COLLEGE TEACHING

KLAPPER

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STUDIES IN METHODS OF TEACHING IN THE COLLEGE

Edited by

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with an
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A treasure of wisdom is stored in the colleges of the land. The teachers are the custodians of knowledge that makes life free and progressive. This book aims to make the college teacher effective in handing down this heritage of knowledge, rich and vital, that will develop in youth the power of right thinking and the courage of right living. Thus *College Teaching* carries out the ideal of service as expressed in the motto of the World Book Company, "Books that Apply the World's Knowledge to the World's Needs"

KCT-I

PREFACE

THE student of general problems of education or of elementary education finds an extensive literature of varying worth. In the last decade our secondary schools have undergone radical reorganization and have assumed new functions. A rich literature on every phase of the high school is rapidly developing to keep pace with the needs and the progress of secondary education. The literature on college education in general and college pedagogy in particular is surprisingly undeveloped. This dearth is not caused by the absence of problem, for indeed there is room for much improvement in the organization, the administration, and the pedagogy of the college. Investigators of these problems have been considerably discouraged by the facts they have gathered. This volume is conceived in the hope of stimulating an interest in the quality of college teaching and initiating a scientific study of college pedagogy. The field is almost virgin, and the need for constructive programs is acute. We therefore ask for our effort the indulgence that is usually accorded a pioneer.

In this age of specialization of study it is evident that no college teacher, however wide his experience and extensive his education, can speak with authority on the teaching of all the subjects in the college curriculum, or even of all the major ones. For this reason this volume is the product of a coöperating authorship. The editor devotes himself to the study of general methods of teaching that apply to almost all subjects and to most teaching situations. In addition, he coördinates the work of the other contributors. He realizes that there exists among college professors an active hostility to the study of pedagogy. The professors feel that one who knows his subject can teach it. The contributors have been purposely selected in order to dispel this hostility. They are, one and all, men of undisputed scholarship who have realized the need of a mode of presentation that will make their knowledge alive.

Books of multiple authorship often possess too wide a diversity of viewpoints. The reader comes away with no underlying thought and no controlling principles. To overcome this defect, so common in books of this type, a tentative outline was formulated, setting forth a desirable mode of treating, in the confines of one chapter, the teaching of any subject in the college curriculum. This outline was submitted to all contributors for critical analysis and constructive criticism. The original plan was later modified in accordance with the suggestions of the contributors. This final outline, which follows, was then sent to the contributors with the full understanding that each writer was free to make such modifications as his specialty demanded and his judgment dictated. This outline is followed in most of the chapters and gives the book that unifying element necessary in any book and vital in a work of so large a coöperating authorship.

The editor begs to acknowledge his indebtedness to the many contributors who have given generously of their time and their labor with no hope of compensation beyond the ultimate appreciation of those college teachers who are eager to learn from the experience of others so that they may the better serve their students.

TENTATIVE OUTLINE FOR THE TEACHING OF —— IN THE COLLEGE

I. Aim of Subject *X* in the College Curriculum:
   Is it taught for disciplinary values? What are they?
   Is it taught for cultural reasons?
   Is it taught to give necessary information?
   Is it taught to prepare for professional studies?
   Is the aim single or eclectic? Do the aims vary for different groups of students? Does this apply to all the courses in your specialty? How does the aim govern the methods of teaching?

II. Place of the Subject in the College Curriculum:
   In what year or years should it be taught?
   What part of the college course — in terms of time or credits — should be allotted to it?

What is the practice in other colleges?

What course or courses in this subject should be part of the general curriculum or be prescribed for students in art, in science, in modern languages, or in the preprofessional or professional groups?

III. Organization of the Subject in the College Course:

Desired sequence of courses in this subject.

What is the basis of this sequence? Gradation of successive difficulties or logical sequence of facts?

Should these courses be elective or prescribed? All prescribed? For all groups of students?

In what years should the elective work be offered?

IV. Discussion of Methods of Teaching this Subject:

Place and relative worth of lecture method, laboratory work, recitations, research, case method, field work, assignment from a single text or reference reading, etc.

Discussion of such problems as the following:

Shall the first course in chemistry be a general and extensive course summing up the scope of chemistry, its function in organic and inorganic nature, with no laboratory work other than the experimentation by the instructor?

Should students in the social sciences study the subject deductively from a book or should the book be postponed and the instructor present a series of problems from the social life of the student so that the analysis of these may lead the student to formulate many of the generalizations that are given early in a textbook course?

Should college mathematics be presented as a series of subjects, e.g., algebra (advanced), solid geometry, trigonometry, analytical geometry, calculus, etc.? Would it be better to present the subject as a single and unified whole in two or three semesters?

Should a student study his mathematics as it is developed in his book,— viz., as an intellectual product of a matured mind familiar with the subject,— or should the subject grow gradually in a more or less unorganized form from a series of mechanical, engineering, building, nautical, surveying, and structural problems that can be found in the life and environment of the student?

V. Moot Questions in the Teaching of this Subject.

VI. How judge whether the subject has been of worth to the student?

How test whether the aims of this subject have been realized?

How test how much the student has carried away? What means, methods, and indices exist aside from the traditional examination?

VII. Bibliography on the Pedagogy of this Subject as Far as It Applies to College Teaching. The aim of the bibliography should be to give worth-while contributions that present elaborations of what is here presented or points of view and modes of procedure that differ from those here set forth.

PAUL KLAPPER

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INTRODUCTION

IT is characteristic of the American people to have profound faith in the power of education. Since Colonial days the American college has played a large part in American life and has trained an overwhelming proportion of the leaders of American opinion. There was a time when the American college was a relatively simple institution of a uniform type, but that time has passed. The term "college" is now used in a variety of significations, a number of which are very new and very modern indeed. Some of these uses of the term are quite indefensible, as when one speaks of a college of engineering, or of law, or of medicine, or of journalism, or of architecture. Such use of the word merely confuses and makes impossible clear thinking as to educational institutions and educational aims.

The term "college" can be properly used only of an institution which offers training in the liberal arts and sciences to youth who have completed a standard secondary school course of study. The purpose of college teaching is to lay the foundation for intelligent and effective specialization later on, to open the mind to new interpretations and new understandings both of man and of nature, and to give instruction in those standards of judgment and appreciation, the possession and application of which are the marks of the truly educated and cultivated man. The size of a college is a matter of small importance, except that under modern conditions a large college and one in immediate contact with the life of a university is almost certain to command larger intellectual resources than is an institution of a different type. The important thing about a college is its spirit, its clearness of aim, its steadiness of purpose, and the opportunity which it affords for direct personal contact between teacher and student. Given these, the question of size is unimportant.

There was a time when it was felt, probably correctly, that a satisfactory college training could be had by requir-

ing all students to follow a single prescribed course of study. At that time, college students were drawn almost exclusively from families and homes of a single type or kind. Their purposes in after-life were similar, and their range of intellectual sympathy, while intense, was rather narrow. The last fifty years have changed all this. College students are now drawn from families and homes of every conceivable type and kind. Their purposes in after-life are very different, while new subjects of study have been multiplied many fold. The old and useful tradition of Latin, Greek, and mathematics, together with a little history and literature, as the chief elements in a college course of study, had to give way when first the natural sciences, and then the social sciences, claimed attention and when even these older subjects of study were themselves subdivided into many parts.

These changes forced a change in the old-fashioned program of college study, and led to the various substitutes for it that now exist. Whether a college prefers the elective system of study, or the group system, or some other method of combining instruction that is regarded as fundamental with other instruction that is regarded as less so, the fact is that all these are simply different kinds of attempt to meet a new condition which is the natural result of intellectual and economic changes. Just now the college is in a state of transition. It is not at all clear precisely what its status will be a generation hence, or how far present tendencies may continue to increase, or how far they may be counteracted by a swing of the pendulum in the opposite direction. Therefore this is a time to describe rather than to dogmatize, and it is description which is the characteristic mark of the important series of papers which constitute the several chapters in the present volume.

A careful reading of these papers is commended not only to the great army of college teachers and college students, but to that still greater army of those who, whether as alumni or as parents or as citizens, are deeply concerned with the preservation of the influence and character of the

American college for its effect upon our national standards of thought and action.

American colleges are of two distinct types, and it may be that the future has in store a different position for each type. The true distinction between colleges is according as they are separate or are incorporated in a university system, and not at all as to whether they are large or small. A separate college, such as Amherst or Beloit or Grinnell or Pomona, has its own peculiar problems of support and administration. The university college, on the other hand, such as Columbia or Harvard or Chicago or the college of any state university, has quite different problems of support and of administration. It is not unlikely that the distinction between these two types of college will become more sharply marked as years go by, and that eventually they will appear to be two distinct institutions rather than two types of one and the same institution.

Meanwhile, we have to deal with the college as it is, in all its varied forms, but characteristically American whatever its form. The American college has little or no resemblance to the English Public School or to the French Lycée or to the German Gymnasium. It is something more than any one of these, and at the same time something less. It differs from them all very much as the conditions of American life differ from those of English or of French or of German life. The college may or may not involve residence, but when it does involve residence, it is at its best. It is then that the largest amount of carefully ordered and stimulating influence can be brought to bear upon the daily life of growing and expanding youth, and it is then and only then, that youth can get the inestimable benefits which follow from daily and hourly contact with others of like age, like tastes, like habits, and like purposes. Indeed, it has often been said that the college gives more through its opportunities which attach to residence, than through its opportunities which attach to instruction.

Almost every conceivable problem that can arise in college life and college work, is discussed in the following

pages. It is now coming to be understood that the health of the college student is as much a matter of concern as his instruction, and that a college is not doing its full duty by those who seek its doors, when it merely provides libraries, laboratories, and skillful teachers. It must also provide for such conditions of residence, of food, of exercise, and of frequent medical examination and inspection, as shall protect and preserve the health of those who come to take advantage of its instruction.

There is one other point which should not be overlooked, and that is the literally immense influence exerted in America by that solidarity of college sentiment and college opinion which is kept alive by organizations of former college students scattered throughout the land. This, again, is a peculiarly American development, and it serves to unite the college and public sentiment much more closely than any formal tie could possibly do. Indeed, it illustrates how completely the American people claim the college as their own. The man or woman who has once been a college student never ceases to be a member of that particular college or to labor to extend its influence and to increase its usefulness.

Every reader of this volume should approach it in a spirit of sympathetic understanding of American higher education, and of the college as the oldest instrument of that higher education and still one of the chief elements in it.

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PART ONE

The Introductory Studies

CHAPTER

I

HISTORY AND PRESENT TENDENCIES OF THE AMERICAN COLLEGE

1. THE COLONIAL PERIOD

The predominance of the religious motive

THE American colonies were founded chiefly by Englishmen who came to America for a variety of reasons. Some of these were economic and political, but the most important of their reasons was the desire to practice their religious convictions with greater freedom than was permitted at home. Apart from the state religion, however, all the colonists were animated by a love for English institutions which they transplanted to the New World, and among these institutions were the grammar school and the college. Wherever the Reformation had been chiefly a religious rather than a political and ecclesiastical movement, the interest in education and the effect upon it were direct and immediate. This was true where Calvinism prevailed, as in the Netherlands, Scotland, and among the Puritans in England. Hence it is natural to find that the first effective movements in America toward the establishment of educational institutions, both elementary and higher, should have taken place in New England.

A large proportion of university graduates were included among the settlers of the Massachusetts Bay Colony. They were chiefly graduates of Cambridge, which had always been religiously more tolerant than Oxford, and especially of Emmanuel College, which was the stronghold of Puritanism at Cambridge. It was natural that these men, leaders in the affairs of the colony, should want to establish a New Cambridge University, but it is astonishing that they were able to do so as early as 1636, only six years after the founding of this colony. Two years later the college was named after John Harvard, a clergyman and a graduate of Emmanuel, who upon his death bequeathed half his estate

and all his fine library of three hundred volumes to the college. The religious motive predominated in the founding of Harvard, for though the colonists longed "to advance learning and perpetuate it to posterity," they were actuated chiefly by dread "to leave an illiterate ministry to the churches, when our present Ministers shall lie in the Dust."

Harvard remained the sole instrument in the colonies for that purpose for more than half a century. In 1693 the College of William and Mary was founded in Virginia, with the most generous endowment of any pre-Revolutionary college, generous because of the help received from the mother country. It was the child of the Church of England, and its president and its professors had to subscribe to the Thirty-nine Articles. Subscription to a religious creed was also demanded of the president and tutors of the third American college, founded in 1701. This Collegiate Institute, as it was called, moved from place to place for more than a decade, but finally it settled permanently in New Haven in 1717. It afterward received the name of Yale College in honor of Elihu Yale, who had given it generous assistance.

As a result of the founding of these three institutions, the New England and the Southern colonies had their need for ministers fairly well supplied, but this was not yet true of the Middle colonies. However, the Presbyterians had become particularly strong in the Middle colonies, and their religious zeal resulted in the establishment of the College of New Jersey, now Princeton University, in 1746.

A few years later Benjamin Franklin advanced for the college a new *raison d'être*. In 1749 he published a pamphlet entitled "Proposals Relating to the Education of Youth in Pennsylvania," in which he advocated the establishment of an academy whose purpose was not the training of ministers but the secular one of developing the practical virtue necessary in the opening up of a new country. The Academy was opened in 1751, and the charter, granted in 1755, designated the institution as "The College, Academy, and Charitable School of Philadelphia." Though the extremely modern organization and curriculum suggested

by Franklin were not realized, the institution, which was afterward called "The University of Pennsylvania," offered the most liberal curriculum of any college in the colonies up to the Revolution.

The human motive was uppermost also in the establishment of King's College in 1754. The colonial assembly desired its establishment to enhance the welfare and reputation of the colony, and the only connection between the college and the Church of England lay in the requirement that the president should be a communicant of that church and that the morning and evening service of the college should be performed out of the liturgy of that church. But the religious motive again comes to the fore in the establishment of Brown University at Providence, Rhode Island, in 1764, primarily to train ministers for the Baptist churches; of Queens, afterwards named Rutgers, in 1766, to provide ministers for the Dutch Reformed churches; and of Dartmouth, in 1769, from which it was hoped at first that the evangelization of the Indians would proceed.

Character of the colonial college

These colonial colleges in their histories bear a great resemblance to one another. They were almost all born in poverty and led a desperate financial existence for many years. In some cases survival was possible only as the result of the untiring self-sacrifice of some great personality like Eleazar Wheelock, the first president of Dartmouth; in all cases, of the devotion of teachers and officers. Their beginnings were all small; in some cases the president was the only member of the instructing staff and taught all the subjects of the curriculum. The students were few in number, the equipment was simple, the buildings usually consisting of a house for the president, in which he often heard recitations, a dormitory for the students, and a college hall. Libraries, laboratories, and recreational facilities were usually conspicuous by their absence. In fact, as the curriculum consisted almost exclusively of philosophy, Greek, Latin, rhetoric, and a little mathematics, there was no great need of much equipment. The classics were taught by the intensive grammatical method; in philosophy there was

a great deal of dialectical disputation; rhetoric was studied as an aid to oratory; mathematics included only arithmetic and geometry. The aim of instruction was, not to give a wide acquaintance with many fields of knowledge for cultural and appreciative purposes, but rather to develop power through intensive exercise upon a restricted curriculum. But the value of the materials utilized to produce power which would function in oratory, debate, and diplomacy is splendidly illustrated in the decades before the Revolution. The contest between the colonies and the mother country was essentially a rational contest in which questions of constitutional law and, indeed, of the fundamental principles of civil and political existence were debated. Splendidly did the leaders of public opinion in the colonies, almost every one of whom was a graduate of a colonial college, defend the cause of the colonists in pamphlet and debate. And when debate was followed by war, twenty-five per cent of the twenty-five hundred graduates of the colonial colleges were found in the military service of their country. At the close of the struggle for independence, it was again upon the shoulders of the men who had gained vision and character in the colonial colleges that the burden fell of organizing the mutually suspicious and antagonistic colonies into one nation. Space will not permit even of the enumeration of the great leaders who graduated from all the colonial colleges, but an idea of the service rendered by those institutions to the new nation may be obtained by mentioning the names of a few statesmen who received their instruction in one of the least of them, William and Mary. In its classrooms were taught Thomas Jefferson, Benjamin Harrison, Edmund Randolph, James Monroe, and John Marshall.

2. THE NATIONAL ERA

French influence

French influence upon American political and intellectual life had become quite pronounced as the result of the contact between the leaders of the two peoples during and after the Revolution. That influence was reflected in the colleges.

Instruction in the French language was offered in several of the colleges before the close of the eighteenth century, and a chair of French was established at Columbia as early as 1779 and at William and Mary in 1793. The secularizing influence of the French united also with the democratizing influence of the Revolution in diminishing the influence of the church upon the colleges and emphasizing the influence of the State and especially the relations between college and people. Of the fourteen colleges founded between 1776 and 1800, the majority were established upon a non-sectarian basis. These included institutions of a private nature like Washington and Lee, Bowdoin, and Union, as well as institutions closely related to the state governments like the Universities of North Carolina and of Vermont. There can hardly be any doubt that the French system of centralized administration in civil affairs influenced the establishment of the University of the State of New York. The University of the State of New York is not a local institution, but a body of nine regents elected by the legislature to control the administration of education throughout the State of New York. Though organized by Alexander Hamilton, it was in all probability much influenced by John Jay, who returned from France in 1784. But the most potent factor in the spread of French influence in the early history of our country was Thomas Jefferson. While Jefferson was American minister to France, he studied the French system of education and embodied ideas taken from it in the organization of the University of Virginia. This occupied much of his attention during the last two decades of his life. The University was to be entirely non-sectarian and had for its purpose (1) to form statesmen, legislators, and judges for the commonwealth; (2) to expand the principles and structure of government, the laws which regulate the intercourse of states, and a sound spirit of legislation; (3) to harmonize and promote the interests of all forms of industry, chiefly by well-informed views of political economy; (4) to develop the reasoning faculties of youth and to broaden their minds and develop their character; (5) to enlighten them

with knowledge, especially of the physical sciences which will advance the material welfare of the people. These progressive views of what the college should aim to do were associated with equally advanced views of college administration, such as the elective system and the importation of professors from abroad. The remarkable vision, constructive imagination, courage, and faith of Jefferson in his break with what was traditional and authoritative in education has been justified by the fine career of the university which he founded.

The state universities system

All the colleges that were established before the Revolution, and most of those between the Revolution and the year 1800, had received direct assistance from the colonial or state government either in grants of land, money, the proceeds of lotteries, or special taxes. Most of them, however, were dependent upon private foundations and controlled by denominational bodies. The secularizing influence from France, the growing interest in civic and political affairs, and the democratic spirit resulting from the Revolution combined to develop a distrust of the colleges as they were organized and a desire to bring them under the control of the state. This was apparent in 1779, when the legislature of Pennsylvania withdrew the charter of the college of Philadelphia and created a new corporation to be known as "The Trustees of the University of the State of Pennsylvania"; it was shown in 1787 when Columbia College was granted a new charter by the state legislature, under which the board of trustees were all drawn from the Board of Regents of the State; it was made most evident in 1816 when the legislature of New Hampshire transformed Dartmouth College into a university without the consent of the board of trustees and empowered the governor and council to appoint a Board of Overseers. In the celebrated Dartmouth College case, 1819, the old board of trustees, when defeated before the Supreme Court of New Hampshire in their suit for the recovery of property which had been seized, carried the case to the Supreme Court of the United States and engaged Daniel Webster as their counsel. The Court

declared the act of the New Hampshire legislature in violation of the provision of the Constitution of the United States which reads that "No state shall pass any . . . law impairing the obligation of contracts." The decision drew a sharp distinction between public and private corporations, and a necessary inference was that most of the existing institutions for higher education were in the latter class. The result was to strengthen the rising demand for publicly controlled institutions. The Southern and Western states across the Alleghanies that were on the point of framing state constitutions made provision for state universities under state control.

