate and given with undue time for reply? Do the pupils seem interested in the drill, or is it monotonous and apparently disagreeable?

(c) *Developing the lesson.*—How much time is spent by the teacher in adding to the pupils' knowledge of facts and principles? Describe the methods by which the teacher develops the lesson. Does she ask questions to lead the pupils to think? Does she give concrete examples from which general facts may be arrived at? Does she tell the pupils much outright, or does she attempt to aid them in finding out facts through their own initiative? Does she make use of the blackboard in developing the new lesson?

(d) *Preparing for the lesson of tomorrow.*—In assigning a lesson does the teacher attempt to clear up difficulties, and aid the pupils in their study of this lesson? How does she do this? Is there any attempt on the part of the teacher to show the pupils how to study?

(e) *Summary.*—In the lesson that you have observed, how much actual teaching do you think the teacher has done? Does the teacher seem more interested in hearing lessons, or in helping the pupils to learn something new?

Observation. V. *Motivating the class work.*—Most work that we do

until it becomes a matter of habit is not done for itself, but for some purpose that lies outside of the work as such. This is a motive. The problem of securing an adequate motive for school activities is one of the most pressing and difficult of all questions that confront the teacher. In so far as school activities appeal to an inborn tendency of the child, no motive outside of these tendencies is necessary. However, most school activities demand an external motive for their performance. Among the most important motives are the desire for approval, and the fear of disapproval. High marks are one form of approval, while disapproval may take the form of reproof or definite punishment. The spirit of rivalry and the desire to beat one's previous record often furnish motives for work that in itself may be distasteful. Work is given a value when its relation to life is clearly shown, and particularly when it appeals to some vocational interest. Work is often done also in the spirit of coöperation with the class and with the teacher. A task is more cheerfully performed and better performed when it is something to be given to the class as a whole to advance the knowledge of the class and to aid its various members in learning. Observe the class with the purpose of discovering if any of these motives are operative.

(a) *Appealing to instinctive tendencies.*—Does any of the work of the class appeal to such fundamental instincts as pleasure in manipulating objects, curiosity, interest in movement, particularly self-activity, the desire to make collections, the play-spirit, or joy in intellectual activity?

(b) *Motives based on reward and punishment.*—Does the teacher emphasize marking in the recitation, or use other means to indicate her approval? Does she reprove for bad work, or tell pupils to remain after school when they fail in their lessons?

(c) *Motives based on rivalry.*—Does the teacher urge pupils to do better so that they may equal or surpass somebody else? Does she encourage them to beat their own previous achievements? In any other way does she appeal to the spirit of rivalry?

(d) *Appealing to community and vocational interests.*—Does the teacher attempt to relate the school work in any way to that of the everyday life of the child, or does the material presented seem to be remote and apart from the vital interests of the child? Does

the teacher in any way appeal to the vocational interests of the child?

(e) *Stimulating the coöperative interests of the pupil.*—Does the teacher in any way attempt to make the class self-helpful? Are pupils given particular work to do and to report on to the class? Is a simple seminary method ever used? In reciting does the pupil merely recite for the teacher, or is there an attempt to recite to the class as a whole? Are the pupils encouraged to speak so that all of the class can hear, or is the "pupil-teacher" attitude the one assumed? Do pupils attempt to pay attention to those who are reciting, and are they encouraged to offer criticisms and suggestions?

(f) *Summary.*—On the whole does the class impress you as alive and interested in the work of the period, or does it seem to be merely "going through the motions?"

B. The High School

In each of the five observations to be conducted in the high school note and report on the following items:—

1. What are the specific aims of the lesson?
2. What methods are employed to realize these aims?
3. What results seem to be attained?
4. If there are any matters of discipline state specifically their nature, and the manner in which they are met.

Observation. I. In addition to considering these specific points in each observation the first observation is to consider particularly the question of Attention and Interest, observing the following topics:—

(a) Characterize in general the attention of the class.

(b) What are the causes for lapses in attention?

(c) What methods does the teacher use to secure attention?

(d) What interests are appealed to that aid in securing and holding attention?

(e) Give instances of passive, active, and secondary passive attention.

Observation. II. The second observation is to consider the question of Thinking under the following heads:—

(a) How large a part of the lesson is directed to developing thought, as distinguished from testing the memory and training through drill?

(b) Give examples of inductive and deductive processes of thinking.

(c) Give examples of instruction cast in the form of a problem.

Observation. III. The third observation period is to give particular consideration to the devices for ILLUSTRATION. An illustration is anything that presents in a simple and concrete manner a fact or principle that is general and abstract. It is the interpretation of the less well known in terms of the more familiar and better known. Illustrations may be objects, pictures of such objects, models, drawings, diagrams, maps, and graphic representations of various sorts. Illustrations may likewise consist in specific examples of general principles. Further the teacher may lead the pupil to revive in imagination concrete experiences that give vitality to the oral or written words which may in themselves be meaningless symbols. In this period of observation observe particularly the following points:—

(a) Does the teacher use in making the lesson clear any objects or representations of such objects?

(b) Does the teacher use the blackboard to illustrate important and difficult points?

(c) Does the teacher in stating a general principle always give concrete illustrations of this principle, and does he demand concrete illustration by the pupil?

(d) Does the teacher attempt to appeal to the imagination of the pupil and lead him to see in his mind's eye that which is not physically present?

Observation. IV. The fourth observation period is to emphasize INDIVIDUAL AID in teaching. No teacher should teach a class entirely as a group. He must in a way consider the individual capacities and needs of his pupils. As a rule individual needs should not be given chief attention during the recitation period. They should be treated outside of the regular class hour. In this connection observe the following topics:—

(a) Does the teacher correct the individual errors of the pupils, or does he call upon the class to correct such errors?