The intention to provide higher education freely for the people had already received its greatest impetus in an Act of Congress passed shortly after the passage of the Ordinance of 1787, providing for the organization of the Northwest Territory. By that act two entire townships of public land were reserved to the states to be erected out of the territory, the proceeds of the sale of which were to be devoted to the establishment of a state university. These universities followed swiftly upon the establishment of new states, and the democratic ideal that prevailed is shown in the determination that the state university was to be the crown of the public educational system of the state. This is well illustrated in the provision of the constitution of Indiana, adopted in the very year of the Dartmouth College decision, 1819, which reads, "It shall be the duty of the General Assembly, as soon as circumstances will permit, to provide by law for a general system of education, ascending in regular gradation from township schools to a state university, wherein tuition shall be gratis and equally open to all." Circumstances did permit in the following year, and the provisions of the bill materialized. The national policy of granting public lands for educational purposes to new states was continued, and one or two townships were devoted in each case to the establishment of a state university. National assistance to higher education was given on an immense scale in 1862, when the Morrill Act was passed pro-

viding for the grant of 30,000 acres of land for each representative and senator, to be devoted to the support in each state of a higher institution of learning, in which technical and agricultural branches should be taught. Within twenty years every state in the Union had taken advantage of this splendid endowment, either to found a new state university which would comply with the requirements as regards courses of instruction or to establish an agricultural college as an independent institution, or in connection with some already existing institution. Not only do some of the finest state universities like those of California, Illinois, and Minnesota owe their origins to the Morrill Act, but others owe to it their real beginnings as institutions of collegiate grade. Up to the passage of the Morrill Act a dozen state universities struggled to maintain themselves with meager revenues and few students. They were trying to do broad academic work, but by no means reached the standards of the strong colleges in the eastern part of the country.

The establishment of state-supported and state-controlled universities in the commonwealths organized after the close of the eighteenth century by no means put an end to the establishment of colleges upon religious foundations. Denominational zeal was very strong in the decades preceding the Civil War, and the church was the center of community life in the newly settled regions. The need to provide an intelligent ministry and also a higher civilization led to the establishment of many small sectarian colleges in the new states. Despite the fact that practically all of them would today be considered only of secondary grade, they accomplished a splendid work and provided ideals and standards of intellectual life in a new country whose population was engaged chiefly in supplying the physical needs of life. The response made in the Civil War by the institutions of higher education throughout the United States, whether privately or publicly supported, was a magnificent return for the sacrifices endured in their establishment and maintenance. Everywhere throughout the North the colleges were depleted of instructors and students who had entered the

ranks, and in the South nearly all the colleges were compelled to close their doors. Upon the shoulders of their graduates fell the burden of directing civil and military affairs in state and nation.

3. THE MODERN ERA

Were a visitor to Harvard or Columbia in 1860 to revisit it today, the changes he would observe would be startling. The elective system, graduate studies, professional and technical schools, an allied woman's college, and a summer session are a few of the most noticeable activities incorporated since 1860. It would be impossible to set any date for the beginning of this transformation, so gradual and subtle has it been, but the accession of Dr. Charles W. Eliot to the presidency of Harvard College in 1869 and the establishment of Johns Hopkins University in 1876 are definite landmarks.

This chapter is a history of the American college, and space will not permit of a detailed description of these activities but simply of a narration of the way they developed and of the forces which brought them into being.

The curriculum and the elective system

It has already been mentioned that the curriculum of the average American college at the beginning of the nineteenth century differed but little from the curriculum followed in the middle of the seventeenth. The reason is simple. The curriculum is based upon the biological principle of adaptation to environment, and the environment of the average American of 1800 differed but slightly from his ancestor of a century and a half previous. The growth of the curriculum follows, slowly it is often true, upon the growth of knowledge. The growth of knowledge during the seventeenth and eighteenth centuries was slow and insignificant compared to its marvelous growth in the nineteenth century, particularly in the last half of it. The great discoveries in science, first in chemistry, then in physics and biology, resulted in their gradually displacing much of the logic and philosophy which had maintained the prime place

in the old curriculum. The interest aroused in the French language and literature by our Revolution; in the Spanish by the South American wars of independence; and in the German by the distinguished scholars who studied in the German universities during the middle decades of the nineteenth century, caused a demand that those languages as well as English have a place in the curriculum. This could be secured only by making them partly alternatives to the classical languages. The Industrial Revolution, based as it was upon the application of science to industry, not only gave an impetus to the establishment of technical schools, but by revolutionizing the production and distribution of wealth pushed into the curriculum the science that deals with wealth, political economy. The growth of cities that followed in the wake of the Industrial Revolution, the conflicts between the interests of classes,— viz., landowners, capitalists, and laborers,— the rapid decay of feudalism and the spread of political democracy following the French Revolution, the expansion of commerce to all corners of the globe and the resulting development of colonialism, all these human interests gave a new meaning to the study of history and politics which caused them to secure a place of great prominence in the curriculum during the last quarter of the nineteenth century.

It is perfectly obvious that as the time at the student's disposal remained the same, if he were to pursue even a part of the new subject matter that was gradually admitted into the curriculum, the course of study could no longer remain wholly prescribed and he would have to be granted some freedom of choice. The growth in number of students also produced changes in administration favorable to the introduction of the elective system. In the early history of the American college one instructor taught a single class in all subjects, and it was not until 1776 that the transfer was made at Harvard from the teaching of classes by one instructor to the teaching of each subject by one instructor. With increase in numbers the students were unable to receive in each year instruction by every member of the teaching

staff. In spite of the quite obvious advantages of the elective system, it was obstinately resisted by the defenders of the classics and also of orthodox religion and at first made but slow progress. Thomas Jefferson gave it the first great impetus when he made it an essential element in the organization of the University of Virginia in 1825. Francis Wayland, president of Brown University and one of the few college presidents of his day who were educators in the modern sense, made a splendid exposition and defense of it in 1850 in his "Report to the Corporation of Brown University on Changes in the System of Collegiate Education." But the elective system waited upon the elevation of Charles W. Eliot to the presidency of Harvard in 1869 for its general realization; in 1872 the senior year at Harvard became wholly elective; in 1879, the junior year; in 1884, the sophomore year; and in 1894 the single absolute requirement that remained in the entire college course was English A. The action of Harvard was rapidly imitated to a more or less thorough extent throughout the country.

Probably no two colleges administer the elective system in the same way. There has been a considerable revulsion of opinion against unrestricted election of individual subjects. In many colleges the subjects of the curriculum were arranged into groups which must be elected *in toto*. This resulted in the multiplication of bachelor's degrees, each indicating the special course — arts, science, philosophy, or literature — which had been followed. At the present time the tendency is to prescribe the subjects considered essential to a liberal education chiefly in the first two years and to permit election among groups of related courses in the last two. This has maintained the unity that formerly prevailed and introduced greater breadth into the curriculum. It has also brought the new bachelor's degrees into disfavor, and today the majority of the best colleges give only the A.B. degree for the regular academic course. Valuable modifications in the elective system are constantly being adopted. One such is the preceptorial system at Princeton and elsewhere, under which the preceptors personally super-

vise the reading and study of a small group of students and can therefore advise them from personal knowledge of their capacity. Another is the system of honor courses adopted at Columbia and elsewhere, whereby a distinction is made between mere "passmen" and students desirous of attaining high rank in courses that are carefully organized in sequence.

German influence and graduate study

The introduction of new subjects into the curriculum of the college and the adoption by it of the elective system owe much to German influence upon American education. Though this influence was partly exerted by the study of the German language and literature, it resulted chiefly from the residence of American students at German universities. The first American to be granted the degree of Doctor of Philosophy from a German university was Edward Everett, who received it at Göttingen in 1817. He was followed by George Ticknor, George Bancroft, Henry W. Longfellow, John Lothrop Motley, Frederick Henry Hedge, William Dwight Whitney, Theodore Dwight Woolsey, and a host of scholars who shed luster upon American education and scholarship in the mid-nineteenth century. Most of these men became associated with American colleges in some capacity and had a profound influence upon their ideals, organization, and methods of teaching. They came back devoted advocates of wide and deep scholarship, of independent research, and of the need of such scholastic tools as libraries and laboratories. But especially did they give an impetus to the movement in favor of freedom of choice *(Lernfreiheit)* in studies. Only by the adoption of such a principle could the pronounced tastes or needs of individual students be satisfied.

Some slight effort had been made in the first four decades of the nineteenth century by a few of the colleges to conform to the desire of students for further study in some chosen field, but the results were negligible. In 1847 Yale established a "department of philosophy and the arts for scientific and graduate study leading to the degree of bachelor of philosophy." The first degree of doctor of philos-

ophy was bestowed in 1861, but a distinct graduate school was not organized until 1872. Harvard announced in the same year the establishment of a graduate department to which only holders of the bachelor's degree would be admitted and in which the degrees of doctor of philosophy and doctor of science would be conferred. The graduate department was not made a separate school, however, until 1890.

The greatest impetus to the establishment of graduate schools in the American universities was made by the establishment of Johns Hopkins University in 1876. Upon its foundation the chief aim was announced to be the development of instruction in the methods of scientific research. The influence of this institution upon the development of higher education in the United States has been incalculably great. Johns Hopkins was not a transplanted German university. The unique place of the college in American education was shown by the fact that graduate schools have followed the lead of Johns Hopkins in building upon the college. Even Clark University at Worcester, founded in 1889 upon a purely graduate basis, established an undergraduate college in 1902.

One of the most gratifying features of higher education in the United States during the past quarter century has been the extension of graduate schools to the strong state universities. Research work in them usually began in the school of agriculture, where the intensive study of the sciences, particularly chemistry and biology, had such splendid results in improved farming and dairying that legislatures were gradually persuaded to extend the support for research to purely liberal studies. With the growth and development of graduate schools in this country, the practice of going to Europe for advanced specialized study has abated considerably. It will probably so continue in the future, particularly with regard to Germany. On the other hand, should the new ideal of international good will become a living reality, education through a wide system of exchange professors and students may be expected to make its contribution.

Technical and professional study

While the graduate school was built upon the college, the technical school grew up by the side of it or upon an independent foundation. The first technical school was established at Troy, New York, in 1824, and was called Rensselaer Polytechnic Institute, after its founder, Stephen Van Rensselaer. For a score of years no other development of consequence was made, but in 1847 the foundations were made of what have since become the Lawrence Scientific School at Harvard and the Sheffield Scientific School at Yale. The passage of the Morrill Act in 1862 had a quickening effect on education in engineering and agriculture. In the decade from 1860 to 1870 some twenty-two technical institutions were founded, most of them by the aid of the land grants. The most important of them is the Massachusetts Institute of Technology, where instruction was first given in 1865 and which has exerted by far the greatest influence upon the development of scientific and technical education. The best technical schools require a high school diploma for admission and have a four-year course of study, but the only technical school on a graduate basis is the School of Mines at Columbia University.

Professional education in theology, law, and medicine in the United States was conducted chiefly upon the apprenticeship system down into the nineteenth century. Though chairs of divinity existed in the colonial colleges in the eighteenth century, systematic preparation for the ministry was not generally attempted and the prospective minister usually came under the special care of a prominent clergyman who prepared him for the profession. In 1819 Harvard established a separate faculty of divinity, and three years later Yale founded a theological department. Since then about fifty colleges and universities have established theological faculties and about 125 independent theological schools have been founded as the result of denominational zeal. A majority of all these institutions require at least a high school diploma for admission; half of them require a college degree. Nearly all offer a three-year course of study and confer the degree of bachelor of divinity.

Previous to the Civil War the great majority of legal practitioners obtained their preparation in a law office. Though the University of Pennsylvania attempted to establish a law school in 1791, and Columbia in 1797, both attempts were abortive, and it remained for Harvard to establish the first permanent law school in 1817. Even this was but a feeble affair until Justice Joseph Story became associated with it in 1830. Up to 1870 but three terms of study were required for a degree; until 1877 students were admitted without examination, and special students were admitted without examination as late as 1893. Since then the advance in standards has been very rapid, and in 1899 Harvard placed its law school upon a graduate basis. Though but few others have emulated Harvard in this respect, the improvement in legal education during the past two decades has been marked. Of the 120 law schools today, the great majority are connected with colleges and universities, demand a high school diploma for admission, maintain a three-year course of study, and confer the degree of LL.B. Twenty-four per cent of the twenty thousand students are college graduates. In some of the best schools the inductive method of study — i.e., the " case method "— has superseded the lecture, and in practically all the moot court is a prominent feature.

Entrance into the medical profession in colonial times was obtained by apprenticeship in the office of a practicing physician. The first permanent medical school was the medical college of Philadelphia, which was established in 1765 and which became an integral part of the University of Pennsylvania in 1791. Columbia, Harvard, and Dartmouth also founded schools before the close of the eighteenth century, and these were slowly followed by other colleges in the early decades of the nineteenth century. During almost the entire nineteenth century medical education in the United States was kept on a low plane by the existence of large numbers of proprietary medical " colleges " organized for profit, requiring only the most meager entrance qualifications, giving poor instruction, and having very inadequate

equipment in the way of laboratories and clinics. In fact, medical education did not obtain a high standard until the establishment of the Johns Hopkins Medical School in 1893. Since then the efforts of the medical schools connected with the strong universities and of the Rockefeller Foundation to raise the minimum standard of medical education have resulted in the elimination of the weakest medical schools. The total number fell from 150 in 1900 to 100 in 1914. Not all of these demand a high school diploma for admission, though the tendency is to stiffen entrance requirements, but all have a four-year course of study. In most institutions experience in laboratory, clinic, and hospital has superseded the old lecture system as the method of instruction. Closely associated with the progress in medicine and to a great extent similar in history has been the progress in dentistry and pharmacy. There are now fifty schools of dentistry, with nearly 9000 students, and seventy-two schools of pharmacy, with nearly 6000 students.

One of the most gratifying advances in professional education has been that of the teacher. Practically all the state universities and many of the universities and colleges upon private foundations have established either departments or schools of education which require at least the same entrance qualifications as does the college proper and in many cases confine the work to the junior and senior years. Teachers College of Columbia University is on a graduate basis. Though many of the 250 training and normal schools throughout the country do not require a high school diploma for admission, the tendency is wholly in that direction. In no field of professional education has the application of scientific principles to actual practice made such progress as in that of the teacher.

College education for women — The independent college

Few movements in the history of American education had more important results than the academy movement which prevailed during the period between the Revolution and the Civil War. Possibly the principle upon which the new nation was established, i. e., the privilege of every individual to make the most of himself, influenced the founders of the

academies to make provision for the education of girls beyond the mere rudiments. Certainly this aspect of the movement had a far-reaching influence. Some of the earliest of the academies admitted girls as well as boys from the beginning, and some soon became exclusively female. When it became evident from the work of the academies that sex differences were not of as great importance as had been supposed, it was not a long step to higher education. Some of the academies added a year or two to the curriculum and took on the more dignified name of "seminary." In this transition period the influence of a few great personalities was profound, and even a brief sketch of the history of women's education cannot omit to mention the splendid work of Emma Willard and Mary Lyon. Mrs. Willard was an exponent of the belief that freedom of development for the individual was the greatest desideratum for humanity. She not only diffused this idea in her addresses and writings but tried to utilize it in the establishment in 1814 of the Troy Female Seminary, which was the forerunner of many others throughout the country. Mary Lyon was rather the representative of the religious influence in education, the embodiment of the belief that to do one's duty is the great purpose in life. In 1837 she founded Mount Holyoke Seminary, which had an influence of inestimable value in sending well-equipped women throughout the country as teachers. The importance of this service was particularly evident during the period of the Civil War.

Although a number of excellent institutions for women bearing the name of college were founded before the Civil War, the first one of really highest rank was Vassar College, which opened its doors to students in 1865. Smith and Wellesley were founded in 1875, and Bryn Mawr in 1885. These four colleges are in every respect the equal of the best colleges for men. They are the most important of a dozen independent colleges for women, almost all of which are situated in the East. To establish the independent college was the chief method adopted in the older parts of the country to solve the problem of women's higher education,

rather than to reorganize colleges for men where conditions were already established.

The development of coeducation

The independent college is not the method that has prevailed in the West. When the inspiration to higher education for women arrived west of the Alleghanies, conditions, especially lack of resources, practically necessitated coeducation. Oberlin, founded in 1834, was the first fully coeducational institution of college grade in the world. In 1841 three women received from it the bachelor's degree, the first to get it. Oberlin's success had a pronounced influence on the state universities, which, it was argued, should be open and free to all citizens, since they were supported by public taxation. Almost all the state universities and the great majority of the colleges and universities on private foundations are today coeducational. The results predicted by pessimists, viz., that the physical health of women would suffer, that their intellectual capacity would depreciate scholarship, and that the interests of the family would be menaced, have not eventuated.

The affiliated college for women

The spread of coeducation in the state universities of the West and the South and its presence in the newer private universities like Cornell and Chicago had an influence upon the older universities of the East. This influence has resulted in a third method of solving the problem of women's education; viz., the establishment of the affiliated college. Several universities have established women's colleges, sometimes under the same and sometimes under a different board of trustees, to provide the collegiate education for women which is given to men by the undergraduate departments. Barnard College, affiliated with Columbia University, Radcliffe College, affiliated with Harvard University, Woman's College, affiliated with Brown University, the College for Women, affiliated with the Western Reserve University, and the H. Sophie Newcomb Memorial College for Women, affiliated with Tulane University, have all been founded within the past forty years.

Graduate and professional studies for women

All the universities for men except Princeton and Johns Hopkins and all the fully coeducational institutions admit

women upon the same terms as men to graduate work. Graduate work is also undertaken with excellent results in some of the independent women's colleges, as at Bryn Mawr. Professional education for women has been coeducational from the beginning, with the exception of medicine. The prejudice against coeducation in that profession was so strong that five women's medical schools were organized, but they provide instruction for little more than a quarter of the women medical students. The increase in the number of women in professional schools has not by any means kept pace with the increase in the colleges. It appears that, with the exception of teaching, woman is not to be a very important factor in the learned professions in the near future.

Undergraduate life — Fraternities

Nothing differentiates more clearly the American college from European institutions of higher education than the kind of non-scholastic activities undertaken by the students. From the very beginning the college became a place of residence as well as of study for students from a distance, and the dormitory was an essential element in its life. With increase in numbers, especially after the Revolution, when all distinctions of birth or family were abolished, students naturally divided into groups. The first fraternity, Phi Beta Kappa, was founded in 1776 at William and Mary, with a patriotic and literary purpose, and membership in it has practically ever since been confined to graduates who have attained high scholastic standing. When one speaks of college fraternities, however, he does not refer to Φ B K, but to one of the intercollegiate social organizations which have chapters in several colleges organized somewhat upon the plan of a club and whose members live in a chapter house. The first such fraternity was founded at Yale in 1821, but it was limited to the senior class. The three fraternities established at Union in 1825–1827 form the foundation of the present system. The fraternities spread rapidly and are today very numerous. There are about thirty of national importance, having about a thousand chapters and a quarter of a million members. The fraternity system is

bitterly attacked as being undemocratic, expensive, emphasizing social rather than scholastic attainments, and, generally speaking, a divisive rather than a unifying factor in college life. Hence some colleges have abolished it. Fraternities have been defended, however, as promoting close fellowship and even helping to develop character. So strongly are they entrenched, not only in undergraduate but also in alumni affection, that they probably form a permanent element in college life.

Religious life

The early American college was primarily a place to prepare for the ministry, and personal piety was a matter of official enforcement. For a number of reasons religious zeal declined in the eighteenth century. After the Revolution, under the influence of the new political theories and of French skepticism the percentage of students professing to be active Christians fell very low. In the early nineteenth century the interest of students in religion increased, and religious organizations in a number of colleges were founded. Practically all of these later gave way to the Young Men's Christian Association, which has now over 50,000 members organized in almost all the colleges of the country save the Roman Catholic. The religious interests of Roman Catholic students are in many colleges served by the Newman Clubs and similar organizations, and of Jewish students by the Menorah Society. The religion of college students has become less a matter of form and speech and more a matter of service — social service of many kinds at home and missionary service abroad.

Physical education

The educational reformers of Europe in the late eighteenth and early nineteenth centuries placed great emphasis upon a more complete physical training. This interest was felt in the United States, and simple gymnastic apparatus was set up at Harvard and Yale in 1826. The movement spread very slowly, however, due probably to ignorance of its real physiological import. Since the Civil War the development of the gymnastic system has been rapid, and now practically every first-class college has its gymnasium, attendance upon which is compulsory, and some have their

stadium and natatorium. Of independent origin but hastened by the spread of the gymnasium is the vast athletic interest of undergraduates. Its earliest form, conducted on a considerable scale, was rowing. The first rowing club was formed at Yale in 1843, and the first intercollegiate race was rowed on Lake Winnepesaukee in 1852, Harvard defeating Yale. Rowing is now a form of athletics at every college where facilities permit. The first baseball nine was formed at Princeton in 1859, and the game spread rapidly to all the other colleges. Football in a desultory and unorganized way made its appearance early in the nineteenth century. As early as 1840 an annual game was played at Yale between the freshmen and the sophomores, but the establishment of a regular football association dates from 1872, also at Yale. In the following year an intercollegiate organization was formed, and since then football has increased in popularity at the colleges to such an extent that just as baseball has become the great national game, so has football become the great American collegiate game. Track athletics is the most recent form of athletic sports to be introduced into the college, and most colleges now have their field days. In addition to these four major forms of college sports, tennis, lacrosse, basketball, and swimming also have a prominent place. The four major sports are usually under the control of special athletic associations, which spend large sums of money and have a great influence with the students. In fact, so great has become the interest of college students in athletics that much fear has been expressed about its influence upon scholastic work, and voices are not lacking demanding its curtailment.[1] Military training is a phase of physical education which, though it had earlier found a place in the land-grant institutions, came to the fore as a part of the colleges' contribution to winning the world war. Students' Army Training Corps were established at many of the higher institutions of the country, and the academic studies were made to correlate with the military work as a nucleus. At the present time, however, the colleges are

[1] W. T. Foster in N. E. A. Reports, 1915.

putting their work back on a pre-war basis, and it seems most unlikely that military training will survive as a corporate part of their work.