(b) Does he attempt to drill a single pupil upon something that is of little value or interest to the class as a whole?

(c) Observe particularly in the work done by the pupil at the board whether the corrections made are for the sole benefit of the pupil making them, or whether these corrections are so made as to be of benefit to the class as a whole.

(d) Does the teacher seem to have any method (through examining written work, or otherwise) of discovering the nature of pupils' errors? Does he attempt to follow up these errors and compel the pupils to correct them?

Observation. V. The fifth observation period is to consider particularly the PERSONALITY OF THE TEACHER. The personality of the teacher is the chief factor in a good school or class. This personality is in part due to original nature, but is in no small measure a matter of experience and training. The following points should be observed:—

(a) Does the teacher seem to be in control of the class at all times; does he see everything that is going on; does he instantly check any tendency toward disorder; does he seem confident and master of the situation?

(b) Does he stand or sit when hearing the recitation; does he move about from time to time?

(c) Does he pay attention to the whole class, or merely to the pupil that is reciting?

(d) Has he a good voice, and does he speak clearly, with vivacity, but with due deliberation?

(e) Does he seem at ease, or is he nervous; does he have any objectionable automatisms or habits?

(f) Is he sympathetic and genial, or is he formal and remote in his manner?

(g) Does he ever give evidence of irritation; does he use sarcasm?

(h) Does he seem to be a thorough master of his subject?

(i) Is he apparently thoroughly interested in his teaching or does he do it as if it were a task?

(j) Does he merely hear lessons, or does he possess instructional skill; does he really teach something?

(k) Does he give a human touch to his subject; does he make it seem as if it were related to the everyday life of the pupil, or does it seem something remote, unreal, and formal?

In making your observations in the high school, observe three

different subjects. Further observe one subject at least twice. In observing the work in foreign language and mathematics observe particularly the use of the blackboard. Observe whether the language teaching is largely synthetic and grammatical, or analytical and direct. The latter method uses grammar only as a means to an end, emphasizes conversational and "natural" methods. In your observations in history notice particularly whether there is an attempt to relate the past to the present, and to find in the events of yesterday points of contact with the happenings of today. In your observations in English distinguish carefully between the practical and the cultural aspects of the lesson. In your observation of science notice particularly whether the habit of thinking inductively is cultivated, or whether a large part of the work is merely testing for knowledge and emphasis of facts learned from books or lectures. In your observations in geometry notice whether the instruction is largely formal or whether it stimulates the pupil to original thinking.

APPENDIX C

Suggested Form of Lesson Plans

The following lesson plans have been selected from a large number submitted by student-teachers as typical of plans of the better type. They are not examples of perfect plans, but of plans that may be expected from the most intelligent and industrious students at the end of their senior year in college, or during their first graduate year.

History

A. Materials covered in the lesson.

(a) *Review.*—We shall rapidly go over the causes and the incidents of the Boer War. (8 min.).

(b) *Advance.*—This will consider three of the most important facts in the reign of Edward VII.,—the Imperial Federation, England's alliance with France and Russia, and the increase of England's naval strength. (12 min.).

(c) *Assignment.*—This will deal with the significance of the facts brought out in the review and advance in relation to current events. (25 min.).

B. Outline of the lesson in detail.

(a) *The aim.*—The aim of the lesson is to connect the events in recent English history with the Great War; particularly to show the effect of Edward's colonial policy and his alliance with France and Russia, on the struggle. The lesson will culminate in the formulation of certain problems that the class are to consider and discuss at a later meeting.

(b) *Method.*—I shall first ask certain review questions among which will be the following:

Give me a brief statement of the most important events of the Boer War.

Do you think that Gladstone was right when he said that the conquest of the Transvaal would not be worth its cost?

Some Englishmen believed that the war was chiefly for the benefit of South African mine owners. What does this suggest to you in regard to our present Mexican problem?

Explain in what ways the Boers have been a source of strength or weakness to England in recent years.

To conquer the Boers England sent into the field an army of two hundred and fifty thousand men. This was a voluntary army. Lord Roberts urged universal service for Englishmen. What is your opinion in regard to such service?

In the foregoing review, I intend to emphasize the fact that the conquest of the Transvaal has had an important bearing on the course of events in South Africa since the beginning of the Great War, and to show that the Union of South Africa has been to the advantage of England. I shall also refer to the fact that England was not prepared for the Boer War, and that she did not for a long time comprehend the task that she had on her hands in conquering the Boers. However, when she made up her mind to go through with the struggle, she never wavered until she had accomplished her purpose.

In considering the events in the reign of Edward VII., I shall aim to make it clear that the alliance between England, France, and Russia was possible notwithstanding the fact that for a long period England had regarded France as her traditional enemy, and that Russia and England had been on unfriendly terms for nearly two generations. I shall then ask,—"Was this alliance prompted primarily by feelings of friendship between the countries concerned, or was its chief aim political?" "If it was largely the result of public policy, what was that

policy?" "In what sense has it proved an entangling alliance?"

I shall next consider Edward's successful efforts toward Imperial Unity and ask the following questions,—"What has been England's policy toward her colonial possessions that has made this unity possible?" "What has been the value to England of this unity?" "If England had shown the same enlightened policy toward America in the Colonial Period, that she has since shown toward her other possessions, would the course of history have been changed, and how?"

In considering England's policy in regard to her navy, I shall ask,—"In 1910, the English Parliament put in its budget the sum of $90,000,000 for war ships. This money might have been used to great advantage for the development of industry, for education, etc. Was it wisely expended?" "Why has England considered a navy so essential to her welfare?" "Has she used this navy chiefly as a means of extending her power, or as a means of protection?"