Student literary activities — College journalism

Journalism, though its actual performance is limited to a small number of students, has had an honored place as an undergraduate activity for almost a hundred years. It served first as a means of developing literary ability among the students, afterwards as a vehicle for college news, and now there has been added to these purposes the uniting of alumni and undergraduates. Hence we find among college journals dailies, monthlies, and quarterlies, some of them humorous and some with a serious literary purpose. Journalism is not the only method of expressing undergraduate thought. There has been a great revival of intracollegiate and of intercollegiate debating in recent years. Literary societies for debating the great issues preceding the Revolution was the first development of undergraduate life, and every college before and after the Revolution had strong societies. As undergraduate interests increased in number, and especially as the fraternity system began to spread, debating societies assumed a relatively less important place, but in the past two decades great interest has been revived in them. The glee club, or choral society, along with the college orchestra, minister to the specialized interests of some students, and the dramatic association to those of others. One significant result of such activities has been to establish a nexus between the college and community life.

Student self-government

One other feature of undergraduate life cannot be overlooked; viz., student self-government. The college student today is two or three years older than was his predecessor of fifty or sixty years ago. Moreover, with the great increase in the number of students has come a parallel increase in complexity of administration and in the duties of the college professor. Finally, a sounder psychology has taught the wisdom of placing in the hands of the students the control of many activities which they can supervise better than the faculty. As a result of these and of other

influences, in many colleges today all extra-scholastic activities are either supervised by the student council, the members of which are elected by the students, or by a joint body of student and faculty members. The effect in almost every instance has been the diminution of friction between the faculty and students and the development of better relations between them. In some colleges the honor system is found, under which even proctoring at examinations does not exist, as all disciplinary matters, including the decision in serious offenses like cheating, rest with the student council. Student self-government is only one evidence of the democratization that has taken place in the administration of the college during the past two decades. Even more noticeable than student self-government is the tendency recently manifested to transfer more of the control of the government of the college from the board of trustees to the faculty.

New opportunities in higher education

With the extension of commerce and the attempt to bring it under efficient organization in the nineteenth century, the demand has been made upon the colleges to train experts in this field. Germany was the first to engage in it, and just before the war probably led the world. France and England have remained relatively indifferent. In America, the so-called "business college" proved entirely too narrow in scope, and beginning with the Wharton School of Finance and Commerce of the University of Pennsylvania (1881), the higher institutions have begun to train for this important field. Some of the colleges of commerce, like those of Dartmouth and Harvard, demand extensive liberal preparation; others, like Wharton and the schools connected with the state universities, coördinate their liberal and vocational work; a few, like that of New York University, give almost exclusive attention to the practical element.

Two other movements might be mentioned as illustrating the attempt to extend the opportunity for higher education to an ever increasing number of people. One is the development of extension courses and the other the offering of evening work to those who cannot attend the regular sessions. These are both steps in the direc-

tion of equality of opportunity which is the ultimate aim of education in a democratic country.

The future of the college in American education — Relation to secondary schools

The college preceded the high school in time, and when the high school began its career in the middle of the nineteenth century it was made tributary to the college in all essentials. By deciding requirements for admission, the college practically prescribed the curriculum of the high school; by conducting examinations itself it practically determined methods of teaching in the high school. But a remarkable change in these respects has taken place in the past two decades. The high school, which is almost omnipresent in our country, has attained independence and today organizes its curricula without much reference to the college. If there be any domination in college entrance requirements today, it is rather the high school that dominates. Over a large part of the country, especially in states maintaining state universities, there are now no examinations for entrance to college. The college accepts all graduates of *accredited* high schools — i. e., high schools that the state university decides maintain proper secondary standards. This growth in strength and independence has been accompanied by a lengthening of the high school course from two years in the middle of the last century to four years at the present time.

The junior college

With the introduction of the principle of promotion by subject instead of by class, the strong high schools have been enabled to undertake to teach subjects in their last years which were formerly taught in the first years of the college. They have done this so well that the practice has grown up in some parts of the country, especially on the Pacific Coast, of extending the course of the high school to six years and of completing in them the work of the first two years of college. This enables more young men and women throughout the state to receive collegiate education, and as the best-equipped teachers in the high schools are usually in the last years and the worst-equipped teachers in the college are usually in the

first years, the system makes for better education. Moreover, it relieves the state universities of the crowds of students in the first two years and permits overworked professors to concentrate upon the advanced work of the last two years and upon research work in the graduate schools. A system which offers so many advantages and is so popular both in the high school and the university bids fair to spread.

The abbreviated and condensed college course

While the movement making for the elimination of the college from below has been taking place in the West, another movement having the same effect has been taking place in the East, only the pressure has been from above. The tendency is spreading for the professional schools of the strong universities to demand a college degree for admission. If the full four years of the college are demanded in addition to the four years of the secondary school and the eight years of the elementary school, the great majority of students will begin their professional education at twenty-two and their professional careers at twenty-six, and they will hardly be self-supporting before thirty. This seems an unreasonably long period of preparation compared to that required in other progressive countries. The German student, for example, begins his professional studies immediately upon graduation from the gymnasium at eighteen. Hence the demand has arisen for a shortening of the college course. This demand has been met in several ways. In some colleges the courses have been arranged in such a way that the bright and industrious student may complete the work required for graduation in three years. In others, as at Harvard, the student may elect in his senior year the studies of the first year of the professional school. Another tendency in the same direction is to permit students in the junior and even in the sophomore years to elect subjects of a vocational nature. This has been bitterly contested by those who hold that the minimum essentials of liberal culture should be acquired before vocational specialization begins. Columbia *permits* a student to complete his college

and professional studies in six years, and at the end of that time he receives both the bachelor's and the professional degrees.

It is to be noted, however, that these solutions of the problem and, in fact, most other solutions that have been suggested, apply only to a college connected with a university; they could not be administered in the independent college. But a movement has developed in the Middle West which may result in another solution; i. e., the Junior College. It can be best understood by reference to the policy of the University of Chicago. That institution divides its undergraduate course into two parts: a Junior College of two years, the completion of whose course brings with it the title of Associate in Arts, and a Senior College of two years, the completion of whose course is rewarded with the regular bachelor's degree. There have become affiliated with the University of Chicago a considerable number of colleges throughout the Mississippi Valley which have frankly become Junior Colleges and confine their work to the freshman and sophomore years. And this has become true of other universities. It would seem inevitable that the bachelor's degree will finally be granted at the end of the Junior College and some other degree, perhaps the master's, which has an anomalous place in American education in any case, at the end of the Senior College. This has, in fact, been suggested by President Butler. The University of Chicago has also struck out in another new direction. Provided a certain amount of work is done in residence at the University, the remainder may be completed *in absentia*, i. e., through correspondence courses.

The Junior College movement has had the excellent result of inducing many weak colleges to confine their work to what they really can afford to do. Many parts of our country have a surplus of colleges, chiefly denominational. Ohio alone has more than fifty. The cost of maintaining dormitories, laboratories, libraries, apparatus, and other equipment and paying respectable salaries cannot be met by the tuition fees in any college. The college must either

have a large income-producing endowment, which few have, or must receive gifts sufficient to meet expenses. Gifts to colleges and universities form one of the finest evidences of interest in higher education in the United States, and reach really colossal proportions. In the past fifty years, during which this form of generosity has prevailed, over 600 million dollars have been given, and in 1914 gifts from private sources amounted to more than 30 million dollars. Most of this money is given to the non-sectarian institutions and not to the small denominational colleges scattered over the country. As they are in addition unable to compete with the state universities, they are for every reason justified in becoming Junior Colleges. But this does not apply to the old independent colleges, such as Amherst, Williams, Dartmouth, etc., which have loyal and wealthy alumni associations. They have the support necessary to retain the four-year course and seem determined to do so.

Just what the outcome of the whole question of shortening the college course may be is not now evident. That concessions in time must be made to the demand for an earlier beginning of professional education seems certain. That the saving should be made in the college course is not so certain. A sounder pedagogy seems to indicate that one year, if not two, can be saved in the period from the sixth to the eighteenth year. It is probable that the arbitrary division of American education into elementary, secondary, collegiate, and university, each with a stated number of years, will give way to a real unification of the educational process. Most Americans would regret to see the college, the unique product of American education, which has had such an honorable part in the development of our civilization, disappear in the unifying process.

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II

PROFESSIONAL TRAINING FOR COLLEGE TEACHING

Introduction

WERE this chapter to be a discussion of schemes of training, now in operation, that had been devised to prepare teachers for colleges, it could not be written, for there are no such schemes. Many elementary and secondary teachers have undergone training for their life work, as investigators have, by a different regimen, of course, for theirs. But if college and university teachers do their work well, it is because they are born with competence for their calling, or were self-taught, or happened to grow into competence accidentally, as a by-product of training for other and partly alien ends, or learned to teach by teaching.

There are able college men, presidents and others, who view this situation with equanimity, if not with satisfaction. Teachers are born, not made, it is said. Can pedagogy furnish better teachers than specialized scholarly training? it is asked. If we train definitely for teaching, we shall diminish scholarship, cramp and warp native teaching faculty, and mechanize our class procedure, it is objected.

Had the subject of training for college teaching been discussed, no doubt other objections would have been advanced. But it has not been discussed, as will be seen from the very scant bibliography at the end of the chapter. No plan of training for college teaching is in operation, and no discussion of such a plan can be found. Each of a half-dozen men has argued his individual views, and elicited no reply.

This state of facts notwithstanding, the subject is well worth discussing, and one may even venture to prophesy that in a decade, or at latest two, the subject will have a respectable literature, and enough training plans will be in operation to permit fruitful comparisons.

When specific training is first urged for specialized work, there always is opposition. The outgoing generation remembers the opposition to specialized training for law, medicine, and engineering, to say nothing of farming, school teaching and business. But in spite of obstructive and retarding objections, specialized types of training for specialized types of work have grown in number and favor, and today we are being shown convincingly that nations which have declined to set up the fundamental types of special training find themselves able to make effective only a fraction of their resources. The majority of the personnel in every higher calling has about average native aptitude for it, and it is just the average man who can be improved in competence for any work by training directed to that end rather than to another. This is, of course, true of college teaching.

How the college teacher has been and is trained

In early days in this country the great majority of college teachers were clergymen, trained in most cases abroad. Later bookish graduates came to be the chief source of supply, their appointment in their own colleges, and infrequently in others, following close upon their graduation. Well into the third quarter of last century college faculties were selected almost exclusively from these two types, representatives of the former decreasing and of the latter increasing in relative number. Neither type was specifically trained for teaching in colleges or elsewhere.

With the founding and developing of Johns Hopkins University a new era in higher education opened in this country. The paucity of exact scholarship came to be known, and the country's need of scholarship to be appreciated. In colleges grown from English seedlings we sought to implant grafts from German universities. Independent colleges and colleges within universities, while still called upon by American traditions and needs to prepare their students for enlightened living by means of a broadening and liberating training, came to be manned preponderatingly by narrowly specialized investigators, withdrawn from everyday life, with concentrated interests

focused upon subjects or parts of subjects, rather than upon students. Little thought was, or is yet, given to the preparation of college teachers for their duties as teachers, and that little rested, and still in large measure rests, satisfied with the assumption that by some unexplained and it may be inexplicable transfer of competence a man closeted and intensively trained to search for truth in books and laboratories emerges after three or more years well equipped for divining and developing the mental processes and interests of freshmen.

Once fairly examined, this assumption lacks plausibility. "We consider the Ph.D. a scholar's degree and not a teacher's degree," says the dean of one of our leading graduate schools, and yet preparation for this scholar's degree has been and is practically the only formal preparation open to college teachers in this country.

Equipment needed by college teachers

It goes without saying that scholarship is one of the basal needs of college teachers, a scholarship that keeps alive, and is human and contagious. But it should be remembered that there are several kinds of scholarship, and it is pertinent to ask what kind college teachers need. Should they, for instance, model themselves on the broad shrewdness and alluring scholarly mellowness of James Russell Lowell or on the untiring encyclopedic exactitude and minuteness of Von Helmholz? Or is there an even better ideal or ideals *for them?* I would suggest that the teacher's knowledge of his subject should, essentially, be of a kind that would keep him in intellectual sympathy with the undeveloped minds of his students, and this means chiefly two things. The more points of contact of his knowledge with the past experience and future plans of his students the teacher has at his command, the better teacher he will be; for he can use them, not as resting places, but as points of departure for the development of phases of his subject outside the students' experience. And secondly, the teacher should see his subject entire, with its parts, as rich in number and detail as possible, each in its proper place within the whole. For the students' knowledge of

the subject is vague and general; he is trying to place it, and many other new things, in some kind of a coherent setting; in fact, he is in college largely for the very purpose of working out some sort of rudimentary scheme of things. The duty of the college teacher is to help him in this quite as much as to teach him a particular subject. And, besides, each particular subject can be best taught if advantage is taken of every opportunity to attach it to the only knowledge of it the student has, vague and general though it be. Highly specialized and dehumanized knowledge is not as useful for the college teacher as broad and vital knowledge, which is, of course, much harder to acquire. Even in the case of "disciplinary" subjects, there is no gain in concealing the human bearings. The teacher should be trained to seize opportunities in the classroom and out to help the student, through his subject and his maturer life experience, to see the bearing of what he is learning on the life about him and on the life he is to lead. This is the college teacher's richest opportunity and the opportunity that tries him most shrewdly. If he is to rise to it, his entire equipment, native and acquired, must come into play.

What else does the teacher need? So that he may select the best and continue to improve them, he needs a knowledge of the different methods and aims in the teaching of his subject, and, so far as possible, of the results attained by each. Too much of college teaching is a blind groping, chartless and without compass. Instead of expecting each inexperienced teacher to start afresh, he should set out armed with the epitomized and digested teaching experience of those that have gone before him.

Finally, the teacher needs a sympathetic and expert understanding of the thinking and feeling of college students. This should be his controlling interest. The teacher, his interest in his subject, and in all else except the student, should be instrumental, not final. Every available strand of continuity between studenthood and teacherhood should thereafter be preserved.

This need suggests a capital weakness of the training for the doctorate in philosophy as a preparation for teaching. As it proceeds it shifts the interest from undergraduate student to scholarly specialty, and steadily snaps the ties that bound the budding investigator to his college days. It also explains the greatness of some college teachers and personalities before the eighties. Their degrees in arts were their licenses to teach. They suffered no drastic loss of touch with undergraduate thought and life. In the early years of their teaching this sympathetic and kindly understanding was fresh and strong, and they used it in their classroom and wove it into the tissue of their tutorial activities. A discerning observer of college faculties can even today discover in them men and women who entered them by the same door as these great ones of old, irregularly as we would say now,— without the hallmark, and whose good teaching is a surprise to their doctored colleagues. In one institution I know of, the best five teachers some years ago were all of this type. The training of college teachers might well, it therefore seems, include an apprenticeship, beginning with, or in exceptional cases before, graduation from college.

The college legislator and administrator

But the duties and opportunities of the college teacher do not stop at the door leading from his classroom. In addition to dealing directly with students, individually and in groups, and even, if possible, with their families, as he grows in service he becomes, as faculty member and committeeman, a college legislator and administrator. In exercising these important functions he needs the equipment that would aid him to take the central point of view, a background of scholarly knowledge of what education in general and college education in particular are in their methods and in their social functions and purposes. There is too much departmental logrolling as well as too much beating of the air in faculty meetings, and too many excursions into the blue in faculty legislation and administration arrangements. The educational views of faculty members greatly need to be steadied, ordered, and ap-

preciably broadened and deepened by a developed and trained habit of thinking educationally under the safeguards of scientific method and on the basis of an adequate supply of facts. That pedagogy has made but the smallest beginning of gathering and ordering such facts and developing a scientific method in this field is not a valid objection. These tasks are no more difficult than others that have been compared, as *they* will be, the sooner for being imposed.

It is significant that coincident with sharp and widespread criticism of the American college (justified in part by what college teachers have been made into by their training), appear demands on the part of faculties for more power. In this connection it may be remembered that autocracy is the simplest and easiest form of government, and that history shows that it can at least be made to work with less brains and training than are required for the working of democracy. As American colleges and universities have grown in complexity and responsibility, their faculties have lost power because they did not acquire the larger competence that was the indispensable condition of even reasonably successful democratic control. It is highly desirable that the power of faculties should increase to the point of preponderance. But the added power they will probably acquire will not be retained unless faculty members learn their business much better than they now know it in most institutions. Thomas Jefferson, when asked which would come to dominate, the states or the federal government, replied that in the long run each of the opposed pair would prevail in the functions in which it proved the more competent.

A tentative scheme of training for college teachers

To outline a scheme of such importance without any experience to examine as a basis is a very bold undertaking, and one that can hope for but partial success. What I shall propose, however, is similar to the proposals of Pitkin (5), Horne (11), and Wolfe (14), my only predecessors in this rash enterprise. The general spirit and purpose of our proposals are the same. But we dis-

agree more or less in details — which is fortunate, as it may encourage discussion of the subject, which is the thing most needed. Indeed, a lively sense of this need has led me to venture some unpopular assertions. It may also be admitted that the desiderata for teachers mentioned above are not likely to be all insured by any system of training.

The proposal submitted for discussion is that a three-year graduate course be established, its spirit and purpose being to train young men to become *college* teachers. This course should lead to a doctorate; e. g., to the degree of Doctor of Philosophy, or of Doctor of Philosophy in Teaching, or of Docendi Doctor. What degree is selected is, in the long run, relatively unimportant, provided the course is soundly conducive to its end.

The course might well be divided into three parts, having the approximate relative value in time and effort of two fifths, two fifths, and one fifth. These parts should proceed simultaneously throughout the three years, the first being an apprenticeship — under supervision, of course — in the functions of the college teacher, the second a broad course of study and investigation of the subject to be taught, and the third a course of pedagogical study and investigation. Let me suggest a minimum of detail within these outlines.

The apprentice teacher would, naturally, do the least classroom teaching during his first year, and the most during his last. He would also each year "advise" a group of freshman in studies and in life, or coöperate with students in the conduct of athletics, dramatics, publication work, or other "activities." On all this apprentice work he would report, and in all he would be guided and supervised appropriately by the department whose subject he was teaching, by the department of education, and by other departments concerned. This and other parts of the training would attract others in addition to narrowly bookish graduates, something much to be desired (other parts would eliminate those not bookish enough), and would tend to keep alive in all apprentices an interest in students,

especially in student character, and to prevent them from thinking of students as disembodied minds.

The course of study and investigation in the subject to be taught should be based on adequate undergraduate work in the same and allied fields, and should be something like the honor course in Oxford or Cambridge (or our *old* M.A. course) in its conduct and purpose; it should hark back to our collegiate origin in England. The work should be in charge of a don, a widely and wisely read and a very human guide, philosopher, and friend. Stated class meetings and precise count of hours of attendance should receive little emphasis. But wide reading of the subject, in a spirit that breeds contagion, running off into a study, in books, laboratories, and meetings, of the human and practical bearings of the subject, should be required, and enough conference with the don should be had to enable him to judge and criticize the student's plan and amount of work, to test his mettle in handling the subject, and to aid him to grasp it as a whole and in its chief subdivisions, and to get glimpses of its bearings on and place in human life. This part of the training should lead up to and culminate in a thesis dealing with some major phase of the subject comprehendingly in its setting and connections. Naturally this program could be carried out most successfully with the social subjects, which lend themselves easily to culture, like history or philosophy, and less completely with the exact subjects, which are better fitted for precise discipline, like mathematics. But if treated, as far as possible, after the manner indicated, even the latter could be made better instruments for the training of college teachers than they are now in narrow specialization for the Ph.D degree. Among returning Rhodes scholars some excellent material for dons could be found.