The remaining part of the lesson will be taken up with the assignment, the chief purpose of which will be to formulate certain thought questions to be considered in the preparation of the next recitation.

Among the problems that I shall develop with the class are the following:—

In dealing with the Boers England showed certain elements of weakness and of strength. What were these?

How have the same characteristics of the English temperament shown themselves during the last two years?

In what respects are England's traits of character at all due to her democratic form of government?

We also have a democratic government; are there any reasons why our experience may be like that of England?

England attempted to safeguard her foreign relations by creating a "balance of power" in her favor through the forma-

tion of the Triple Entente. What did this balance of power culminate in?

England desired peace. Can peace be secured by balancing groups of nations against one another?

Is there any better way of securing peace and establishing it on a permanent basis?

England believed in naval preparedness, but not in military preparedness. How might the advice of Lord Roberts have affected the Great War?

Has America the same reasons for having a large navy that England has? Has America the same reasons for having a large army?

Questions asked.—The large proportion of the questions asked during the course of the lesson will be of the thought type. Fact questions will be introduced merely as a preparation for the thought questions.

Illustrations Used.—I shall use a map of South Africa in considering the Boer War. A map of Europe, showing the British Isles, will be used in discussing England's need of a navy. Other illustrations will be of the nature of comparisons, and I shall use a number of these.

(c) *Results.*—The lesson went well. The class gave excellent attention to most of the topics discussed, chiefly because they saw the significance and bearing of these topics on matters in which they are all greatly interested. I made the mistake in several instances of discussing points not directly connected with my main topics, and consequently the lesson lacked somewhat in unity. I had some difficulty in keeping members of the class from talking when they were not addressed, and for this reason there was confusion at times. I asked too many questions for these to be adequately discussed in the course of the recitation. I asked too many "yes and no" questions.

PHYSICS

A. Materials covered in the lesson.

(a) *Review.*—I shall go over with the class the various facts previously discussed in regard to sound, namely,—that it originates in a vibrating body, that it is conducted through the atmosphere, and that it is in the form of longitudinal wave motion. What really travels through the air is a series of compressions, alternating with a series of rarefactions. (10 min.).

(b) *Advance.*—Here we shall discuss the speed of sound, the graphic representation of sound, and the nature of the manometric flame. (17 min.).

(c) *Assignment.*—I wish here to bring out the difference between noise and tone, and two of the three features by which tones are distinguished from one another, namely,—loudness and pitch. I shall reserve the discussion of quality (fundamentals and overtones) for another lesson. (18 min.).

B. Outline of the lesson in detail.

(a) *The aim.*—The aim of this lesson is again to emphasize the physical facts relating to the cause of sound and its transmission; to draw a distinction between sound as a *sensation* and as a *physical phenomenon;* to frame with the class a definition of noise and tone, and of loudness and pitch. I shall treat these distinctions from two standpoints,—sensation and physical energy. These latter distinctions will lead up to subsequent laboratory experiments.

(b) *Method.*—I shall first ask a number of fact questions concerning matters brought out in previous lessons. Typical questions to be asked are as follows:—

If you clamp in a vise a blade of a hack saw, what must you then do to cause it to give forth a sound?

As long as the sound continues what will you notice about the hack saw?

Sound a tuning fork and notice that the edges look hazy. Why is this?

What must we do to the strings of a mandolin in order that the instrument shall give forth a sound?

What do the above facts show in regard to the cause of sound?

The human voice is a good example of sound. Is the sound in this instance due to vibrations? (This last question calls for discussion and reflection; it has not been touched on in previous lessons.)

How does sound travel from the source (a vibrating body) to the ear that hears it?

What proofs have you that it travels through the air?

Does it take time to travel?

What proofs have you that it takes time, and can you measure the time that it actually takes?

The above questions will emphasize the facts that sound is always caused by a vibrating body, and that it travels through the air. I shall next attempt to demonstrate the fact that sound travels in the form of waves. To do this, I shall use König's device, the manometric flame. (The nature of the sound wave has been discussed in previous lessons, but has not as yet been demonstrated, for the simple reason that the apparatus was out of order at the time the topic was first considered.)

I shall next draw on the board a graphic representation of sound waves and explain the construction of the graph.

In the assignment for tomorrow, I shall attempt first to lead the class to distinguish between two kinds of sound, noise and tone, and to point out their essential differences first as sensations, and then as physical phenomena. To do this I shall use the various resources of the laboratory to produce sounds (both tones and noises). I shall strike tuning forks, actuate strings, pound on the desk with a mallet, etc. By this means I hope to get a statement from the class that some of the sounds are musical and others are not. If I succeed in doing this, I shall

then ask such questions (requiring reflection and thought) as the following:—

Give me a list of words (adjectives) that can be applied to tones; to noises.

Are tones always pleasant? Are noises always unpleasant?

Are there some sounds that are both tones and noises?

I shall next attempt to make clear to the class that the discussion of tone and noise which we have just had, considers sound as a *sensation*, not as a form of physical energy. I shall then ask what is the physical distinction between tone and noise, and shall again use the manometric flame with the purpose of showing that tone is due to a periodic motion, and that noise is due to a non-periodic motion.

By striking the tuning fork with gentle and hard blows, I shall attempt to lead the class to distinguish between loud and soft tones. By striking various forks I shall attempt to develop the notion of pitch. I shall clamp a clock spring in a vise, hoping to bring out the fact that as it is shortened it vibrates more rapidly and gives out a higher note. I shall also attempt to show that a vibrating string sounds loud when its amplitude is great, and soft when its amplitude is slight. Finally, I hope to lead the class to the conclusion that loudness is due to amplitude of vibration, while pitch depends on rapidity of vibration (frequency). In the next lesson (a laboratory exercise), I shall attempt further to prove these conclusions through individual observation and experimentation.