The fifth of the course directed to pedagogy should include a very brief study of the methods of teaching the chosen subject, with glimpses into teaching methods in general; and courses in the history and philosophy of edu-

cation, with emphasis on, but by no means exclusive dealing with, the educational and social functions of the college. It might include an intensive investigation of some relatively simple college problem in preparation for future faculty membership. All this should, of course, be intimately articulated with the student's apprenticeship work. Such a course of pedagogical study should furnish a basis for better teaching methods and for helpful self-criticism therein; should encourage the formation of a habit of thinking and working out educational problems scientifically with eyes open to the purpose of the college as a whole; and should discourage departmental selfishness in legislation and administration.

Incidental advantage

The college would, under this plan, have some of its teaching done at minimum cost by student teachers, who should receive only the graduate scholarship or fellowship now customary for Ph.D. candidates. Care would be necessary to prevent the assignment to them of mere routine hackwork without training value. It is safe to say that, though slightly less mature, their services, being supervised, would be more valuable than those rendered during their first few years of teaching by most better-paid winners of the doctorate of philosophy, who, if they do so at all, grope their way to usefulness as teachers, with little aid from others more experienced.

With good teaching prepared for, required, and adequately rewarded (a point to be developed later), somewhat longer schedules could properly be assigned and further economy effected. Schedules would, of course, have to be kept short enough to allow ample time for reading, for some writing, and for faculty and committee work in later years. But time would not be required by *college* teachers for specialized research, and the freedom from such tasks resulting for them would be a blessed relief to many who are now compelled to assume a virtue they have not, and to conceal the love of teaching they have. And when we bear in mind the heavy mass of uninspired and unimportant hackwork that is now dumped on the

scholarly world, we shall welcome the prospect of a lightened burden for ourselves.

The need of students, especially of freshmen, for advisers is widely recognized. They come into a new freedom exercised in a new environment. This makes for bewilderment that involves loss of precious time and opportunities, and presents perils which involve possible injuries to many and certain injuries to some. Efforts, many and various. to constitute a body of advisers chosen from among faculty members have met with but little success. With few exceptions the task is not congenial to those who now man our faculties, and for that and other reasons they are ill fitted for it. But a greater measure of success has been attained, even under present conditions, when the coöperation of volunteers from among seniors and graduate students has been had. This suggests that the problem might come nearer solution when some dependence came to be placed upon the services of apprentices. Such service would be a part of their regular work having a bearing on their future career, and would therefore be supervised and rest on sustained interest and the consciousness that it was counting.

Finally, young student teachers would, under proper encouragement and arrangement, help materially to bridge the gulf, that is broader than is wholesome, between a faculty of mature men and young students. The mixing of these different generations, so far as possible, is much to be desired, difficult as it is to accomplish.

Consequent change of plan in appointments and promotions

This is not the place to discuss the details of appointment and promotion plans, interesting and important as they are. But it is evident that the scheme of training outlined, if adopted, would call for changes in present practices.

The appointing authorities of colleges looking for young teachers could ascertain their strong and weak points as they developed during their apprenticeship in classrooms and in other educational activities, as well as the quality and trend of their scholarship. They would not rest satisfied with ascertaining the minute corner of the field of

philosophy, history, or physics in which a man recommended had done research. Records could be kept throwing much-needed light on the teaching ability, scholarship, and personality of candidates for appointment. In selecting *college* teachers, appointing authorities would value this evidence and would come to prefer teaching power to investigating ability.

Moreover, the record keeping, and, no doubt, some of the supervision begun during the apprentice years would continue during the early instructorial years. This would render it possible to evaluate and to value effectiveness in teaching in making promotions. Ambitious teachers would no longer be practically forced, as their only resort, to neglect their students and give their best energies to publication in order to make a name and get a call, in the interest of promotion. The expert teacher would have a chance and a dignity equal to that of the skilled investigator. The individual could follow, and not be penalized for so doing, his own bent and the line of his highest capacity.

Training of investigators

The training now given in graduate schools here and elsewhere for the doctorate in philosophy will, of course, continue, and increase rather than diminish. Investigators will be preferred in research, in universities, and in some colleges and college departments. They will be increasingly prized in the government service and in important branches of industry. The recent terrible experiences burn into our minds the imperative need strong nations have of exact knowledge and of skill that has a scientific edge. And the specific training for these great tasks will be stronger when it is based on a college course in which highly effective and whole-hearted teaching is valued and rewarded.

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III

GENERAL PRINCIPLES OF COLLEGE TEACHING

Status of teaching in the colleges

THE investigator of educational practices and methods of teaching is impressed with an unmistakable educational anti-climax, for the conviction grows on him that elementary school teaching is on a relatively high plane, that secondary school teaching is not as effective, and that collegiate teaching, with rare exceptions, is ineffective and in urgent need of reform. A superficial survey of educational literature of the last ten years shows that while the problem of the high school is now receiving earnest attention, elementary education continues to absorb the earnest efforts of an army of vitally interested investigators. The field of college pedagogics is still virgin soil, and no significant or extensive program for improved methods of teaching has yet been advanced.

Three earnest and intelligent students representing three colleges of undisputed standing were asked informally about their instructors for the current semester. Nothing was said to make these students aware that their judgment would hold any significance beyond the friendly conversation. The summary of opinions is offered, not because the investigation is complete and affords a basis for scientific conclusion, but because it reflects typical college teaching in three recognized institutions of more than average standing.

STUDENT NO. I

Teacher A: A popular and interesting teacher, talks enthusiastically but talks all the time. Lessons assigned are not heard. Students seldom recite. Written quizzes on themes of assigned reading are rated by an assistant. The work comes back with an A, a C, or a D, but we do

STUDENT NO. II

Teacher A: A good teacher of mathematics. He assigns a new lesson for home study. The next day he asks questions on this lesson. The answers are written out on the blackboards. After fifteen minutes all students take their seats and the work on the blackboard is taken up for expla-

STUDENT NO. III

Teacher A: A very popular teacher of English. If the final examination is given by another teacher, I may not have enough specific facts to pass. We began Chaucer last week. He spent a good part of each session reading to us. All of us were surprised to find how

Student No. I	Student No. II	Student No. III
not know why the rating was given. Frequently two students who worked together are marked B and D respectively for the same work. Sometimes a student who "cribbed" his outline from another who actually "worked it up" receives a higher mark than was given for the original.	nation. He explains every difficulty very clearly. We rarely cover the lesson. Some topics go unexplained because during the next hour the blackboard problems are based on the new lesson. If I understood the second half of each lesson as clearly as the first, I would feel hopeful of a good grade in the final examination.	much more the text meant than after our own reading. In the last session we went to our book on literature and tried to justify the characterization which the author gives of Chaucer. The class agreed with all in the book except in one characterization. In the composition work we took up the structure of short narratives. The assignment was to find narratives in current periodicals, in the writings of standard authors, in newspapers, and then attempt to find whether the structure we studied was followed. In each case we had to justify any departure from the standard. There was little time for the footnotes in Chaucer. I hope we are not asked for these on the final examination.
Teacher B: Rather an interesting teacher; assigns lessons from a book. At the beginning of the hour he asks questions on the text but is soon carried away and rambles along for the period, touching on every subject. We never complete a chapter or topic. The succeeding hour we take the next chapter, which meets the same fate. Written tests determine the students' rank. The grade for the written test is announced, but the papers are not returned and one never knows why the papers were rated C or D.	*Teacher B:* A dry course in Art History and Appreciation. We take up the history of architecture, painting, and sculpture. The names of the best artists are mentioned, and their many works confuse us. We memorize Praxiteles, Phidias, Myron, the ancient cairns, the parts of an Egyptian temple. Pictures are shown on the screen. I elected this course in the hope that it would teach me something about pictures, how to judge them and give me standards of beauty, etc., but it has been history and not appreciation so far. We do not see any beauty in the pictures of old madonnas. Even the religious ones among us say this.	*Teacher B:* A very conscientious teacher of chemistry. He gives us a ten-minute written quiz each hour on the work in the book or on the matter discussed in the last lecture. The rest of the hour is spent in explanation of difficult points and in the application of what we learned, to industry and physiology. It is surprising to see the interest the class shows in the chemical explanations of things we never noticed before.
Teacher C: A conscientious teacher in physics. He assigns a definite lesson for each recitation of the term.	Teacher *C:* A good, clear, effective lecturer in chemistry. Every lesson we learn a definite principle and its	*Teacher C:* A scholarly instructor in history. He assigns thirty to forty pages in English history, and

STUDENT NO. I

At the beginning of the hour students go to the board to write out answers to questions on the lesson. The hour is spent listening to the recitation of each student and the explanation of difficult points. We never cover more than one half of the lesson; sometimes only one third. The next hour the questions are on the new lesson, not on the incompleted portion of the former lesson. My knowledge of physics is punctuated by areas of ignorance. These alternate with topics that I think I understand clearly.

Teacher D: A quiet, modest man. Sits back comfortably in his seat and asks questions on assigned texts. The questions review the text, and he explains in further detail the facts in the book. The conscientious and capable student finds him superfluous; the indifferent student remains unmoved by his phlegmatic presentation; the poor student finds him a help; the shirk who listens and takes notes is saved studying at home.

Teacher E: A good teacher of Latin. He explains the work, hears the lessons, gives drills, calls on almost everybody every hour. The written work is returned properly corrected and rated.

STUDENT NO. II

application. The laboratory work of each week is related to the lecture and throws interesting side lights on it. We have quiz sections once a week. Here the work is oral and written.

Teacher D: A very strict teacher of English literature. He assigns text for study, and we must be prepared for detailed questions on each of the great writers. He is very strict and detailed. We had to know all the fifteen qualities of Macaulay's style. "No, we did not read Macaulay this term; we study from a history of English literature that tells us all about the master writers."

Teacher E: A quiet, dignified gentleman who teaches us psychology. A chapter is assigned in the book, and the hour is spent hearing students recite on the text. He sticks closely to the book. He explains clearly when the book is not clear or not specific enough. The hours drag, for the book is good and those who studied the lessons weary at what seems to us needless repetition.

STUDENT NO. III

then he lectures to us about the topics discussed by the author. He points out errors in dates and places. Occasionally he calls on a student. At the end of each month he gives a written test. We remember little of what we learned and must "bone away" at about 200 to 300 pages. His English is delightful and we enjoy listening at times, but I seem to retain so little. "Yes, half the term is up. We are beginning the reign of Henry VII."

Teacher D: A very enthusiastic lecturer in economics. He explains the important principles in economics. We follow in a printed syllabus, so that it is unnecessary to take notes. He talks well and makes things clear. We are given assignments in S——'s "Elements of Economics," on which we are questioned by another teacher. "Is the work in the quiz section related directly to the lectures? Sometimes. No, we do not take current economic problems. These are given in a later elective course."

Teacher E: An instructor in psychology. His hours are weary and dreary. A chapter is assigned in X's "Elements of Psychology." He asks a question or two and then repeats what the author tells us, even using the illustrations and diagrams found in the text. Sometimes a student reads a paper which he prepared. "No, we do not get very much out of these papers read by students. But then we get just as little from the instructor. No, we

Student No. I	Student No. II	Student No. III
Teacher F: One cannot pass judgment on this teacher of mechanical drawing. He gives out a problem, works a type on the board, and then distributes the plates. We draw. He helps us when we ask for aid, otherwise he walks about the room. I suppose one cannot show teaching ability in such a subject.	*Teacher F:* A learned Latin scholar who is very enthusiastic about his specialty. The students exhibit cheerful tolerance. He assigns a given number of lines per day. These we prepare at home. In class we give a translation in English that has distorted phrases and clauses, lest we be accused of dishonesty in preparation. The rest of the time is spent on questions of syntax, references, footnotes, and the identification of the real and mythological characters in the text. The teacher is animated and effective.	never apply the psychology to our own thinking nor to teaching nor to the behavior of children or adults." *Teacher F:* A forbidding but very strict Latin teacher. His questions are fast and numerous and the hesitating student is lost. He assigns at least twenty-five per cent more per lesson than any other instructor. The hour is spent in translating, parsing, and quizzing on historical and mythological allusions. Every "pony" user is soon caught, because he is asked so many questions on each sentence. There is a distinct relief when the hour is over because he is constantly at you. "Will I take the next course in Latin? Not unless I must. This is prescribed work. It can't end too soon for me, nor for the others in the class."

The student of scientific and statistical measurements in education may object to attaching any importance to these informal characterizations of college teachers by undergraduates. College teachers interested in the pedagogical aspects of their subject, and college administrators who spend time observing class instruction will concede that these young men were not at all unfortunate in their teachers. The significance of these characterizations is not that college teachers vary in teaching efficiency, but rather that inefficient college teaching is general, and that the causes of this inefficiency are such as respond readily to simple remedial measures very well known to elementary and high school teachers.

Causes of ineffective college teaching

It may be well to note the chief causes of ineffective college teaching before directing attention to a remedial program:

(*a*) Many college teachers hold to be true the time-

honored fallacy that the only equipment for successful teaching is a thorough knowledge of the subject. They do not stop to square their belief with actual facts. They overlook the examples of their colleagues possessed of undisputed scholarship who are failures in the classroom. They fail to realize that there are psychological and pedagogical aspects of the teaching art which demand careful organization, skilful gradation and a happy selection of illustrations intimately related to the lives of the students.

(*b*) Closely related to this first cause of ineffective teaching is a lack of sympathetic understanding of the student's viewpoint. The scholarly teacher, deep in the intricacies and speculations of his specialty, is often impatient with the groping of the beginner. He may not realize that the student before him, apparently indifferent to the most vital aspects of his subject, has potentialities for development in it. His interest in his researches and his vision of the far-reaching human relations of his subject may blind him to the difficulties that beset the path of the beginner.

(*c*) The inferiority of college teaching in many institutions can often be traced to the absence of constructive supervision. The supervising officer in elementary and secondary schools makes systematic visits to the classrooms of young or ineffective teachers, observes their work, offers remedial suggestions, and tries to infuse a professional interest in the technique of teaching. In the college such supervision would usually stir deep resentment. The college teacher is, in matters of teaching, a law unto himself. He sees little of the actual teaching of his colleagues; they see as little of his. His contact with the head of his department, and his departmental and faculty meetings, are usually limited to discussions of college policy and of the sequence and content of courses. Methods of teaching are rarely, if ever, brought up for discussion. The results are inevitable. Weaknesses in teaching are perpetuated, while the devices and practices of an effective teacher remain unknown to his colleagues.

(*d*) A fourth factor which accounts for much of the inefficiency in college pedagogics is made the thesis of Dr. Mezes' chapter on "The Training of the College Teacher." The college teacher, unlike teachers in other grades of an educational system, is expected to teach without a knowledge of educational aims and ideals, and without a knowledge of the psychological principles which should guide him in his work. The prospective college teacher, having given evidence of scholarship alone, has intrusted to him, the noisy, expressive, and rapidly developing youth. We set up no standards aside from character and scholarship. We do not demand evidence of teaching ability, a knowledge of applied psychology and of accepted teaching practices, skill in presentation, power of organizing material in graded sequence, or ability to frame a series of questions designed to stimulate and sustain the self-activity of the pupils. The born college teacher remains the successful teacher. The poor college teacher finds no agent which tends to raise his teaching to a higher level. The temperamentally unfit are not weeded out. But teaching is an art, and like all arts it requires conscientious professional preparation, the mastery of underlying scientific principles, and practice under supervision scrupulous in its attention to technique.

We have here outlined a few of the causes which keep college teaching on a low plane. The remedial measures are in each case too obvious to mention. It remains for college authorities to formulate a well-conceived and adjustable program of means and methods of ridding college teaching of those forces which keep it in a discouraging state. It is our purpose in the remainder of this chapter not to evolve a system of pedagogics, but rather to touch on the most vital principles in teaching which must be borne in mind if college teaching is to be rendered pedagogically comparable to elementary and secondary teaching. We shall confine ourselves to teaching practices which are applicable to all subjects in the college curriculum.

PRINCIPLES IN COLLEGE TEACHING

A clearly conceived aim must control all teaching

One of the very first elements in good teaching is the clear recognition of a well-defined aim that gives purpose and direction to all that is attempted in a lesson or in a period. The chief cause of poor teaching is aimless teaching, in which the sole object seems to be to fill the allotted time with talking about the facts of a given subject. We sit patiently through a recitation in English literature. Act I, Scene 1 of *Hamlet* had been assigned for home study and is now the text for the hour. Questions are asked on the dramatic structure of this scene, on versification, on the meaning of words and expressions now obsolete, on peculiarities of syntax, and finally a question or two on a character portrayal. The bell brings these questions to an abrupt end. Ask teacher and students the aim of all these questions. To the former, they are means of testing the students' knowledge of a variety of facts of language and literature; to the latter they mean little, and serve only to repress a living interest and appreciation of living literary text. How much more effective the hour in English literature would have been if the entire act had been assigned with a view to giving the students an insight into the dramatic structure of each scene in this act and of the act as a whole. All the questions would then bear on dramatic movement, on the dramatist's technique, on his way of arousing interest in his story, on devices for giving the cause and the development of the action. In the opening scene we read:

Elsinore. A Platform before the Castle.
Francisco at his post. Enter to him Bernardo.

BER. Who's there?
FRAN. Nay, answer me; stand, and unfold yourself.
BER. Long live the King!
FRAN. Bernardo?
BER. He.
FRAN. You come most carefully upon your hour.
BER. 'Tis now struck twelve; get thee to bed, Francisco.

FRAN. For this relief much thanks: 'tis bitter cold. And I am sick at heart.

BER. Have you had a quiet guard?

Here we see the guard on duty challenged by his relief, a most unusual procedure. Why does this experienced guard so far forget the customary forms as to challenge the guard on duty? What possible reason can there be for this? How would you read the second line? What words must be emphasized to show the surprise of the challenged guard? If the entire hour were given to the whole of Act I and all the questions sought to reveal to the students Shakespeare's power of dramatic structure, a definite and lasting impression would be carried away. Act I should be assigned again, but with a different aim. The teacher now seeks to make clear to the student the dramatist's method of character portrayal. A third hour may be spent on certain portions of this act in which attention is given to significant facts of language, choice of words, or poetic form. When a guiding aim controls, all questions, suggestions, explanations, and illustrations tend to create in the mind of the pupil a rich and unified impression. Where no distinct aim gives direction to the work, the student is confused by a variety of facts — isolated facts — that are displaced by another group of disjointed bits of information. Aimless teaching leads to mental wandering on the part of the student; teaching governed by a definite aim leads to mental development and to the acquisition of new viewpoints and new power.

The educational aim vs. the instructional aim

We must distinguish clearly between the general or educational aim and the specific or instructional aim. The former sums up the hope of an entire course or an entire subject. In the teaching of literature we hope to develop a vital interest in reading, a discriminating taste, an enlivened imagination and a quickened perception which enable the student to visualize the situations and to acquire the thought on the printed page. The instructional aim, however, is much more specific; it posits a task that can be accomplished in a very limited time; it

seeks to give an insight into Shakespeare's mastery of words, or into his power of character portrayal, or into his methods of enhancing dramatic interest. Each of these two types of aims has its unmistakable influence on methods of teaching.

The variety of aims that may govern teaching

What aim should we select to guide us in formulating principles of collegiate teaching? The question is almost basic, for the selection of a proper aim gives color and direction to all our teaching. In brief, the aim may be one of the following:

(*a*) *The informational aim.* A given course in chemistry or physics may be designed to sum up for the student the vital facts necessary for an intelligent comprehension of common phenomena. With such an aim, it is obvious that only so much laboratory work will be assigned as will give the student a general knowledge of the tools and methods of laboratory work; that the major portion of the work will be divided into occasional lectures, regular book assignments, and extensive applications of knowledge gained to surrounding chemical and physical phenomena. A language course may seek to give pupils a stock of words designed to develop power to read the language in a very short time. Obviously, grammatical work and translations into the mother tongue will now be minimized, and those devices which give the eye the power to find thought in new symbols will be emphasized. There is no standard for determining the relative importance of this informational or utilitarian aim when compared to other aims. The significant thing is, not so much to discover its relative importance, but, having adopted it, to devise methods which clearly tend to bring the students to an effective realization of it.

(*b*) *The disciplinary aim.* On the other hand, the controlling aim in any subject may be to develop the power to reason about natural phenomena, the power to observe, and the power to discriminate between vital and inconsequential details. If this be the aim, the assignment of subject matter must be reduced, the phenomena

studied must be submitted in the forms of problems, first-hand observations must be made, and students must be led to see the errors in their observations and their reasoning. The course which is extensive in subject matter and which relies on the lecture method sacrifices mental discipline for information. From the teaching point of view, the result of the time-honored quarrel between the disciplinists and the utilitarians is not so important as the adoption of a definite aim, and the formulation of consistent methods of teaching in order to attain that aim. Ineffective teaching is not caused by the selection of the one aim or of the other, but by systems of instruction devoid of any aim at all.