Questions asked.—At the beginning of the hour the questions will be principally of the knowledge and the drill types; the majority of the questions will, however, be of the thought type. I shall aim to demonstrate and develop rather than to tell.

Illustrations used.—I shall use numerous demonstrations as outlined above. In addition, in discussing the rate at which sound travels, I shall tell the class about the explosion at Krakatoa in August, 1883, the effects of which were recorded at

various points on the earth's surface. I shall illustrate compressions and rarefactions of the air by Mach's photograph of the stationary waves which accompany the flight of a Mauser rifle ball. I shall also refer to the effect of the explosion of ammunition in New York harbor in 1916. Glass windows were broken as far uptown as Times Square.

(c) *Results.*—I attempted to cover too much in the hour. Some of the things I tried to do were too difficult for the class to comprehend, particularly the graphic representation of sound waves. This part of the lesson was a distinct failure. Some of my demonstrations did not come out well, particularly those connected with the manometric flame. Few of the class could see just what took place. I shall use this demonstration again as a laboratory exercise. The interest was on the whole well sustained. Some of the thought questions worked out satisfactorily. However, I was forced to tell a good deal that I had hoped to develop. On the whole I should say that the lesson was fairly successful. Much must be gone over again in review.

Geometry

A. Materials covered in the lesson.

(a) *Review.*—We will here consider the facts already discussed in regard to the properties of triangles, particularly those theorems in the text in regard to equal triangles. (5 min.).

(b) *Advance.*—Here we will take up the proof of the following theorems:

I. The sum of the angles of any triangle is equal to two right angles.

II. Two right triangles are equal when the hypothenuse and leg of one are equal respectively to the hypothenuse and leg of the other. (20 min.).

(c) *Assignment.*—In this part of the lesson the following theorems will be developed and stated:

I. If two triangles have two sides of one equal respectively to

two sides of the other, but the included angle of the first greater than the included angle of the second, the third side of the first is greater than the third side of the second.

II. The converse of this proposition. (20 min.).

B. Outline of the lesson in detail.

(a) *The aim.*—The aim of this lesson is, first, to recall to the minds of the class the fact that triangles are equal when certain conditions are realized in regard to their sides and the angles, and second, to work out with the class the statement of two theorems in regard to triangles that have two sides equal, but the third side unequal, and also the included angles unequal. The first part of the lesson is largely in preparation for the second part, and it includes both the review of the work done during the last few days and a consideration of the work prepared for the lesson of today.

(b) *Method.*—The lesson will begin with a written test of the propositions assigned for today's advance work. During the test, I shall inspect the work of individual pupils, and discover by this means how well they understand the theorems which they are attempting to prove. At the conclusion of this test, I shall ask the following questions:

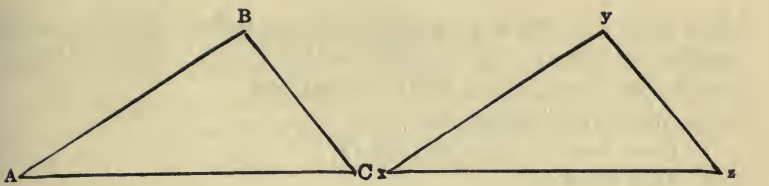
How many right angles can a triangle have?

How many obtuse angles?

What is the sum of the acute angles of a right triangle equal to?

What can you say about a right triangle whose two legs are equal respectively to the two legs of another right triangle?

In obtaining the answers for these questions, I shall ask for the reasons involved. I shall then proceed to discuss the properties of equal triangles, not right triangles, as these have been considered in previous lessons. First, I shall draw on the board two triangles thus:



I plan to make subsequent questions and answers substantially as follows:—

Teacher. How do these two triangles look to you?

Pupil. They look equal.

T. If they are equal, what do you know is true about them?

At this point I hope to obtain the following answers:—

P 1. They have three sides respectively equal.

P 2. They have a side and two adjacent angles equal each to each.

P 3. They have two sides and the included angle of one equal respectively to the two sides and included angle of the other.

I shall then continue somewhat as follows:—

T. Name two sides of one triangle, and two sides of the other.

P. AB and AC of the first, and xy and xz of the second.

T. Name the included angles.

P. The angle at A, and the angle at x.

T. Let us measure these sides and these angles. (Teacher measures with rule and protractor.) Yes, I find side AB is just the same length as side xy, and that AC and xz are also equal. The angles at A and at x are both forty-two degrees. Now according to a previous proposition, what can we say about these two triangles?

P. They are equal.

T. Then if I should take one triangle and put it on the other, what would happen?

P. One triangle would exactly cover the other. They would be the same.

T. Now from the point A, I am going to draw a dotted line AC′ just as long as AC, and so that the line AC′ falls outside of the tri-

angle ABC. . . . Then I am going to draw another dotted line joining the points B and C′. Now look at the triangle ABC′, and compare it with triangle xyz. What can you say?

P. ABC′ is not equal to xyz.

T. How about the sides AB and xy?

P. They are equal.

T. And the sides AC′ and xz?

P. They are equal also.

T. But how about the angle BAC′ and the angle yxz?

P. The angle BAC′ is greater than the angle yxz.

T (measuring): Yes, it is sixty-three degrees. Now how about the side BC′ as compared with the side yz?

P. BC′ is greater than yz.

T (measuring): Yes, it is quite a little longer. Now can you state a proposition concerning the relation of the triangle ABC′ and the triangle xyz? What do you know about these two triangles?

P. Two sides are equal.

T. Anything else?

P. Yes, the included angles are not equal.

T. Anything else? Anything about the equality of the two triangles?

P. The triangles are not equal.

T. Can you state this fact in the form of a proposition?

P (after further discussion): When two triangles have two sides equal, but the included angle of one greater than the included angle of the other, then the two triangles are not equal.

T. Anything else? How about the sides BC′ and yz?

P. They are not equal.

T. Anything else that you can say?

P. BC′ is greater than yz.

T. That is right. Anything else? Where are the sides in relation to the angles BAC′ and yxz?

P. They are opposite these angles.

T. And which side is greater?

P. Side BC′.

T. And which angle is greater?

P. Angle BAC′.

T. Now let us have the entire proposition. We have already said that when two triangles have two sides of the one equal respectively to the two sides of the other, but the included angles unequal, then the two triangles are unequal. Now what can we say about the relation of the sides opposite the included angles?

P. The sides are unequal.

T. And the greater side . . . ?

P. Lies opposite the greater angle.

T. There you have the entire proposition. You have seen that it is true, but for tomorrow's lesson, I wish you to prove in logical form that it is true.

By further questioning I hope to develop the converse of this proposition, namely—If two triangles have two sides of one equal respectively to two sides of the other, but the third side of the first greater than the third side of the second, the included angle of the first is greater than the included angle of the second. In conclusion, I shall suggest steps by which these two theorems may be demonstrated, but I shall leave the details to be worked out by the pupils.

Illustrations used.—Besides illustrating the work by the method of drawing figures on the board, I shall attempt to make these theorems more definite and concrete by calling the attention of the class to the fact that Providence, Boston, and Worcester are practically each forty-four miles apart; that Westerly is also the same distance from Providence, but about twice as far from Boston. I shall ask what facts follow from this in terms of our day's lesson.

(c) *Results.*—I carried out the lesson practically as planned. The written test was completed by all but four of the class in the time allowed for it (18 min.). I found some difficulty in developing a statement of the two theorems for tomorrow, but I finally obtained the desired answers, though I am afraid that over half of the class did not follow me completely. There was a good deal of interest in the illustration based on the situation

of Providence, Boston, Worcester and Westerly, and several thoughtful questions were asked.

ENGLISH

A. Materials covered in the lesson.

(a) *Review.*—I shall take up portions of Washington Irving's three sketches relating to Christmas (*Christmas Eve*, *Christmas Day*, and the *Christmas Dinner*), emphasizing details not sufficiently brought out in previous lessons. (10 min.).

(b) *Advance.*—I shall read with the class the sketch, *The Widow and Her Son.* (15 min.).

(c) *Assignment.*—This will be the sketch, *A Royal Poet.* It will occupy about half of the entire period. (20 min.).

B. Outline of the lesson in detail.

(a) *The aim.*—My main aim in this lesson is to impress on the class certain elements in literary appreciation. In particular I shall attempt to bring out the "feeling tone" of the sketches taken up in the review and the advance. I hope to make the pupils realize to some extent the sparkle, the mirth, the humor, the sense of bodily comfort that make the "atmosphere" of the Christmas sketches, and on the other hand the gloom, the poverty, the misfortune, and the hopeless misery that cast their pall over the story of the *Widow and her Son.* In the assignment, too, the aim will be in part to make the class feel with the author. Here I shall attempt to direct the thoughts of the pupils to those elements that show Irving's art in writing his moods into the description. I shall further attempt to aid the class in understanding Irving's conception of the poetic imagination, and impress upon them his portrayal of the refined and gracious character of James I.

(b) *Method.*—In the review, I shall read to the class certain selected passages from the Christmas stories, for example,—"It was a brilliant moonlit night," etc. "The postboy rang

a large porter's bell, which resounded through the still frosty air," etc., (to impress the "Christmas feeling"); descriptions of Master Simon, the dance, the orchestra in the church (for the jollity and humor); the description of the Christmas dinner (to convey the sense of well-being and creature-comfort). In this way I hope to get the necessary background for the contrasting mood of the sketch taken up in the advance.

I shall read as much as possible of this with the class, and I shall ask such questions as the following:

Name some of the words that Irving uses to make us feel the quiet of an English Sabbath.

How does the spirit of the day contrast with that of Christmas?

What are the feelings that you have when you read this description?

What new feelings do you have when the old woman is described?

Can you imagine the tolling of the bell?

Is it a pleasant sound to you?

You pity the poor woman; what feelings have you for the well-fed priest?

Why did he treat the old woman with such indifference?

How does Irving feel toward the poor? Toward the rich?

Contrast the feeling that you have when you finish this story, with your feelings on ending the Christmas stories.

If you had been writing the story of the widow would you have ended it differently? Why?

Do you think that the great writers end all of their stories happily?

Why is it undesirable always to have a happy ending?

How about the endings of Shakespeare's plays? of Dickens' novels, etc.?

In the assignment I shall give a brief sketch of the life of James I., as a preparation for the reading of the sketch. I shall next explain the meanings of some of the difficult words and

passages. I shall then ask the class to keep in mind such questions as the following in their reading of the sketch:—

In what mood did Irving write this sketch?

Select five adjectives that indicate this mood; select five adjectives from the Christmas stories that give the mood of the author when he wrote these sketches; in a similar way select five adjectives that indicate Irving's feelings when he wrote the story of the widow.

When an artist wishes to make us know his feelings in his paintings how does he do it?

When a writer wishes to convey to us his feelings how does he do it?

What does the term word-artist mean to you?