(*c*) *The appreciative or æsthetic aim.* It is obvious that a subject may be taught for the power it develops for æsthetic appreciation of the arts of life. We have here a legitimate aim of coördinate importance with the two preceding ones; and if we adopt it, the vital thing in teaching is to allow this appreciative aim to mold all instructional effort. It is obvious that a college course in æsthetics must be inspirational, must seek to develop a real appreciation of the beauty of line, of color and of sound. Such a course must, therefore, encourage contact with the products of art, rather than promote the study of texts on the history of any of the arts. So, too, courses in music or in literature which do not send the student away with an intense desire to hear, to see, to feel the masterpieces of music or literature must be judged dismal failures. The formalization of an art course given to the general student, kills the live material and leaves the student himself cold.

(*d*) *The aim to teach technique.* An effective college course may select for its aim the development of the technique of a given subject. It is obvious that a science course governed by this aim will emphasize the laboratory method at the expense of information; that a course in the social sciences will seek to cover less ground but will develop in the student the power to find facts and use them to formulate an intelligent conclusion; that a course in

biology will minimize names, classifications and structures, but will emphasize field and laboratory work and the modes of utilizing the data thus discovered. We must repeat the statement made before, that no one can set himself up as the final arbiter of the claims of these contending aims. They are all vitally necessary for a thorough understanding of life's problems. The significant conclusion for teaching is that one or more of these aims must be consciously chosen and that content and method must be determined by them absolutely. Teaching for the sake of teaching consumes time and makes drafts on energy, but it leaves the student no richer in power and with no truer understanding.

Should the aim be modified for varying groups of students?

It is obvious that no general law can be formulated for the adjustment of aims to the needs of students. Teachers have usually found it necessary to change the aim, the content, and the method of a course according to the needs of different classes of students. In one of our colleges science students are required to take two years of Latin. The course offered these young men gives the ordinary drill in grammar, translation, and analysis of Cæsar, Cicero, and Vergil, as well as practice in prose composition in which nondescript and disjointed English sentences, grammatically correct, are turned into incorrect Latin. This description, without any changes whatever, applies also to the course given in the introductory years in Latin to students specializing in the arts. Even a superficial analysis reveals a different set of needs in the two classes of students which can be served only by a corresponding difference in content and mode of teaching. A student who takes French or German because he wants enough mastery of these languages to enable him to read in foreign journals about the progress of his specialty must be given a course which appeals to the eye and minimizes the grammatical and conversational phases of these languages.

There are courses that are foundational and that must therefore be governed by an eclectic aim. In the first course in college physics it is obvious that we must teach the necessary facts of the subject as well as its method. These

aspects of the work must be emphasized with equal force for all students; no differentiation need be made for future medical or engineering students or for prospective teachers of the subject in secondary schools. Generally speaking, initial courses in a department are governed by an eclectic aim, but in the advanced courses there must be constant adjustment to the needs of various groups. An eclectic aim can be as effective an instrument in enhancing the quality of teaching as a single, clear-cut aim, provided there is a clear recognition of the relative importance of the ends set up, and provided a definite plan is evolved to attain them.

The aim or aims of a subject or a lesson, once formulated, must always be kept before the students as well as before the teacher. Every pupil must know the ends to be attained in the course he is taking, and as work progresses he must experience a growing realization that the class is moving toward these ends. The subject matter of the course, the method of instruction, the assigned task, now glow with interest which springs from work clearly motivated. The average student plods through his semester from a sense of duty or obedience rather than from a conviction of the worth of both subject matter and method.

Value of clearly defined aims

Not only must the general aim be indicated to the student, but he must also be made acquainted with the specific aim. Where students have been acquainted with the specific task that must be accomplished in a given period, concentration and coöperation with the instructor are easier; the students can, at stages in the lesson, anticipate succeeding steps; their answers have greater relevancy, their thought is more sequential and flows more readily along the path planned by the instructor. A specific aim for each lesson makes for economy, for it is a standard of relevancy for both student and teacher. The student whose answer or observation is irrelevant is asked to recall the aim of the lesson and to judge the pertinence of his contribution. The instructor given to wandering far afield finds that a

clearly fixed aim is an aid in keeping him in the prescribed path. Too many college hours, especially in the social sciences, find the instructor beginning with his subject but ending anywhere in the field of human knowledge. These wanderings are entertaining enough, but they dissipate the energies of the students and produce a mental flabbiness already too well developed in the average college student.

Motivation in college teaching

A second factor which contributes much toward the effectiveness of college teaching is the principle of motivation. So long as most of the college course is prescribed, course by course, students will be found pursuing certain studies without an intelligent understanding of their social or mental worth. Ask the student " doing " prescribed logic to explain the value of the course. In friendly or intimate discussion with him, elicit his conception of the utilitarian or disciplinary worth of the prescribed Latin or mathematics in the arts course. He sees no relation between the problems of life and the daily lessons in many of these subjects. He submits to the teacher's attempts to graft this knowledge upon his intellectual stock merely because he has learned that the easiest course is to bend to authority. Instruction in too many college subjects is based, not on intelligent and voluntary attention, but on the discipline maintained by the institution or by the instructor. It is obvious that such instruction is stultifying to the teacher and can never develop in the student a liberal and cultured outlook upon life.

The principle of motivation in teaching seeks to justify to the student the experience that is presented as part of his college course. It is obvious that this motivation need not always be explained in terms of utilitarian values. A student of college age can be made to realize the mental, the cultural, or the inspirational values that justify the prescription of certain courses. The college instructor who tries to motivate courses in the appreciation of music or painting finds no great difficulty in leading his students to an enthusiastic conviction of their inspirational value. It is well

worth taking the student into our confidence in these matters of aim and value. We must become more tolerant of the thoughtful student who makes honest inquiry as to the value of any of the presented courses. We must learn to regard such questions as signs of growing seriousness and increasing maturity and not as signs of impertinence. We constantly ask ourselves questions about the round of our daily task; we seek to know thoroughly their uses, their values, their meaning in our lives. Clear conception of use or value in teaching is as vital as it is in life — for what is teaching if not the process of repeating life's experiences?

In the principle of motivation lies the most successful solution of the problem of interest in teaching. We have too long persisted in the "sugarcoating" conception of interest. We have regarded it as a process of "making agreeable." Interest has therefore been looked upon as a fictitious element introduced into teaching merely to inveigle the mind of the student into a consideration of what we are offering it. Our modern psychology teaches a truer conception of interest: a feeling accompanying self-expression. Interest has been defined as a feeling of worth in experience. Where this feeling of worth is aroused, the individual expresses his activity to attain the end that he perceives. Every act, every effort, to attain this end is accompanied by a distinctive feeling known as interest. When a class is quiet and gives itself to the teacher, it is obedient and polite, but not necessarily interested. The class that looks tolerantly at the stereopticon views that the instructor presents, or listens to the reading of the professor of English, is amused but not necessarily interested. But when the students ask questions about the pictures or ask the professor of English for further references, then have we evidence of real interest. Interest is, therefore, an active attitude toward life's experience. Rational motivation is almost a guarantee of this active attitude of interest.

Intelligent motivation in teaching has far-reaching values for both student and teacher. It stirs interest and guarantees attention and thus tends to keep aroused the activity

of the students. It establishes an end toward which all effort of teacher and student must bend. It enables the student to follow a line of thought more intelligently, and occasionally to anticipate conclusions. For the teacher it serves as a standard, in terms of which he reorganizes his subject matter, judges the value of each topic, and omits socially useless matter which has too long been retained in the course in the fond hope that it will in some way develop the mind.

Beginning at the point of contact

The instructor who strives to motivate the subject matter he teaches usually begins with that phase of the subject which is most intimately related to the student's life and environment. Every subject worth teaching crosses the student's life at some point. The contacts between pupil and subject afford the most natural and the most effective starting points in the teaching of any subject.

The subject matter in a college course is too frequently so organized that it presents points of discrepancy between itself and the student. To the college student life is not classified and systematized to a nicety. Experiences occur in more or less accidental but natural sequence. Scientific classification is the product of a mature mind possessing mastery of a given portion of the field of knowledge. To thrust the student, who is just finding his way in a new course, into a thoroughly scientific classification of a subject, is to present in the introduction what should come in the conclusion.

Many a student taking his introductory course in psychology begins with a definition of the subject, its relation to all social and physical sciences, and its classification. All these are aspects of the subject which the mind conversant with it sees clearly and understands thoroughly, but which the inexperienced student accepts merely because the facts are printed in his text-book. The youthful mind is concerned with the present and with the immediate environment. Too many of our college courses, in the initial stages, transport the student into the realm of theory or into the distant past. The

student cannot orientate himself in this new environment and is soon lost on the highways and byways of classification; to him the subject becomes a study of words rather than of vital ideas. Why must the introductory course in philosophy begin with the ancient philosophers, and give the major part of the term to the study of dead philosophers and their theories long since refuted and discarded, while vital modern philosophic thought is crowded into the last few sessions of the semester?

Illustrations of maxim, Begin at the point of contact

The pedagogical significance of beginning at the point of contact can best be understood and appreciated by illustrations of actual teaching conditions. Most initial courses in economics begin by positing that economics is the science of the consumption, distribution, and production of wealth. The student is told that in earlier systems of economics production was studied as the initial economic process, but that the more modern view makes consumption the starting process. All this the student takes on faith. He does not really see its bearings and its implications; he is as unconcerned with the new formulation as he is with the old; he feels at once far removed from economics. The succeeding lessons study economic laws with little reference to the economic life that the student lives. In a later chapter he learns a definition of wages, the forces that determine wage, and the mode of computing the share of the total produce that must go to wages.

Here we have a course that does not begin at the point of contact, that presents the very discrepancies between itself and the student that were noted before. How can we overcome them? By proceeding psychologically. The instructor refers to two or three important wage disputes in current industrial life; these conflicts are analyzed; the contending demands are studied, and the forces controlling the adoption of a new wage scale are noted. After this study of actual economic conditions the students are led to formulate their own definition of wages, and to discover the forces that determine wage. Their conclusions are of course tentative. The textbook or textbooks are

consulted in order to verify the formulations and the conclusions of the class. Thus the course is developed entirely through a series of contacts with economic life. The final topic in the course is the formulation of a definition of economics. Now the class sums up all that it has seen and learned of economics during the year. The cold and empty definition now glows with meaning. Such a course awakens an intelligent interest in economic life; it develops a mode of thought in social sciences and a sense of self-reliance; it teaches the student that all conclusions are tentative and constantly subject to verification; it fosters a critical attitude toward printed text.

The college graduate who studied college mathematics, advanced algebra, trigonometry, analytical geometry, and calculus, looks back with satisfaction at work completed. Each of these subjects seemed to have little or no relation to the other; each was kept in a water-tight compartment. He remembers few, if any, of the formulæ, equations, and symbols. He recalls vividly his admiration of the author's ingenious method of deriving equations. Every succeeding theorem, formula, or equation was another puzzle in a subject which seemed to be composed of a series of difficult, unrelated, and unapplied mathematical proofs. The course ended, the mass of data was soon obliterated from the mind's active possessions.

What is the meaning of it all? What is its relation to life? There is no doubt that much of this mathematics has its application to life's needs, and that these successive subjects of mathematics are thoroughly interdependent. But nothing in the mode of instruction leads the student to see either the application or the interrelation of all this higher mathematics. Would it not be better to give a single course called mathematics rather than these successive subjects? Would it not be more enlightening if each new mathematical principle were taught through a situation in building, engineering, or mechanics so that the student would at all times see the intimate relation between mathematical law and physical forces? Would not the disci-

plinary values of mathematics be intensified for the student by teaching it in a way that presents a quantitative interpretation of the daily phenomena in his experience?

Teachers of philosophy and psychology too often fall into a formalism that robs their subject of all its vitalizing influences. Many a student enters his course in logic with high hopes. At last he is to learn the laws of thought which will render him keen in detection of fallacies and potent in the presentation of argument. How bitter is his disappointment when he finds his course dissipated in definitions and classifications. His logic gives itself to the discussion of such patent fallacies as, "A good teacher knows his subject; Williams knows his subject, therefore he is a good teacher." Day after day he proves the error in every form of stupidity or the truth of what is axiomatic. He tires of "Gold is a metal" and "Socrates is mortal." Few courses in logic have the courage to break away from the traditional formalism and to begin each new principle or fundamental concept of logic by analyzing editorials, arguments, contentions in newspapers, magazines, campaign literature, or the actual textbooks. Few students complete their course in logic with a keener insight into thought and with a maturer or more aggressive mental attitude.

Beginning at the point of contact relates the subject to the life of the student

It was pointed out in a previous illustration that the college student "taking philosophy" is seldom made to feel that the subject he studies is related to the problems that arise in his own life. Too frequently introductory courses in philosophy are historical and extensive in scope, striving to develop mastery of facts rather than to give new viewpoints. The student learns names of philosophers, and attempts to memorize the philosophic system developed by each thinker. Such a course imposes a heavy burden on retentive power, for no little effort is required to remember the distinctive philosophical systems advocated by the respective writers. To the students these philosophers represent a group of peculiar people differing one from the

other in their degrees of "queerness." One system is as far removed as another from the life that the student experiences; no system helps him to find himself. An introductory course in philosophy should begin with the problems of philosophy; it should have its origin in the reflective and speculative problems of the student himself. As the course progresses, the student should feel a growing sense of power, an increasing ability to formulate more clearly, to himself at least, the questions of religion and ethics that arise in the life of a normal thinking person. So, too, courses in ethics and psychology lose the vital touch unless they begin in the life of the student and apply their lessons to his social and intellectual environment.

It must be pointed out, however, that the social sciences lend themselves more readily to this intimate treatment than do languages, or the physical sciences, but at all points possible in the study of a subject, the experience of the student must be introduced as a means of giving the subject real meaning. In teaching composition and rhetoric illustrations of the canons of good form need not be restricted to the past. Current magazines and newspapers are not devoid of effective illustrations. When the older literary forms are used exclusively as models of language, the student ends his course with the erroneous notion that contemporary writing is cheap and sensational and devoid of artistic craftsmanship.

Courses in physics and chemistry frequently devote themselves to a development of principles rather than to the applications of the studies to every sphere of life. Introductory college courses in zoölogy spend the year in the minutiæ of the lowest animal forms and rarely reach any animal higher in the scale than the crayfish. We still find students in botany learning the various margins of leaves, the system of venation, the scientific classifications, but at the end of the course, unable to recognize ordinary leaves and just as blind to nature as they were before. Zoölogy and botany do not always — as they should — give a new

view of life, a new attitude towards living phenomena, a new contact with nature.

Careful inquiry among college students will reveal an amazing ignorance of common chemical and physical phenomena after full-year courses in chemistry and physics. We find a student giving two semesters to work in each of these subjects. He spends most of his time learning the chemical elements, their characteristics and the modes of testing for them. The major portion of the time is spent in the laboratory, where he must discover for himself the elementary practices of the subject and test the validity of well-established truths. At the end of his second semester he has not developed sufficient laboratory technique for significant work in chemistry; he is ignorant of the chemical explanation of the most common phenomena in life.

Pedagogical vs. logical organization

There is much to be said for the position taken by the "older teachers," who may not possess the scholarship of the "younger investigators" but who argue for a general course in which laboratory work shall be reduced, technique minimized, and attention focused on giving an extensive view of chemical forces. The simple chemical facts in digestion, metabolism, industry, war, medicine, etc., would be presented in such a way as to make life a more intelligent process and to give an insight into the method of science. In the courses that follow the introductory one, there would be a marked change in aim; the student would be taught the laboratory technique and would be given a more intensive study of the important aspects of chemistry. Similar changes in the introductory courses in physics are urged by these same teachers.

Beginning at the point of contact may frequently interfere with the logical arrangement of the course of study; it may wrench many a topic out of its accustomed place in the textbook; it will demand that the applications, which come last in most logically arranged courses, be given first and that definitions and principles which come first be given last. This logical arrangement, it was pointed out, is usually the expression of the matured mind that is

thoroughly conversant with every aspect of a subject; it may mean little, however, to the beginner — so little that he does not even slightly appreciate its significance. The loss in logical sequence entailed by beginning at the point of contact is often more than compensated for by the advantages which are derived from a psychological presentation.

Proper organization as a factor in effective teaching

A well-organized lesson possesses teaching merits which may counteract almost all the usual weaknesses found in poor teaching. Good organization determines clearness of comprehension, ease of retention, and ability of recall; it makes for economy of time and mental energy; it simplifies the processes of mental assimilation; it teaches the student, indirectly but effectively, to think sequentially. We have all suffered too keenly, as auditors and readers, the inconveniences of poor organization, not to realize the worth of proper organization of knowledge in teaching.

Organization of knowledge has become a pedagogical slogan, but its increase in popularity has not been accompanied by increased clearness of comprehension of its meaning. What, then, is meant by proper organization? It must ever be borne in mind that proper organization is a relative condition, the limits of which are determined by the capacities of the students and the nature of the subject matter. What is effective organization of facts in elementary history may be very ineffective organization for students of high school or college grade. Making due allowance for relative conditions, good organization may be said to consist of five essential characteristics.

Logical sequence is the first of these. It is apparent that the more rational the sequence of facts, the more effective is the organization of knowledge. Data organized on a basis of cause and effect, similarity, contrast or any other logical relationship will help to secure the teaching advantages we have mentioned. A search for this simple principle in most textbooks on American or English history or literature reveals its complete absence. A detailed mass of historical information grouped into administrations or reigns is merely a mechanical organization in which time,

the accidental element, and not the development of social movements, the logic of human history, is the determining factor. In too many courses in literature the student learns names of writers, biographical data, and literary characteristics of the masters, but fails to see the development of the movement of which the writer was a part. Events of history placed in their social movements, writers in literature placed in the school in which they belong, give the student the logical ties which bind the knowledge to him. So, too, one often analyzes the sequence of chapters in an advanced algebra or a trigonometry and fails to discover the governing rationale. It must be remembered, however, that the nature of the subject will often reduce the logical element in its organization. Instances in language teaching may be cited as illustrations of teaching situations where a mechanical organization is often the only one possible because of the arbitrary character of the subject matter.

Meaning of organization of subject matter

Relativity of importance is the second factor of good organization. A cursory study of a well-organized chapter or merely passing attention to a well-organized lecture reveals at once a distinct difference in the emphasis on the various parts or elements of the subject. The proportional allotment of time or space, the number of illustrations, the number of questions asked on a given point, the force of language — these are all means of bringing out the relative importance of constituent topics or principles. In retrospect, a well-organized lesson presents an appearance similar to a contour map; each part stands out in distinctive color according to its significance.

It is frequently argued by teachers that students of college age should be required to distinguish the relativity of importance of the parts of a lesson or the topics in a subject; that the instructor who points out the changing importance of each succeeding part of a lesson is enervating the student by doing for him what he ought to do for himself. This is true in part, but it must be realized that the instructor who through questions and directed discussions leads students to formulate for themselves the rela-

tive importance of data is not only carrying out the suggestion made in the preceding paragraph but is also developing in his students a power they too frequently lack. Those who have studied the notes that students take in their classes have seen how frequently facts are torn from their moorings; how wrong principles are derived from illustrations; how a catch-phrase becomes a basic principle; how simple truths and axioms are distorted in the frenzy of note taking. Through questions if possible, through emphasis on illustrations and explanations, where no other means is available, students must be made to see that all facts of a subject are not of the same hue, that some are faint of tint, others in shadow, and still others in high colors. Without this relativity of importance, facts are grouped; with it, they are intelligently organized.

An underlying tendency can be discerned in well-organized knowledge. Not only are facts arranged in logical sequence and emphasized according to importance, but there is in addition a central principle or an underlying purpose giving unifying force to them all. We can illustrate the need of this third characteristic of good organization by referring to a college course in American history which gives much time to the period from 1815 to 1860. The events of these forty-five years are not taught in administrations but are summed up in six national tendencies; viz., the questions of state sovereignty, slavery, territorial acquisition, tariff, industrial and transportational progress, and foreign policy. Each of these movements is treated as intensively as time permits. At the end of the study of the entire period, the student is left with these six topics but without a unifying principle; to him, these are six unrelated currents of events. In each of these problems the North and the South displayed distinctive attitudes, acted from distinctive motives, expressed distinctive needs and preferences, but these were never brought out either through well-formulated questions or through explanation. As a result, the class never realize fully that those years, 1815–1860, marked the period of growing sectional

differences, misunderstandings, and animosities. Had this underlying tendency been brought out clearly at various points in the course, the students would have carried away a permanent impression of what is most vital in this period of American development.