According to Irving, what are some of the things essential to the imagination of a poet?

How was it possible for James imprisoned still to live in the world outside?

How can you live at the present moment in a world outside of the classroom?

In what sense was the imprisonment of James an aid to his fancy?

Is there anything in the character of James while in prison that would indicate what he would be when released?

In what mood does Irving end the sketch? Has he impressed you at all with this mood?

Explain this statement,—The great writer is he who makes his readers see as he sees, and feel as he feels.

Would you call Irving a great writer? Why?

Questions asked.—I shall ask practically no questions of the drill or informational type. Some will be thought questions of the intellectual type, but the great majority will be questions of appreciation.

Illustrations used.—I shall ask the class to recall in imagination Christmas scenes similar to those described by Irving. I

shall ask them to picture in their mind's eye some poor and feeble woman that they have seen; some eccentric character they have known, etc.

In attempting to bring out the fact that the writer puts his own feelings into his work through "word painting," I shall make a comparison between a photograph and a painting, with the purpose of showing that the painter creates the scene and does not copy it as it exists in nature. He colors it to suit his thoughts and moods.

(c) *Results.*—I am not sure but that I aimed too high in this lesson. I think that about half of the class got some real appreciation of Irving as an artist, but I am sure that what I said was above the heads of a good many in the class. It would have been much easier for me to have taught the lesson merely as a collection of incidents and facts; to have impressed upon the class the story, and have been contented with that. However, I cannot feel that I should have been teaching literature if I had done this and nothing more. I have the satisfaction of knowing that some of the class at least, obtained an insight into Irving's art.

Latin

A. Materials covered in the lesson.

(a) *Review.*—The review lesson considered the declension of the irregular adjectives alius, alter, neuter, nullus, solus, totus, ullus, unus, uter, uterque, ending in ius in the genitive singular and i in the dative singular of all genders; in addition to the declension of the adjectives, the lesson included their use in such idioms as: alter—alter= the one—the other, alius—alius= one—another, etc. There are also a Latin-English exercise and three sentences to be translated from English into Latin. (10–12 min.).

(b) *Advance.*—The advance lesson takes up the infinitives, present, perfect and future, active and passive, of verbs of all

four conjugations, with their meanings and their use in sentences, as subject or as complementary infinitives; the use of the accusative case as subject of an infinitive is also illustrated in the lesson. The lesson also includes a reading lesson, a vocabulary exercise, and a Latin-English exercise. (18–20 min.).

(c) *Assignment.*—For the next lesson we shall take up indirect statements and the manner of expressing them in Latin, by the infinitive with subject accusative; we shall also consider the use of the various tenses of infinitive, present, perfect, and future, to express time relative to that of the main verb. The advance lesson also includes three English-Latin sentences, a vocabulary and a Latin-English exercise. (10–14 min.).

B. Outline of the lesson in detail.

(a) *The aim.*—In this lesson, I shall aim to familiarize the pupils with the declension and use of the irregular adjectives previously mentioned, and with the various infinitives, active and passive, with their meanings and use in sentences. In the assignment, I shall try to give the pupils an understanding of what indirect statements are, and how they are expressed in Latin.

(b) *Method.*—At the beginning of the period, we shall have a short test, covering the advance and review lessons; the questions will be somewhat as follows:—(1) Decline solus-a-um. (2) Give the six infinitives of *rego*. (3) Translation of a Latin sentence. (4) Translation of an English sentence.

After the test, I shall drill the pupils on the vocabulary, using perception cards, on which are printed the various words (in the vocabulary). In the work on vocabulary, the card is presented to the class as a whole; after a pause of a few seconds, an individual pupil is called upon; he pronounces the word, gives the English meaning, and, in the case of nouns, proceeds to give the genitive case and the gender; as, for example:—Peri-

culum, danger; periculum, -i, n. In the case of verbs, the pupil gives the meaning and then the principal parts.

In the review work, I shall call for the declension of one or two of the irregular adjectives. In taking up the infinitives, I shall call for the infinitives of various verbs with their meanings, and I shall have pupils write the infinitives of other verbs on the blackboard. I shall also take up the translation of original sentences containing infinitives, working out the translation with the class, and writing the sentences on the front board as they are developed. Examples of sentences follow:—"The soldiers wish to be brave and bold." "The general is said to have been captured." "The king wishes the citizens to be faithful." In taking up the English-Latin sentences, which are review work, I shall have individual pupils write the translation on the board, with suggestions and corrections from the class, or if time does not permit, I shall write the sentences working with the class.

In connection with the translation of the Latin-English exercises, I shall read each sentence in Latin, aiming to read in such a way as to bring out the sense of the sentence; after a pause, to allow pupils time for thought, I shall call upon a particular pupil to translate. If there is a mistake in the translation, I shall first mention the word incorrectly translated, in order to focus the attention of the pupil on the word before asking any questions; then I shall ask for the case of the word, the manner of translating such a case, etc., in order to make the pupil see his mistake and correct his translation. I shall also ask for other constructions, even though correctly translated, to bring out important points of syntax.

After all this comes the assignment, which, as was said before, has to do with indirect statements. I shall proceed somewhat as follows:—I shall ask the class to recall our definition of indirect questions. I shall ask such questions as the following:—Give an example of a direct question.—What are you

doing? Make that an indirect question.—He asks what you are doing. From this, define an indirect question. Now, instead of questions, let us consider statements. Give an example of a direct statement.—You are reading. An indirect statement; He says that you are reading. Now, define an indirect statement. We shall now proceed to the manner of expressing such statements. I shall take the example of the direct statement given:—You are reading, and the indirect statement: Dicit te legere, pointing out the changes that take place: namely, the verb of the direct statement becomes the infinitive, and the subject of the verb becomes the accusative, the subject of the infinitive; I shall also point out the literal translation of the sentence: He says you to write; and hence, he says that you write. I shall now ask the class to formulate a rule regarding the translation of indirect statements. I shall now turn to the expression of time, present, past, or future, in relation to the main verb. I shall use the example in the book. (1) He says he is writing; literal:—He says himself to write; expressed by the present infinitive—same time as that of main verb. (2) He says he has written; literal: He says himself to have written—expressed by perfect infinitive—time before that of the main verb. (3) He says he will write; literal: He says himself to be about to write; future infinitive—time after that of the main verb.

If there is any time left, I shall take simple indirect statements, and have the class give the literal English order first, and then translate them into Latin. In this way, I shall attempt to give pupils an understanding of indirect statements and their translation into Latin.

(c) *Results.*—I succeeded in covering the entire lesson, as planned, with the exception of a part of the assignment. I was obliged to hurry somewhat at the end. I should have cut down by a few minutes the time set aside for the review and advance, or have given the assignment earlier in the lesson. Both the review and advance went well today. I find that the class is

improving both in interest and accomplishment. There are three or four pupils, however, who are failing far too often. These I am keeping after school and giving them individual instruction.

English

LESSON IN ENGLISH GRAMMAR

A. Materials covered in the lesson.

(a) *Review.*—The review consists of a test on a grammar exercise written in class under supervision and corrected orally in class, embodying the use of active and passive in various tenses, and of an oral drill on the passive conjugation. (10 min.)

(b) *Advance.*—The advance will take up the subject of participles and participial phrases. As this is a new topic not prepared by the class, it is in the nature of an assignment. (20 min.)

(c) *Assignment.*—The assignment will consist of a test on the work in participles as taken up in the advance, based on the section in the grammar, and of ten words for spelling and ten pages in the *Odyssey*. The pupils understand that they will be tested for the story of what they read in the *Odyssey*. Some of the difficulties in the spelling words will be pointed out and explained. (15 min.)

B. Outline of the lesson in detail.

(a) *Aim.*—The aim of this lesson is to give a thorough introduction to the subject of participles, showing their use in the sentence, and avoiding confusion with the infinitive (which in the book is put in the same lesson). The more ultimate aim is the improvement of composition work for which this technical knowledge is necessary.

(b) *Method.*—After the test on the review, I shall go over the review of the passive conjugation orally to form a transition to the new work and remind pupils of the method of forming tenses.

I shall then ask them to open the grammars to the lesson on participles given there,—that it is partly a verb, having tense

and voice, and partly either noun or adjective according to its use in the sentence.

I shall then go over with them the paradigm, calling its peculiarities to their attention by asking, for instance, what tense and voice of the participle has a progressive form.

Then I shall ask the class to form, with the paradigm as a model, the various participles of other verbs, calling for a certain form and then calling on a pupil for the answer. As for instance, "What is the present active participle of the verb *take?* The passive perfect? The present perfect progressive? What is the perfect passive participle of *sing?*" etc. I shall skip around in the tenses, and shall also go through all the tenses in order with the same verb to form a sort of synopsis.

Before the class comes in, I shall write on the blackboard ten sentences illustrating participles and participial phrases. At the proper place in the lesson I shall turn to these, and reading a sentence aloud, ask the class what participle there is in it and what tense and voice this form is. In this way there is practice both in forming and in recognizing the various tenses. I shall also read aloud sentences illustrating the different tenses of the participle, as,—"Having been walking all day, they were tired." "He did not like being taken for an actor."

I shall then proceed to the next part of the subject, the use of the participle in the sentence. Here I shall refer again to our definition, showing how we have been working on the verbal side of the participle, its tense and voice, and are now to look at it as an adjective or noun.

I shall read the examples of the two uses given in the book and ask the pupils to see why the phrase is noun or adjective, as,—"Seeing your difficulty, I will help you." What does seeing modify? (Answer, I.) That is why it is called adjective, it modifies the pronoun. "Playing tennis is good exercise." Why is playing a noun? What part of the sentence is it? (Answer, subject.) Then I can explain that the participle is a

noun or gerund if it is used in the way a noun would be used, as subject or object.

I shall then take up the sentences on the board and oral sentences and ask the pupils to tell what kind of phrases the participial phrases are, always demanding reasons for their answers. "He did not like being taken for an actor." (Answer, gerund.) Why? Because it is the direct object of "like." The sentences chosen illustrated as many uses as possible of the noun clause, i. e.,—as subject, object, appositive, and object of a preposition.

As a form of application, I shall take up the changing of clauses into participial phrases in an exercise in the book, considering also which form of expression is preferable in the sentences.

I shall then assign a test on forming and distinguishing the participles and phrases.

(c) *Results.*—The interest and attention of the class were very good. The test next day showed ability on the part of the class in identifying forms but not in forming the tenses and voices themselves.

A later lesson was utilized to bring out the practical uses of this work in the composition work. The class were led to work out inductively the construction of the participial phrase in the sentence, and then to correct the errors made in their compositions in its use. Their work was much better for the drill which we had had in the grammatical side of the work.

German

A LESSON TAUGHT BY A COMBINATION OF DIRECT AND GRAMMAR METHODS, THE SO-CALLED REFORM METHOD

A. Materials covered in the lesson.

(a) *Review.*—Such as may arise in developing the new subject of relative pronouns, as for instance the declensions of the different kinds of pronouns already studied. (5–10 min.)