Gradation of subject matter is another characteristic of good organization. Careful gradation is not so vital in subjects of social content as it is in mathematics, foreign languages, and exact sciences. The most important single factor in removing difficulties that beset a student is gradation. Teaching problems often arise because the instructor or the textbook presents more than one difficulty at a time. Teachers who lack intellectual sympathy or who are so lost in the advanced stages of their specialty that they can no longer image the successive steps of difficulty, one by one, that present themselves to a mind inexperienced in their respective fields, are frequently guilty of this pedagogical error. Malgradation of subject matter is the direct cause of serious loss of time and energy and of needless discouragement not only to students but to instructors as well.

Ability of the student to summarize easily is a test of good organization. At the end of a loosely organized chapter or lesson the student experiences no little difficulty in setting forth the underlying principles and their supporting data. It does not help much to have the textbook or the instructor state the summary either at the end of the lesson in question or at the beginning of the succeeding one. The summary of a lesson, given by the class, is a test of the effectiveness of instruction. Summaries given by teachers or textbooks have little or no pedagogical justification. Only in cases where the summary introduces a new point of view or unifying principles, or when it sets forth basic principles in particularly forceful language — only then is the statement by teacher or textbook justifiable.

Thoroughness

Teachers are advised to be thorough in their instruction. They in turn urge their students to strive for thoroughness in study. We praise or impugn the scholarship of our colleagues because it possesses or lacks thoroughness. Here

we have a quality of knowledge universally extolled. But what is meant by thoroughness? How can teachers or students know that they are attaining that degree of comprehension known as thoroughness? We are told that thoroughness is a relative condition, always changing with accompanying circumstances. Even an unattainable ideal can be defined,— why not thoroughness? We must, therefore, attempt to determine the meaning of thoroughness as used in teaching and study.

Negative interpretation of thoroughness

It may be helpful to formulate the common or lay interpretation of thoroughness. The term "thoroughness" is erroneously used in a quantitative sense to describe scholastic attainment. We are told of a colleague's thoroughness in history; he knows all names, dates, places, facts in the development of mankind; his knowledge of his specialty is encyclopedic; "there is no need of looking things up when he is around." A professor of English literature boasted of the thoroughness with which he teaches *Hamlet:* "Every word of value and every change in the form of versification are marked; every allusion is taken up, every peculiar grammatical construction is brought to the attention of the class." Here we have illustrations of an erroneous conception of thoroughness which gives it an extensive meaning and regards it as the accumulation of a mass of data.

Yet the master of chronological detail in history may have no historical imagination, no historical perspective, no historical judgment. He may possess the facts, but a period in history still remains for him a stretch of time limited by two dates, rather than a succession of years in which all mankind seems to be moving in the same direction, possessed of the same viewpoints, the same hopes and aspirations. The professor of English literature does not see that in teaching *Hamlet* he forsook his specialty, literature, for philology and mythology; that he turned his back on art and took up language structure. Thoroughness is not completeness, because the possession of the details of a subject does not necessarily bring with it a true comprehension of it. Add all the details, and the sum total is nothing more

than the group of details. Thoroughness is a degree of comprehension resulting from the acquisition of new points of view. The teacher of history who sees underlying forces in the facts of the past, who understands that true inwardness of any movement which shows him its relation to all phases of life, but who nevertheless may not have ready command of all the specific details, is more thorough in his scholarship. He has the things that count; the facts that are forgotten can easily be found. The class that studies the dramatic structure of *Hamlet*, that sees Shakespeare's power of character portrayal, that takes up only such grammatical and language points as give clearer comprehension or lead to greater appreciation of diction, is thorough although it does not possess all the facts. It is thorough because what is significant and dynamic in *Hamlet* is made focal. The postgraduate student assiduously searching for data for his doctorate thesis is often guided by the erroneous conception of thoroughness; he wants facts that have never seen the light. The more he gets of these, the nearer he approaches his goal. He avoids conclusions; he is counseled by his professors against giving too much of his book to the expression of his views. Analyze the chapters of a doctorate thesis and note the number of pages given to facts and those to conclusions and interpretations. The proportion is astonishing. The student's power to find facts is clearly shown; his power to use facts is not revealed by his thesis. The richer the thesis is in detail, in references, in allusions to dusty tomes and original sources, the more thorough is it frequently considered by the faculty. We have failed to realize that this excessive zeal in gathering and collating a large number of not commonly known facts may make the thesis more cumbersome, more complete, but not necessarily more thorough. However, the plea for a new standard in judging doctorate theses is meeting with gratifying encouragement.

Positive interpretation of thoroughness

What, then, are the teaching practices that make for greater thoroughness, that increase the qualitative and intensive character of knowledge? We shall discuss some of these in the succeeding paragraphs.

How can thoroughness be produced?

The acquisition of new points of view makes for increased thoroughness of comprehension. The class that understands the causes of the American Revolution from the American point of view knows of the navigation laws, the quartering of soldiers in American homes, the Stamp Act, the Boston Massacre,— the usual provocations that strained patience to the breaking point. The college teacher of American history who spends time on the riots in New York in which a greater number of colonists was killed than in Boston, who teaches in detail the various acts forbidding the manufacture of hats and of iron ware, or the protests against English practices in the colonies made by British merchants, etc., is adding more facts, but he may only be intensifying the erroneous conclusion that the students have formed in earlier and less complete courses. The topic, "Causes of the American Revolution," grows in thoroughness, not through the addition of these facts but through the presentation of new interpretations of the practices of the English. When we explain that the English believed in virtual and not actual representation, the students see a new meaning in "taxation without representation." When the students learn that the English government decided on a new economic and industrial policy which planned to have the mother country specialize in manufacture and transportation and the colonies in production of raw materials, the students see reason, though not necessarily justice, in the acts prohibiting Americans from various forms of manufacture and transportational activities. These new facts modify in the minds of students the point of view so often given in elementary courses, that the War for Independence was caused by sheer British meanness and injustice, by her policy of reckless repression.

It is not always possible to give new points of view to all knowledge in all subjects. There are cases in which there is only one point of view or where students may not be ready for a new interpretation because of their limited mastery of a new field of knowledge. Under these conditions an added point of view is a source of confusion rather

than an aid to clearer comprehension. Some subjects, like the social sciences, naturally allow for richer interpretations. Others, like the languages and the physical sciences, present only very limited opportunities; in the biological sciences the possibilities, though not as rich as in the social sciences, are numerous and productive of good results.

Comparison is a second means of producing thoroughness of comprehension. Good teaching abounds in comparisons which are introduced at the end of every important topic rather than reserved for examination questions. Comparisons used liberally at every logical pause in the development of a subject always give an added viewpoint, review early subject matter incidentally, stir thought, and make for better organization. How much more clearly are the causes of the War of 1812 understood after they are compared with those that brought on the Revolutionary War! How much more definite are the causes of the American Revolution when compared with those that brought on the French Revolution! A writer, a school, or a movement in English literature may be understood when studied by itself; but how is comprehension deepened when each is compared with another writer or school or movement! Comparison of perception and conception or appreciation and association in psychology, makes each activity stand out clearer in the mind of the student. Compare the laws of rent, wage, profit, and interest in economics, and not only each is better understood but the basic laws of distribution are readily derived by the student. Similarly, comparisons in mathematics, physics, chemistry, and the entire range of collegiate subjects give increased comprehension, useful though incidental reviews, and greater unification of knowledge, as well as added points of view.

Correlation as a means of producing thoroughness is closely allied to comparison. Correlation relates kindred topics of different subjects, while comparison points out relations in the same subject. The instructor who correlates the history of education with the political and economic history that the student learned in another course is

unifying related experience, reducing the field of knowledge, introducing logical organization, and adding new interpretations to facts already acquired. Similarly, teaching must be enriched by correlating physics and mathematics, chemistry and physics, literature and music, history of literature and general history, until instruction has taken advantage of every vital relation among subjects. With the growth of specialized subjects there is an unfortunate tendency toward isolation until the untrained mind looks upon the curriculum as a series of unrelated experiences, each rivaling the other in its claim to importance.

The advantage of correlation will remain lost in college teaching as long as each instructor regards himself as a specialized investigator concerned with teaching his subject rather than his students. How many college teachers know what subjects their students have already taken, or knowing the names of these subjects, have a general knowledge of their content? The college professor of the preceding generation was a cultured gentleman whose general scholarship transcended the limits of his specialty. He understood and knew the curriculum as a whole. Because of changes in every phase of our civilization, his successor has a deeper but a narrower knowledge. He knows little of the work of his students outside of his own subject. He does not relate and correlate the ever growing field of knowledge; he merely adds — by the introduction of his own mass of facts — to the isolation which characterizes the parts of college curricula. This tendency must be counteracted, not by interfering with the scholastic interests of any instructor, but by occasional conferences of instructors of allied subjects in order to agree on common meeting grounds, on points of correlation, on useful repetitions, and on the elimination of needless duplications. Such pedagogical conferences are rare because college teachers are not alive to the need of reform in methods of college teaching.

Thoroughness results from *increase in the number of applications* of knowledge. The introduction of the functional view into teaching brings with it a realization of the vital

needs of increased ways of applying the experience we present to students. As the laws of physics, mathematics, biology, composition, economics, etc., are applied to a number of specific instances, the generalization grows in meaning and in force. Specific cases vary, and, varying, give new color and new meaning to the laws that are applied to explain them. How much a law in chemistry means after it is applied to specific instances in industry, human and animal physiology, plant life, or engineering! The equation learned in descriptive geometry may be understood, but it never means so much as when it is applied to specific problems in engineering. Applications give added insight into knowledge and therefore make for greater thoroughness of comprehension.

Teaching as a process of arousing self-activity

Locke's Blank Paper Theory, enunciated centuries ago, has been repeatedly and triumphantly refuted even by tyros in psychology, but in educational practices it continues to hold sway. College teaching too frequently proceeds on the assumption that the mind is an aching void anxiously awaiting the generous contributions of knowledge to be made by the teacher. College examinations usually test for multiplicity of facts acquired, rather than for power developed. College teaching usually does not perceive that the mind is a reacting machine containing a vast amount of pent-up potential energy which is ready to react upon any presentation; that development takes place only as this self-activity expresses itself; that education is evolutionary rather than involutionary. Teaching is, therefore, a process of arousing, sustaining, and directing the self-activity of pupils. The more persistently and successfully this activity is aroused, the more systematically it is directed to intelligent ends, the more skillful is the teaching. Teachers do not impart knowledge, for that is impossible; they *occasion* knowledge. Only as the teacher succeeds through questions, directions, diagrams, and all known devices, in arousing the self-activity of the student, is he producing the conditions under which knowledge is acquired by the pupil.

Evaluation of common methods of teaching

The methods commonly used in college teaching are as follows:

1. Lecture method, with or without quiz sections.
2. Development method, with or without textbook.
3. Combination of lecture and development method.
4. Reference readings and the presentation of papers by students.
5. Laboratory work by students, together with lectures and quiz sections.

Teachers have long debated the relative merits of these methods or combinations of them. They fail to realize that each method is correct, depending upon the aim to be accomplished and the governing circumstances. No method has a monopoly of pedagogical wisdom; no method, used exclusively, is free from inherent weakness. A teaching method must be judged by its ability to arouse and sustain self-activity and to attain the aim set for a specific lesson. With this standard for judging a method of teaching, we must stop to sum up the relative worth of common methods of college teaching.

Lecture method evaluated

The lecture method has been the target for much criticism for many centuries. Socrates inveighed against its use by the sophists, and educators since have repeated the attack. The reasons are legion: (*a*) The lecture method tends to discourage the pupil's activity. The student feels no responsibility during the lecture; he listens leisurely, and makes notes of the instructor's contribution. The student's judgment is not called into play; he learns to take knowledge on the authority of the instructor. The sense of comfort and security experienced in a lecture hour is fatal even to aggressive and assertive minds. Sooner or later the students succumb to the inertia developed by the lecture system.

(*b*) A second limitation of an exclusive lecture method is its inability to make permanent impressions. Many a student, entering the lecture hall, has completely forgotten

even the theme of the last lecture. Knowledge is retained only when it is obtained by the expression of self-activity. To offset this weakness notes must be taken, but these prove to be the bane of the lecture method. Some students, in their efforts to record a point just concluded, lose not only the thought of what they are trying to write but also the new thought which the instructor is now explaining; they drop both ideas from their notes and wait for the next step in the development of the lecture. This accounts for the many gaps in the notes kept by students. Some instructors, dismayed by the amount of knowledge lost by students, resort to dictation devices. Others, realizing the pedagogical weakness of such teaching, distribute mimeographed outlines of carefully prepared summaries of the lectures. Now the student is relieved of the tedium of note taking, but the temptation to let his mind wander afield is intensified. An outline, scanty of detail, but so devised as to keep the organization and sequence of subject matter clear in the minds of students, is, of course, helpful. But detailed outlines distributed among the students discourage even attentive listening.

(*c*) In teaching by lectures only there is no contact between student and teacher. The student does not recite; he does not reveal his type of mind, his mode of study, his grasp of subject matter. He is merely a passive recipient. To this third weakness of the lecture method we may add a fourth: (*d*) it tends to emphasize quantity rather than method. The student is confronted with a great mass of facts, but he does not acquire a mode of thought nor does he see the method by which a given subject is developed. (*e*) The lecture method, therefore, inculcates in students an attitude of mental subservience which is fatal for the development of courageous and vigorous thought. And finally (*f*) it must be urged that in lecture teaching the instructor is not testing the accuracy of the students' conceptions nor is he able to judge the efficacy of his own methods.

But, on the other hand, it must be admitted that with

an effective lecturer, possessed of commanding personality, the lecture gives a point of view of a subject and an enthusiasm for it which other devices fail to achieve. The lecture method makes for economy of time and enables one to present his subject to his class with a succinctness absent from many textbooks. Where much must be taught in a limited time, where a comprehensive view of an extensive field must be given, when certain types of responses or mental attitudes are desired, the lecture serves well.

Final worth of lecture method

Experience teaches that an exclusive lecture system is not conducive to efficient work; that lectures to regular classes ought to be punctuated by questions whenever interest lags; that the occasional and even the unannounced lecture is more effective; that supplementary devices for checking up assignments and regular collateral study are of vital importance. Where regular lectures are followed by detailed analyses in quiz sections the best results are obtained when the lecturer himself is the questioner. Where quiz sections are turned over to assistants, wise procedure requires that quiz leaders attend the lectures and decide, in conference with the lecturer, the specific aims which must be achieved in the quiz work and the assigned readings which must be given to students in preparation for each quiz hour. Unless this is done, the student is frequently confused by the divergent points of view presented by lecturer, quiz master, and textbook.

The development method has much to commend it. It stimulates activity by its repeated questions. Few or no notes are taken. There is constant contact with the student. At every point the mental content of the pupils is revealed. The teacher sees the result of his teaching by the intelligence of successive responses. The pupil is being trained in systematic thought and in concentration. But it must be remembered that the development method is often costly in time because answers may be wrong or irrelevant. It may encourage wandering; a student's reply reveals ignorance of a basic principle, and the aim

of the lesson is often forgotten in the eagerness to patch up this misconception. Then, too, in subject matter that is arbitrary, as in descriptive and narrative history, no development is possible. In such cases the questions are designed to test the student's knowledge of the text, and the lesson becomes a quiz rather than a development.

It is plain, therefore, that a judicious combination of the lecture and development methods will give better results than the exclusive use of either one. The analysis of the pedagogical advantages of each leads to the conclusion that the development method should predominate and that the lecture method should be used sparingly and always with some of the checking devices described.

Place of reference reading in college teaching

A common method employed in advanced courses in college subjects emphasizes *reference study and research.* The entire course is reduced to a series of problems, each of which deals with a vital aspect of the subject. Each student is made responsible for a topic. The initial hours are devoted to an examination of the common sources of information in this specific subject, the modes of using these, the standards to be attained in writing a paper on one of the topics, and similar matters. The remainder of the term is given over to seminar work: each student reads his paper and holds himself in readiness to answer all questions his classmates may ask on his topic. The aims of such a course are obviously to develop a knowledge of sources and an ability to use intelligently the unorganized data found by the student. The results of these pseudo-seminar courses are far from what was anticipated. A thorough investigation of such a course will soon convince the teacher that the seminar method, whatever its merits in university training, must be refined and diluted before it is applied to college teaching. Let us see why.

Evaluation of development—Socratic or heuristic method

Successful reference reading requires a knowledge of the field studied, maturity of mind, discriminating judgment in the selection of material, and ability in organization. The university student is not only maturer and more serious but has a basis of broader knowledge than most under-

graduates. Without this equipment of mental powers and knowledge, the student cannot judge the merits of contending views nor harmonize seeming discrepancies. A student who has no ample foundation of economics cannot study the subject by reference reading on the problems of economics. To learn the meaning of value he would read the psychological explanations of the Austrian schools and the materialistic conceptions of the classical writers. He would then find himself in a state of confusion, owing to what seemed to him to be a superfluity of explanations of value. When one understands one point of view, an added viewpoint is a source of greater clarity and a means of deeper understanding. But when one is entirely ignorant of fundamental concepts, two points of view presented simultaneously become two sources of confusion. In the university only the student of tried worth is permitted to take a seminar course. In the upper classes in college, mediocre students are often welcomed into a seminar course in order to help float an unpromising elective.

Limitations of seminar method in undergraduate teaching

The college seminar is usually unsuccessful because few students have ability to hold the attention of their classmates for a period of thirty minutes or more. Language limitations, lack of a knowledge of subject matter, inability to illustrate effectively, and the skeptical attitude of fellow students all militate against successful teaching by a member of the class. Students presenting papers often select unimportant details or give too many details. The rest of the class listen languidly, take occasional notes, and ask a few perfunctory questions to help bring the session to a close. A successful hour is rare. The student who prepared the topic of the day undoubtedly is benefited, but those who listen acquire little knowledge and less power. The course ends without a comprehensive view of the entire subject, without that knowledge which comes from the teacher's leadership and instruction. This type of reference reading and research has value when used as an occasional ten or fifteen minute exercise to

supplement certain aspects of class work. But as a steady diet in a college course, the seminar usually leaves much to be desired.

The laboratory method is growing in favor today in college teaching. It is employed in the social sciences, in sociology, in economics, in psychology, in education, as well as in the physical and the biological sciences. Where it is followed the aim is clearly twofold; viz., to teach the method by which the specific subject is growing and to develop in the students mental power and a scientific attitude towards knowledge.

Value of laboratory method

Let us illustrate these two aims of the laboratory method. A laboratory course in chemistry or biology or sociology may be designed to teach the student the use of apparatus and equipment necessary for work in a respective field; the method of attacking a problem; a standard for distinguishing significant from immaterial data; methods of gathering facts; the modes of keeping scientific records,—in a word, the essence of the experience of successive generations of investigators and contributors. But no successful laboratory results can be obtained without a proper mental attitude. The student must learn how to prevent his mental prepossessions or his desires from coloring his observations; to allow for controls and variables; to give most exacting care to every detail that may influence his result; to regard every conclusion as a tentative hypothesis subject to verification or modification in the light of further test. Unless the student acquires a knowledge of the method of science and has achieved these necessary modes of thought, his laboratory course has failed to make its most significant contribution.

In courses where the aim is to teach socially necessary information or to give a comprehensive view of the scope of a specific subject, it is obvious that the laboratory method will lead far afield. It is for this reason that introductory courses given in recitations, with demonstrations by instructors, and occasional lecture and laboratory hours, are more liberalizing in their influence upon the

beginners than courses that are primarily laboratory in character.

Cautions in the use of the laboratory method

Most laboratory courses would enhance their usefulness by observing a few primary pedagogical maxims. The first of these counsels that we establish most clearly the distinctive aim of the course. The instructor must be sure that he has no quantitative aim to attain but is occupied rather with the problems of teaching the method of his specialty. Second, an earnest effort must be made to acquaint the students with the general aim of the entire course as well as with the specific aim of each laboratory exercise. The students must be made to realize that they are not discovering new principles but that by rediscovering old knowledge or testing the validity of well-established truths they are developing not only the technique of investigational work, but also a set of useful mental habits. Much in laboratory work seems needless to the student who does not perceive the goal which every task strives to attain.

A third requisite for successful laboratory work requires so careful a gradation that every type of problem peculiar to a subject is made to arise in the succession of exercises. It is wise at times to set a trap for students so that they may learn through the consequences of error. For this reason students may be permitted to leap to a conclusion, to generalize from insufficient data, to neglect controls, to overlook disturbing factors, etc. An improperly planned and poorly graded laboratory course repeats exercises that involve the same problems and omits situations that give training in attacking and solving new problems.

Effective laboratory courses afford opportunity to students to repeat those exercises in which they failed badly. If each exercise in the course is designed to make a specific contribution to the development of the student, it is obvious that merely marking the student zero for a badly executed experiment is not meeting the situation. He must in addition be given the opportunity to repeat the

experiment in order to derive the necessary variety of experiences from his laboratory training. And, finally, the character of the test that concludes a laboratory course must be considered. The test must be governed by the same underlying aims that determine the entire course. It must seek to reveal, not the mastery of facts, but growth in power. It must measure what the student can do rather than what he knows. A properly organized test serves to reinforce in the minds of students the aims of the entire course.

The college teacher not the university professor

An analysis of effective teaching is necessarily incomplete that does not give due consideration to the only human factor in the teaching process — the teacher. We have too long repeated the old adages: "he who knows can teach"; "a teacher is born, not made"; "experience is the teacher of teachers." These dicta are all tried and true, but they have the failings common to platitudes. It often happens that those who know but lack in imagination and sympathy are by that very knowing rendered unfit to teach. "Knowing" so well, they cannot see the difficulties that beset the learner's path, and they have little patience with the student's slow and measured steps in the very beginnings of their specialty. It is true that some are born teachers, but our educational institutions could not be maintained if classes were turned over only to those to whom nature had given lavishly of pedagogical power. Experience teaches even teachers, but the price paid must be computed in terms of the welfare of the student. Teaching is one of the arts in which the artist works only with living material; yet college authorities still make no demand of professional training and apprenticeship as prerequisites for admission to the fraternity of teaching artists.

Ineffective college teaching will not improve until professional teaching standards are set up by respected institutions. The college teacher must be possessed of ample scholarship of a general nature. He must have expertness in his specialty, to give him a knowledge of his field,

its problems and its methods. He must be a constant student, so that his scholarship in his specialty will win recognition and respect. But part of his preparation must be given over to professional training for teaching. Without this, the prospective teacher may not know until it is too late that his deficiencies of personality unfit him for teaching. With it, he shortens his term of novitiate and acquires his experience under expert guidance. The plan of college-teacher training, given by Dr. Mezes in Chapter II, so complete in scope, so thoroughly sound and progressive in character, is here suggested as a type of professional preparation now sorely needed.

Testing the results of instruction

The usual test of teacher and student is still the traditional examination, with its many questions and sub-questions. We still measure the results of instruction by fathoming the fund of information our students carry away. But these traditional examinations test for what is temporary and accidental. Facts known today are forgotten tomorrow. The professor himself often comes to class armed with notes, but he persists in setting up, as a test of the growth of his students, their retentivity of the facts he gave from these very notes. In the final analysis, these examinations are not tests. The writer does not urge the abolition of examinations, but argues rather for a reorganized examination that embodies new standards. A real examination must test for what is permanent and vital; it must measure the degree to which students approximate the aims that were set up to govern the entire course; it must gauge the mental habits, the growth in power, rather than facts. Part of an examination in mathematics should test students' ability to attack new problems, to plan a line of work, to think mathematically, to avoid typical fallacies of thought. For this part of the test, books may be opened and references consulted. In literature we may question on text not discussed in class to ascertain the students' power of appreciation or of literary criticism. So, too, in examinations in social sciences, physical sciences, foreign languages, and biological sciences, the examination must

consist, in great measure, of questions which test the acquisition of the habits of thought, of work, of laboratory procedure — in a word, the permanent contribution of any study. This part of an examination should be differentiated from the more mechanical and memory questions which seek to reveal the student's mastery of those facts of a subject which may be regarded as socially necessary. Reduce the socially necessary data of any subject to an absolute minimum and frame questions on it demanding no such slovenly standard — sixty per cent — as now prevails in college examinations. If the facts called for on an examination are really the most vital in the subject, the passing grade should be very high. If the questions seek to elicit insignificant or minor information, any passing mark is too high. It is obvious, therefore, that a student should receive two marks in most subjects,— one that rates power and another that rates mere acquisition of facts. The passing grade in the one would necessarily be lower than in the other. An examination is justified only when it is so devised that it reveals not only the students' stock of socially useful knowledge but also their growth in mental power.

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PART TWO

The Sciences

IV

THE TEACHING OF BIOLOGY

Biology and Education

Biology the science basal to all knowing

THE life sciences, broadly conceived, are basal to all departments of knowledge; and the study of biology illumines every field of human interest. To the believer in evolution the human body, brain, senses, intellect, sensations, impulses, habits, ideas, knowledges, ideals, standards, attractions, sympathies, combinations, organizations, institutions, and all other powers and possessions of every kind and degree are merely crowning phenomena of life itself. The languages, history, science, economic systems, philosophies, and literatures of mankind are only special manifestations and expressions of life and a part, therefore, of the studies by which we as living beings are trying to appraise and appreciate the meaning of life and of the universe of which life is the most significant product. Life is not merely the most notable product of our universe; it is the most persuasive key for solving the riddle of the universe, and is the only universe product which aspires to interpret the processes by which it has reached its own present level.

All knowledge, then, is *biological* in the very vital sense that the living organism is the only *knowing* thing. The knowing process is a life process. Even when knowledge pertains to non-living objects, therefore, it is one-half biological; our most worth-while knowledge — that of ourselves and other organisms — is wholly so. Because all our knowledge is colored by the life process, of which the knowing process is derivative, the study of life underlies every science and its applications, every art and its practice, every philosophy and its interpretations. Biology must be taught in sympathy with the whole joint enterprise of living and of learning.

The most outstanding phenomenon of life is the *adaptation* of living things to the real and significant conditions of their existence. Furthermore, as these conditions are not static, particularly in the case of humans, organisms must not merely be adapted, but must continue thereafter to be *adaptable.* Now learning is only a special case under living, and education a special case under life. Its purposes are the purposes of life. It is an artificial and rapid recapitulation for the individual, in method and results, of past life itself. The purpose of education is "adaptation,— with the retention of adaptability." It is to bring the individual into attunement, through his own responses and growth, with all the real factors, external and internal, in his life,— material, intellectual, emotional, social, and spiritual,— and at the same time leave him plastic.

Adaptation without losing adaptability the goal of life and of education

Adaptation comes through the habit-forming experiences of stimulus and response. The very process of adaptation, therefore, tends toward fixity and to destroy adaptability. It is thus the task of education, as it is of life, to replace the native, inexperienced and physiological plasticity of youth with some product of experience which shall be able to revise habits in the interest of new situations. The adaptability of the experienced person must be psychical and acquired. It must be in the realm of appreciation, attitude, choice, self-direction — a realm superior to habit.

In this human task of securing adaptation and retaining adaptiveness the life sciences have high rank. In addition to furnishing the very conception itself that we have been trying to phrase, they give illustrations of all the historic occasions, kinds, and modes of adaptation; in lacking the exactness of the mathematical and physical sciences they furnish precisely the degree of uncertainty and openness of opportunity and of mental state which the act of living itself demands. In other words the science of life is, if properly presented, the most normal possible introduction to the very practical art of living. Because of the parallel meaning of education and life in securing progressive adaptation to the essential influential forces of the uni-

verse, an appreciative study of biology introduces directly to the purposes and methods of human education.

Chief Aims of Biology as a College Subject

Why study biology in college?

While students differ in the details of their purposes in life, all must learn to make the broad adjustments to the physical conditions of life; to the problems of food and nutrition; to other organisms, helpful and hurtful; to the internal impulses, tendencies, and appetites; to the various necessary human contacts and relations; to the great body of knowledge important to life, which human beings have got together; to the prevailing philosophical interpretations of the universe and of life; and to the pragmatic organizations, conventions, and controls which human society has instituted. In addition to these, some students of biology are going into various careers, each demanding special adjustments which biology may aid notably. Such are medicine and its related specialties, professional agricultural courses, and biological research of all kinds.

An extended examination of college catalogs shows some consciousness of these facts on the part of teachers of biology. The following needs are formally recognized in the prospectuses: (1) The disciplinary and cultural needs of the general student; (2) the needs of those preparing for medicine or other professional courses; and (3) the needs of the people proposing to specialize in botany and zoölogy. These aims are usually mentioned in the order given here; but an examination of the character of the courses often reveals the fact that the actual organization of the department is determined by an exact reversal of this order,—that most of the attention is given, even in the beginning courses, to the task of preparing students to take advanced work in the subject. The theory of the departments is usually better than their practice.

In what follows these are the underlying assumptions, —which seem without need of argument: (1) The general human needs should have the first place in organizing

the courses in biology; (2) the introductory courses should not be constructed primarily as the first round in the ladder of biological or professional specialization, but for the general purposes of human life; (3) the preparation needed by teachers of biology for secondary schools is more nearly like that needful for the general student than that suited to the specialist in the subject; and (4) the later courses may more and more be concerned with the special ends of professional and vocational preparation.

General Aims of Biology in Education

What are the general adaptive contributions of biology to human nature? What are the results in the individual which biology should aim to bring to every student? There are four classes of personal possessions, important in human adaptation, to which biology ministers in a conspicuous way: information and knowledge; ability and skills; habits; and attitudes, appreciations, and ideals. These four universal aims of education are doubtless closely related and actually inseparable, but it is worth while to consider them apart for the sake of clearness.

A. Types of biological knowledge useful in the adaptation of human beings to the most important conditions of their life

(1) Study of biology furnishes knowledge of adaptive value

(1) Some knowledge of the processes by which individual plants and animals grow and differentiate, through nutrition and activity; of the process of development common to all organisms; and the bearing of these facts on human life, health, and conduct.

(2) An outline knowledge of reproduction in plants and animals; the origin, nature, meaning, and results of sex; the contribution of sex to human life, to social organization and ideals, and its importance in determining behavior and controls.

(3) A good knowledge of the external forces most important in influencing life; of the nature of the influence;

of the various ways in which organisms respond and become adjusted individually and racially to these conditions. A sense of the necessity of adaptation; of the working of the laws of cause and effect among living things, as everywhere else; of the fact that nature's laws cannot be safely ignored by man any more than by the lower organisms; of the relation between animal behavior and human behavior.

(4) Equally a true conception of the known facts about the internal tendencies in organisms including man, which we call hereditary. The principles underlying plant, animal, and human breeding. Any progress in behavior, in legislation, or in public opinion in the field of eugenics, negative or positive, must come from the spread of such knowledge.

(5) A knowledge of the numerous ways in which plants and animals contribute to or interfere with human welfare. This includes use for food, clothing, and labor saving; their destruction of other plants or animals useful or hurtful to us; their work in producing, spreading, or aiding in the cure of disease; their æsthetic service and inspiration; the aid they give us in learning of our own nature through the experiments we conduct upon them; and many miscellaneous services.

(6) A conception of the evolutionary series of plants and animals, and of man's place in the series; a reassurance that man's high place as an intellectual and emotional being is in no way put in peril by his being a part of the series. Some clear knowledge of the general manner of the development of the plant and animal kingdoms to their present complexity should be gained. The student should have some acquaintance with the great generalizations that have meant so much to the science and to all human thinking, should understand how they were reached and the main classes of facts on which they are based.

(7) The general student should be required to have such knowledge of structure and classification as is needed to give foundation and body to the evolutionary conceptions

of plants and animals, and to the various processes and powers mentioned above — and only so much.

(8) Some knowledge of the development of the science itself; of its relation to the other sciences; of the men who have most contributed to it, and their contributions; of the manner of making these discoveries, and of the bearing of the more important of these discoveries upon human learning, progress, and well-being.

(9) Something of the parallelism between animal psychology, behavior, habits, instincts, and learning, and those of man,— in both the individual and the social realm.

(10) An elementary understanding of plant and animal and human distribution over the earth, and of the factors that have brought it about.

B. FORMS OF SKILL WHICH WORK IN BIOLOGY SHOULD BRING TO EVERY STUDENT

(2) Biological study gives desirable skills

Skill or ability may be developed in respect to the following activities: seeking and securing information, recording it, interpreting its significance, reaching general conclusions about it, modifying one's conduct under the guidance of these conclusions, and, finally, of appraising the soundness of this conduct in the light of the results of it. All of these are of basic importance in the human task of making conscious adjustments in actual life; and the ability to get facts and to use them is more valuable than to possess the knowledge of facts. Other sciences develop some of these forms of skill better than biology does; nevertheless, we shall find that biology furnishes a remarkably balanced opportunity to develop skills of the various kinds. It presents a great range and variety of opportunity to develop accuracy and skill in raising questions; in observation and the use of precise descriptive terms in recording results of observation; in experimentation; in comparison and classification. It is peculiarly rich in opportunities to gain skill in discriminating between important and unimportant data, — one of the most vital of all the steps in the process of sound reasoning. In practice, a datum may at first sight

seem trivial, when in reality it is very significant. *Skill* in estimating values comes only with *experience* in estimating values, and in applying these estimates in practice, and in observing and correcting the results of practice.

Finally, skill in adjusting behavior to knowledge is one of the most necessary abilities and most difficult to attain. The study of animal behavior experimentally is at the foundation of much that we know of human psychology and the grounds of human behavior. Even in an elementary class it is quite possible so to study animal responses and the results of response as to give guidance and facility to the individual in interpreting the efficiency of his own responses, and in adding to his own controls. As has been said, practice of some kind is necessary to determine whether our estimate of values is good. Even vicarious experience has educative value.

C. HABITS WHICH MAY BE STRENGTHENED BY THE WORK IN BIOLOGY

(3) Biology may supply adaptive habits

Habits are of course the normal outcome of repeated action. Indeed, skills are in a sense habits from another point of view. Skill, however, looks rather toward the output; habit, toward the mode of functioning by the person by whom the result is attained. We may then develop habits in respect to all the processes and activities mentioned above under the term "skills." The teacher of biology should have definitely in purpose the securing for the student of habits of inquiry, of diligence, of concentration, of accuracy of observation, of seeking and weighing evidence, of detecting the essentials in a mass of facts, of refusing to rest satisfied until a conclusion, the most tenable in the light of all known data, is reached, and of reëxamining conclusions whenever new evidence is offered.

Of course it is impossible to use biology to get habits of right reasoning in students unless we *really allow them to reason.* If we insist that their work is merely to observe, record, and hold in memory,— as so many of us do in

laboratory work,— they may form habits of doing these things, but not necessarily any more than this. Indeed, they may definitely form the habit of doing *only* these things, *failing to use the results in forming for themselves any of the larger conclusions about organisms. Seeing* and *knowing* — without the ability and habit of *thinking* — is not an uncommon or surprising result of our conventional laboratory work. There is only one way to get the habit of right "following through" in reasoning; this is, *always to do the thing.* When data are observed or are furnished it is a pedagogical sin on the part of the teacher to allow the student to stop at that point; and equally so to deduce the conclusion for the student, or to allow the writer of the textbook to do so, or at any time to induce the student to accept from another a conclusion which he himself might reach from the data. We have depended too much on our science as a mere observational science,— when as a matter of fact its chief glory is really its opportunity and its incentives to coherent thinking and careful testing of conclusions.

It is inexact enough, if we are entirely honest, to force us to hold our conclusions with an open mind ready to admit new evidence. It is entirely the fault of the teacher if the pupil gets a dogmatic, too-sure habit of mind as the result of his biological studies. And yet, as has been said, it is exact enough to enable us to reach just the same sort of approximations to truth which are possible in our own lives. The study of biology presents a superb opportunity to prepare for living by forming the habits of mind and of life that facilitate right choices in the presence of highly debatable situations. In this it much surpasses the more "exact" sciences. We may conclude, then, by positing the belief that the most important mental habit which human beings can form is that of using and applying consciously the scientific method as outlined above, not merely to biology alone, but to all the issues of personal life as well.

D. APPRECIATIONS, ATTITUDES, AND IDEALS AS AIDED BY BIOLOGY

(4) Attitudes of life perfected by study of the life sciences

This group of objectives is a bit less tangible, as some think, than those that have been mentioned; but in my own opinion they are as important and as educable for the good of the youth by means of biology as are knowledge, skill, and habit. In a sense these states of mind arise as by-products of the getting of information, skills, and habits; in turn they heighten their value. We have spoken above of the need of skill and habit in making use of the various steps in the scientific method in reaching conclusions in life. These are essential, but skill and habit alone are not enough to meet the necessities in actual life.

In the first place the habit of using the scientific method in the scientific laboratory does not in itself give assurance that the person will apply this method in getting at the truth in problems in his own personal life; and yet this is the essential object of all this scientific training. In order to get the individual to carry over this method,—especially where feelings and prejudices are involved,—we must inculcate in him the scientific ideal and the scientific attitude until they become general in their influence. To do this he ought to be induced as a regular part of his early courses in biology to practice the scientific method upon certain practical daily decisions exactly with the same rigor that is used in the biological laboratory. The custom of using this method in animal study should be transformed into an *attitude of dependence upon it* as the only sound method of solving one's life choices. Only by carrying the method consciously into our life's problems, *as a part of the exercise in the course in biology*, can we break up the disposition to regard the method as good merely in the biological laboratory. We must generate, by practice and precept, the *ideal* of making universal our dependence upon our best instrument of determining truth. A personal habit in the laboratory must become a general ideal for life, if we hope to substitute the scientific method for prejudice

in human living. There is no department of learning so well capable of doing this thing as biology.

In the second place, the scientific method standing alone, because of its very excellence as a method, is liable to produce a kind of over-sure dogmatism about conclusions, unless it be accompanied by the scientific attitude or spirit of open-mindedness. The scientific spirit does not necessarily flow from the scientific method at all, unless the teacher is careful in his use of it in teaching. We make a mistake if, in our just enthusiasm to impress the scientific method upon the student, we fail to teach that it can give, at best, only an approximation to truth. The scientific attitude which holds even our best-supported conclusions subject to revision by new evidence is the normal corrective of the possible dogmatism that comes from over-confidence in the scientific method as our best means of discovering truth.

The student at the end of the first year of biology ought to have more appreciation and enjoyment of plants and animals and their life than at the beginning,— and increased appreciation of his own relation to other animals; some attitude of dependence upon the scientific method of procedure not merely in biology but in his own life; a desire, however modest, for investigating things for himself; and an ideal of open-minded, enthusiastic willingness to subject his own conclusions to renewed testing at all times. All these gains should be reinforced by later courses.

Special Aims of Biology in Education

(5) Biology a valuable tool for certain technical pursuits

So far as I can see, the preparation of students for medicine, for biological research, or for any advanced application of biology calls only for the following,— in addition to the further intensification of the emphasis suggested above:

(*a*) An increased recognition of the subject matter in organizing the course. In the early courses the subject ought to be subordinated to the personal elements. If one is to relate himself to the science in a professional way, the logic of the science comes to be the dominant objective.

(*b*) Growing out of the above there comes to be a change of emphasis on the scientific method. The method itself is identical, but the attitude toward it is different. In the early courses it was guided by the *teaching* purpose. We insist upon the method in order that the student may appreciate how the subject has grown, may realize how all truth must be reached, and may come habitually to apply the method to his life problems. In the later courses it becomes the method of research into the unknown. The student comes more and more to use it as a tool, in whose use he himself is subordinated to his devotion to a field of investigation.

(*c*) A greater emphasis upon such special forms of biological knowledge as will be necessary as tools in the succeeding steps, and the selection of subject matter with this specifically in view. This is chiefly a matter of information, making the next steps intellectually possible.

(*d*) More specific forms of skill, adapted to the work contemplated. Technic becomes an object in such courses. Morphology, histology, technic, exact experimentation, repetition, drill, extended comparative studies, classifition, and the like become more essential than in the elementary courses. Thoroughness and mastery are desiderata for the sake both of subject matter and character; and in very much greater degree than in the general course.

Organization of the Course in Biology

Biology courses not to be standardized rigidly

The writer does not feel that standardized programs in biology in colleges are either possible or desirable. What is set down here under this heading is merely intended as carrying out the principles outlined above, and not as the only way to provide a suitable program. The writer assumes that the undergraduates are handled by men of catholic interests; and that the undergraduate courses are not distributed and manipulated primarily as feeders for specialized departments of research in a graduate school. This latter attitude is, in my opinion, fatal to creditable

undergraduate instruction for the general student or for the future high school teachers of the subject.

But they should follow a general principle:

There are three groups or cycles of courses which may properly be developed by the college or by the undergraduate department of the university.

First Group

This group contains introductory courses for all students, but organized particularly with the idea of bringing the rich material of biology to the service of young people with the aim of making them effective in life, and not as a first course for making them botanists or zoölogists.