(b) *Advance.*—The assignment yesterday consisted of reading and explaining an interesting account of Wintersport in Germany. The class was then assigned to write in German an account of the Wintersport which each one of them had participated in. The papers will be collected and marked according to grammar and originality. (All the time necessary will be used to develop the subject of relative pronouns with the many different uses.) (10–15 min.)

(c) *Assignment.*—The assignment will consist entirely of the development of the subject of relative pronouns. The ordinary relative pronouns *der* and *welch* will be considered first. Then the uses of *wer* and *was*, as relative pronouns, if they can be translated as *he who*, *whoever*, and *that which*, *whatever*. The different paradigms illustrating these relative pronouns will be put on the board and the class will enter these into their notebooks. A sentence-paradigm illustrating the use of the relative pronoun *das* will be put on the board and also assigned. With this as a model the class is to prepare the masculine and feminine relative pronouns in sentence-paradigms. (20–30 min.)

B. Outline of the lesson in detail.

(a) *Aim.*—The aim of this lesson is to present to the class the subject of relative pronouns.

(b) *Method.*—The method of procedure is on the whole one which develops from what the class already know about pronouns in German and from what they know about relative pronouns in English grammar. (The subject of relative pronouns and their uses has always been one of great difficulty. In common, everyday speech, *who* and *whom* are constantly being interchanged. Who did you see? instead of whom did you see? If a sharp distinction is drawn between the uses of the relative pronouns in English grammar at once, some of the difficulty which will be met with in the German uses of the relative pronouns will be overcome.)

In developing the subject, I ask first questions dealing with review subjects:

Was für Fürwörter haben wir schon bis jetzt studiert? die persönlichen Fürwörter, die unpersönlichen Fürwörter, die Frage-Fürwörter, die unbestimmten Fürwörter, die Besitz-Fürwörter, und die hinweisenden Fürwörter. These are put on the board with examples.

Questions asked: Was bleibt noch übrig in dem Subject der Fürwörter? (die Relativen.)

Was sind diese auf Englisch? (who, whose, whom, which, etc.).

(Dann werden Beispiele auf Englisch verlangt. Der grosze Unterschied zwischen *who* und *whom*, wo gewöhnlich so viele Fehler gefunden werden, wird klar auseinander gesetzt. Dann fange ich sofort mit dem Deutschen, in Konversation an.)

Wie heiszt der Knabe, *der* vor mir sitzt?

Wer ist der Knabe, *dessen* Buch ich nehme?

Wie heiszt der Knabe, neben *dem* er sitzt?

Was gebe ich dem Knaben, *den* ich sehe?

Was lesen die Knaben, *die* hier sind?

Wie heiszen die Knaben, *deren* Bücher ich nehme?

Lesen die Knaben mit *denen* ich spreche, Deutsch?

Was sprechen die Knaben, *die* ich sehe?

Dasselbe wird nun mit einem weiblichen Hauptwort getan,—die Dame, zum Beispie, and auch mit einem sächlichen Hauptwort, das Buch. Dann schreibe ich die Deklination an die Tafel:

der	die	das	die
dessen	deren	dessen	deren
dem	der	dem	denen
den	die	das	die

An der Tafel unter einer Karte steht schon geschrieben, die Deklination von dem relativen Fürwört *das* in Sätzen.

Das buch, das auf dem Tische liegt, ist das meinige.

Das Buch, dessen Bilder schön sind, ist ein Deutsches.

Das Buch, in dem (worin) so viele Bilder sind, ist blau.

Das Buch, das ich in der Hand habe, ist nicht das meinige.

Die Bücher, die auf dem Tische liegen, sind grosz.

Die Bücher, deren Schrift Deutsch ist, sind interessant.

Die Bücher, in dem (worin) wir Geschichten lesen, sind schwer.

Die Bücher, die wir kaufen, kosten viel Geld.

Die Klasse soll für das nächste Mal solche Sätzen schreiben und dabei ein männliches und ein weibliches Hauptwort gebrauchen.

Dann erkläre ich, dass *welch* auch ein relatives Fürwört ist, und wird wie das Frage-Fürwört dekliniert mit Ausnahme des Genitivs, der derselbe ist wie bei- der, die, das. *Welch* wird auch wie ein Adjectiv benutzt. Die Deklination des *welch* wird auf die Tafel geschrieben.

Wer und *was* benutzt als relative Fürwörter werden jetzt durch Beispiele erklärt. Die Deklination ist dieselbe wie die der Frage-Fürwörter.

Unter einer anderen Karte steht folgendes geschrieben:

1. The ordinary relative pronouns are *der* and *welch;* who, which and what.

2. *Wer* and *was* are used as compound or indefinite relatives; he who, whoever; that which, whatever.

3. *Was* is used instead of *das* after any neuter pronoun or adjective taken in a general sense: nicht alles, was glänzt, ist Gold.

4. In relative clauses the inflected verb comes last.

5. The relative pronoun agrees with its antecedent in gender and number, but not necessarily in case.

6. Either relative may refer to a person or a thing.

7. *Welch* is used as an adjective.

8. The relative clause is separated from the rest of the sentence by commas. Diese Regeln werden in die Hefte geschrieben.

(c) *Results.*—The introduction by way of review of kinds of pronouns and of English relatives was worth while and went well. It gave the boys a foundation, something they could rely upon as reference. It made the subject of German relative pronouns clearer and more easily understood. Evidently my questions in developing the paradigm of *der, die, das* were very clear and always understood, for responses came readily and quickly. The boys seem to be alert and ready to enter into the grammar "game" we seemed to be playing. Interest and attention were excellent.

INDEX OF AUTHORS

(See addditional list of names in bibliography)

INDEX OF SUBJECTS

INDEX OF SUBJECTS OF INSTRUCTION

Printed in the United States of America