Course — *Biology 1.* General Biology

(1) The *first* group of courses should introduce to life rather than to later biological courses

This course should introduce the student to the college method of work in the life sciences; should give him the general knowledge and points of view outlined above as the chief aims of Biology; should synthesize what the student already knows about plants and animals under the general conception of life. Ideally the botanical and zoölogical portions should be fused and be given by one teacher, rather than presented as one semester of botany and one of zoölogy. This, however, is frequently impracticable. In any event the total result should really be biology, and not a patchwork of botany and zoölogy. Hence there should be a free crossing of the barriers in use of materials at all times.

A year of biology is recommended because each pupil ought to have some work in both fields, and we cannot expect him to take a year in each.

Course — *Biology 2.* History of Biology

This course, dealing with the relation of the development of biology to human interests and problems, may be given separately, or as a part of Course I,— which should otherwise be prerequisite to it. This may be one of the most humanizing of all the possible courses in biology.

Second Group

(2) A *second* group should be technical and introductory to professional uses

This group furnishes a series of courses providing a thorough introduction to the principles and methods of botany and zoölogy. They provide discipline, drill, comparison, mastery of technic as well as increased appreciation of biology and of the scientific method. They should prepare for advanced work in biology, and for technical applications of it to medicine, agriculture, stock breeding, forestry, etc.

Course — Botany 1: General and Comparative Botany, and the Evolution of Plants.

Course — Botany 2: Physiology and Ecology of Plants.

Course — Botany 3: Plant Cytology, Histology, and Embryology.

Course — Zoölogy 1: General and Comparative Zoology.

Course — Zoölogy 2: Animal, including Human, Physiology.

Course — Zoölogy 3: Microtechnic, Histology, Histogenesis, Embryogeny.

Course — Zoölogy 4: Animal Ecology.

This outline for botany and zoölogy follows in the main the most common arrangement found in the schools of the country. In the personal judgment of the writer all undergraduate courses should combine aspects of morphology, physiology, ecology, etc., rather than be confined strictly to one particular phase; even histology and embryology can be better taught when their physiological aspects are emphasized. There is no fundamental reason, however, why there may not be great latitude of treatment in this group. An alluring feature of biological teaching is that a teacher who has a vital objective can begin anywhere in our wonderful subject and get logically to any point he wishes. These courses may be further subdivided, where facilities allow.

Third Group

This group contains certain of the more elementary applications of biology to human welfare. While having

(3) A *third* group of special, but cultural, courses

practical value in somewhat specialized vocations, the courses in this group are not proposed as professional or technical. They are definitely cultural. Every college might well give one or more of them, in accordance with local conditions. They ought to be eligible without the courses of the second group. The order is not significant.

Biology 3: Economic Entomology;
Biology 4: Bird Course;
Biology 5: Tree Course;
Biology 6: Bacteriology and Fermentation;
Biology 7: Biology of Sex; Heredity and Eugenics;
Biology 8: Biology and Education;
Biology 9: Evolution and Theoretical Problems.

Place of Biology in the College Curriculum

The first course ought to be given in such a way that it might fittingly be required of all freshmen

The introductory course (Biology 1) can be given in such a way that it ought to be required of all students during the freshman or sophomore year, preferably the freshman. In addition to the life value suggested above, and its introductory value in later biology courses, such a course would aid the student in psychology, sociology, geology, ethics, philosophy, education, domestic economy, and physical culture. Effort should be made to correlate the biological work with these departments of instruction. The course as now given in most of our colleges and universities does not possess enough merit to become a required study. Perhaps all we have a right at present to ask is that biology shall be one of a group of sciences from which all students must elect at least one. It is preposterous, in an age of science, that any college should not require at least a year of science.

Biology 1 should be prerequisite for botany 1 and zoölogy 1, and for the special biology courses in group three.

Botany 1 and zoölogy 1 should be made prerequisite for the higher courses in their respective fields; but aside from this almost any sequence would be allowable.

A major in biology should provide at least for biology 1 and 2, botany 1, zoölogy 1, botany 2 and 3, or zoölogy, 2 and 3. Chemistry is desirable as a preparation for the second group of courses.

Methods of Teaching as Conditioned by the Aims Outlined Above

Acceptance of biology retarded by poor pedagogy

Since the laboratory method came into use among biologists, there has been a disposition, growing out of its very excellences, to make a fetich of it, to refuse to recognize the necessity of other methods, to be intolerant of any science courses not employing the laboratory, and to affect a lofty disdain of any pedagogical discussion of the question whatsoever. The tone in which all this is done suggests a boast; but to the discriminating it amounts to a confession! The result of it has been to retard the development of biology to its rightful place as one of the most foundational and catholic of all educational fields. The great variety of aim and of matter not merely allow, but make imperative, the use of all possible methods; and there is no method found fruitful in education which does not lend itself to use in biology. The lecture method, the textbook, the recitation, the quiz and the inverted quiz, the method of assigned readings and reports, the method of conference and seminar, the laboratory method, and the field method are all applicable and needed in every course, even the most elementary.

Prostitution of the laboratory

Our method has thus crystallized about the laboratory as the one essential thing; but worse, we have used the very shortcomings of the laboratory as an excuse for extending its sway. The laboratory method is the method of research in biology. It is our only way to discover unknown facts. Is it, therefore, the best way to rediscover facts? This does not necessarily follow, though we have assumed it. Self-discovered facts are no better nor more true than communicated facts, and it takes more time to get them. The laboratory is the slowest possible way of getting facts.

We have tried to correct this quantitative difficulty by extending the laboratory time, by speeding up, by confining ourselves to static types of facts like those of structure, and by using detailed laboratory guides for matter and method, all of which tends to make the laboratory exercise one of routine and the mere observation and recording of facts or a verification of the statements in manuals. The correction of these well-known limitations of the laboratory must come, in my opinion, by a frank recognition of, and breaking away from, certain of our misapprehensions about the function of the laboratory. Some of these are:

Real purpose and possibility of laboratory work

1. That the chief facts of a science should be rediscovered by the student in the laboratory. This is not true. Life is too short. The great mass of the student's facts must come from the instructor and from books. The laboratory has as its function in respect to facts, some very vital things: as, making clear certain classes of facts which the student cannot visualize without concrete demonstration; giving vividness to facts in general; gaining of enough facts at first hand to enable him to hold in solution the great mass of facts which he must take second hand; to give him skill and accuracy in observation and in recording discoveries; to give appreciation of the way in which all the second-hand facts have been reached; to give taste and enthusiasm for asking questions and confidence and persistence in finding answers for them. Anything more than this is waste of time. These results are not gained by mere quantity of work, but only through constant and intelligent guidance of the student's attitude in the process of dealing with facts.

2. A feeling that the laboratory or scientific method consists primarily of observation of facts and their record. In reality these are three great steps instead of one in this method, which the student of biology should master: (1) the getting of facts, one device for doing which is observation; (2) the appraisal and discrimination of these facts to find which are important; and (3) the drawing

of the conclusions which these facts seem to warrant. There are two practical corollaries of this truth. One is that the laboratory should be so administered that the pupil shall appreciate the full scope of the scientific method, its tremendous historic value to the race, and the necessity of using *all* the steps of it faithfully in all future progress as well as in the sound solution of our individual problems and the guidance of conduct. The second is that we may make errors in our scientific conclusions and in life conclusions, through failure to discriminate among our facts, quite as fatally as through lack of facts. Indeed, my personal conviction is that more failures are due to lack of discrimination than to lack of observation. The power to weigh evidence is at least as important as the power to collect it.

3. A disposition to deny the student the right to reach conclusions in the laboratory,— or, as we flamboyantly say, to "generalize." Now in reality the only earthly value of *facts* is to get *truth*,— that is, conclusions or generalizations. To deny this privilege is taxation without representation in respect to personality. The purpose of the laboratory is to enable students to think, to think accurately and with purpose, to reach their own conclusions. The getting of facts by observation is only a minor detail. In reality, the data the student can get from books are much more reliable than his own observations are likely to be. Our laboratory training should add gradually to the accuracy of his observations, but particularly it should enable him to use his own and other persons' facts conjointly, and with proper discrimination, in reaching conclusions. To do other than this tends to abort the reasoning attitude and power, and teaches the pupil to stand passive in the presence of facts and to divorce facts and conclusions. The fear is, of course, that the students will get wrong conclusions and acquire the habit of jumping prematurely to generalizations. But this situation, while critical, is the very glory of the method. What we want to do is to ask them continually,— wherever possible,— *where*

their facts seem to lead them. Their conclusions are liable to be quite wrong, to be sure. But our province as teachers is to see that the facts ignorance of which made this conclusion wrong are brought to their attention,— and it is not absolutely material whether they discover these facts themselves or some one else does. What we want to compass is practice in reaching conclusions, and the recognition of the necessity of getting and discriminating facts in doing so, together with a realization that there are probably many other facts which we have not discovered that would modify our conclusions. This keeps the mind open. In other words, the student may thus be brought to realize the meaning of the "working hypothesis" and the method of approximation to truth. It makes no difference if one "jumps to a conclusion," if he jumps in the light of all his known facts and holds his conclusion *tentatively*. It is much better to reach wrong conclusions through inadequate facts than to have the mind come to a standstill in the presence of facts. Instead of being a threat, reaching a wrong conclusion gives us the opportunity to train students in holding their conclusions open-mindedly and subject to revision through new facts. Reaching wrong or partial conclusions and correcting them may be made even more educative than reaching right ones at the outset. This would not be true if the conclusion were being sought for the sake of the science. But it is being sought solely for the sake of the student. The distinction is important. The inability to make it is one of the reasons why research men so often fail as teachers.

All through life the student will be forced to draw conclusions from two types of facts,— both of which will be incomplete: those he himself has observed and those which came to him from other observers. While he must always feel free to try out any and all facts for himself, it is quite as important in practice that he be able to weigh other persons' facts discriminatingly. We teach in the laboratory that the pupil should not take his facts second hand, though we rather insist that he do so with his con-

clusions. In reality it is often much better to take our facts second hand; the stultifying thing is to take our conclusions so.

4. The dependence upon outlines and manuals. This is one of the most deadening devices that we have instituted to economize gray matter and increase the quantity of laboratory records at the expense of real initiative and thinking. It is easy for the reader to analyze for himself the mental reaction, or lack of it, of the student in following the usual detailed laboratory outline. *Every laboratory exercise should be an educative situation calling for a complete mental reaction from the pupil.* In the first place, no exercise should be used which is not really vital and educative. This assured, the full mental reaction of the student should be about as follows:

A normal complete mental reaction for every laboratory exercise

(1) The cursory survey of the situation.

(2) The raising by the student of such questions as seem to him interesting or worthy of solution. (Here, of course, the teacher can by skillful questioning lead the class to raise all necessary problems, and increase the student's willingness to attack them.)

(3) The determination through class conference of the order and method of attacking the problems, and the reasons therefor.

(4) The accumulation and record of discovered facts (sharply eliminating all inferences).

(5) The arrangement (classification) and appraisal (discrimination) of the discovered facts.

(6) Conclusions or inferences from the facts. (These should be very sharply and critically examined by teacher and class, to see to what extent they are really valid and supported by the facts.)

(7) Retesting of conclusions by new facts submitted by class, by teacher, or from books, with an effort to diminish prejudice as a factor in conclusions, and to increase the willingness to approach our own conclusions with an open mind.

When laboratory outlines are used at all they should consist merely of directions, and suggestions, and stimulating questions which will start the pupils on the main quest, —the raising and solving of their own problems.

Some Moot Problems [1]

Ascending or descending order?

1. Shall we begin with the simple, little-known, lower forms and follow the ascending order, which is analogous at least to the evolutionary order? Or shall we begin with the more complex but better-known forms and go downward? It seems to the writer that the former method has the advantage in actual interest; in its suggestiveness of evolution, which is the most important single impression the student will get from his course; and in the mental satisfactions that come to pupil and teacher alike from the sense of progress. However, our material is so rich, so interesting, and so plastic that it makes little difference where we begin if only we have a clear idea of what we want to accomplish.

Morphology versus other interests

2. What proportion of time should be given to morphology in relation to other interests? For several reasons morphology has been overemphasized. It lends itself to the older conception of the laboratory as a place to observe and record facts. It offers little temptation to reach conclusions. It calls for little use of gray matter. This makes it an easy laboratory enterprise. It is what the grade teachers call "busy" work, and can be multiplied indefinitely. It can be made to smack of exactness and thoroughness.

Furthermore, morphology *is* in reality a basal consideration. It is a legitimate part of an introductory course,—but never for its own sake nor to prepare for higher courses. But morphology is, however, only the starting point for the higher mental processes by which different forms of organisms are compared, for the correlating of structure with activity, for appreciation of adaptations of

[1] These problems relate particularly to the introductory courses.

structure both to function and to environmental influence. It thus serves as a foundation upon which to build conclusions about really vital matters. Experience teaches that sensitiveness, behavior, and other activities and powers and processes interest young people more than structure. The student's views are essentially sound at this point.

The introductory course should, therefore, be a cycle in which the student passes quite freely back and forth between form, powers, activities, conditions of life, and the conclusions as to the meanings of these. It is important only that he shall know with which consideration he is from time to time engaged.

Few types or many?

3. Shall a few forms be studied thoroughly, or many forms be studied more superficially? There is something of value in each of these practices. It is possible to overemphasize the idea of thoroughness in the introductory courses. Thoroughness is purely a relative condition anyway, since we cannot really master any type. It seems poor pedagogy, in an elementary class particularly, to emphasize small and difficult forms or organs because they demand more painstaking and skill on the part of the student. My own practice in the elementary course is to have a very few specially favorable forms studied with a good deal of care, and a much larger number studied partially, emphasizing those points which they illustrate very effectively.

Distribution of time

4. What proportion of time should be given to the various methods of work? Manifestly the answer to this question depends upon the local equipment and upon the character of the course itself. The suggestion here relates primarily to the general or introductory courses. It seems to me that a sound division of time would be: two or three hours per week of class exercises (lectures, recitations, reports, quiz, etc.) demanding not less than four hours of preparation in text and library work; and four to six hours a week of "practical" work with organisms, about two hours of which should take the form of studies in the field wherever this is possible.

Weakness of the research man as a teacher for the beginning course

5. Is the "research" man the best teacher for the introductory courses? In spite of a good deal of prejudgment on the part of college and university administrators and of the research biologists themselves, I am convinced he is not. While there are notable exceptions, my own observation is that the investigator, whether the head professor or the "teaching fellow," usually does not have the mental attitude that makes a successful teacher, at least of elementary classes,— and for these reasons: he begrudges the time spent in teaching elementary classes, presents the subject as primarily preparatory to upper courses, subordinates the human elements to the scientific elements, and actually exploits the class in the interest of research. The real teacher's question about an entering class is this: "How can I best use the materials of our science to make real men and women out of these people?" The question of the professional investigator is likely to be: "How many of these people are fit to become investigators, and how can I most surely find them and interest them in the science?" This is a perfectly fine and legitimate question; but it is not an appropriate one until the first one has been answered. It has been assumed that the answers to the two questions are identical. This is one of the most vicious assumptions in higher education today, in my opinion. Furthermore, the investigator with his interests centering at the margins of the unknown cannot use the scientific method as a teacher, whose interest must center in the pupil. The points of view are not merely not identical; they are incompatible.

Necessity of differentiation and recognition of the two functions

Experience indicates the wisdom of having all beginning courses in biology in colleges and universities given by teachers and not by investigators, mature or immature. All people who propose to teach biology in the high schools should have their early courses given from this human point of view, that they may be the better able to come back to it after their graduate work, in their efforts to organize courses for pupils the greater part of whom will never have any but a life interest in the subject. The

problem of presenting the advanced and special courses is relatively an easy one. The investigator is the best possible teacher for advanced students in his own special field if he is endowed with any common sense at all.

Tests of Effectiveness of Teaching

As yet we are notably lacking in regard to the measurement of progress as the result of our teaching. Our usual tests — examination, recitation, quiz, reports, laboratory notebooks — evaluate in a measure work done, knowledge or general grasp acquired, and accuracy developed. We need, however, measurements of skill, of habits, and of the still more intangible attitudes and appreciations. These may be gained in part by furnishing really educative situations and observing the time and character of the student's reaction. Every true teacher is in reality an experimental psychologist, and must apply directly the methods of the psychologist.

More vital *tests* of results of teaching must be found

The laboratory and field furnish opportunity for this sort of testing. The student may be confronted with an unfamiliar organism or situation and be given a limited time in which to obtain and record his results. He may be asked to state and enumerate the problems that are suggested by the situation; outline a method of solving them; discover as large a body of facts as possible; arrange them in an order that seems to him logical, with his reasons; and to make whatever inferences seem to him sound in the light of facts,— supporting his conclusions at every point. The ability to make such a total mental reaction promptly and comprehendingly is the best test of any teaching whatsoever. The important thing is that we shall not ourselves lose sight of the essential parts of it in our enthusiasm for one portion of it.

In judging attitude and appreciation I think it is possible for discriminating teachers to obtain the testimony of the pupil himself in appraisal of his own progress and attitude. This needs to be done indirectly, to be sure.

The student's self-judgment may not be accurate; but it is not at all impossible to secure a disposition in students to measure and estimate their own progress in these various things with some accuracy and fairness of mind. Besides its incidental value as a test, I know of no realm of biological observation, discrimination, and conclusion more likely to prove profitable to the student than this effort to estimate, without prejudice, his own growth.

The Literature of the Subject

Scarcity of authoritative pedagogical literature in biology

For various reasons very little attention has been given to the pedagogy of college biology by those in the best position to throw light upon this vital problem. More information as to the attitude of teachers of the subject is to be derived from college and university catalogs than elsewhere,— howbeit of a somewhat stereotyped and standardized kind. Much more has been written relative to the teaching of biology in the secondary schools. In my opinion the most effective teaching of biology in America today is being done in the best high schools by teachers who have been forced to acquire a pedagogical background that would enable them to reconstruct completely their presentation of the subject. Most of these people obtained very little help in this task from their college courses in biology. For these reasons every college teacher will greatly profit by studying what has been written for the secondary teachers. *School Science and Mathematics* (Chicago) is the best source for current views in this field. Its files will show no little of the best thought and investigation that have been devoted to the principles underlying instruction in biology. Lloyd and Bigelow, in *The Teaching of Biology* (Longmans, Green & Co.), have treated the problems of secondary biology at length. Ganong's *Teaching Botanist* (The Macmillan Company) has high value.

The authors of textbooks of biology, botany, and zoölogy issued during the last ten years have ventured to develop, in their prefaces, appendices, and elsewhere, their peda-

gogical points of view. The writer has personal knowledge that teaching suggestions are still resented by some college teachers of zoölogy. Illustrations of the tendency to incorporate pedagogical material in textbooks on biological subjects can be found in

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V

THE TEACHING OF CHEMISTRY

Preparation of entering students a determining factor

SOME of the students entering classes in chemistry in college have already had an elementary course in the subject in the high school or academy, while others have not. Again, some study chemistry in college merely for the sake of general information and culture, while many others pursue the subject because the vocation they are planning to make their life's work requires a more or less extensive knowledge of chemistry. Thus, all students in the natural sciences and their applications — as we have them in medicine, engineering, agriculture, and home economics — as well as those who are training to become professional chemists, either in the arts and industries or in teaching, must devote a considerable amount of time and energy to the study of chemistry. The teacher of college chemistry consequently must take into consideration the preparation with which the student enters his classes and also the end which is to be attained by the pursuit of the subject in the case of the various groups of students mentioned.

In the larger high schools courses in chemistry are now quite generally offered, but this is not yet true of the smaller schools. In some colleges those who have had high school chemistry are at once placed into advanced work without taking the usual basal course in general chemistry which is so arranged that students can enter it who have had no previous knowledge of the subject. In other words, in some cases the college builds directly upon the high school course in chemistry. As a rule, however, this does not prove very successful, for the high school course in chemistry is not primarily designed as a course upon which advanced college chemistry can be founded. This is as it should be, for after all, while the high school prepares students for college, its chief purpose is to act as a finishing school for those larger numbers of students who never go to college. The

high school course in chemistry is consequently properly designed to give certain important chemical facts and point out their more immediate applications in the ordinary walks of life, as far as this can properly be done in the allotted time with a student of high school age and maturity. The result is consequently that while such work can very well be accepted toward satisfying college entrance requirements, it is only rarely sufficient as a basis for advanced college courses in the subject. As a rule it is best to ask all students to take the basal course in general chemistry offered in college, arranging somewhat more advanced experiments in the laboratory wherever necessary for those who have had chemistry in preparatory schools. This has become the writer's practice after careful trial of other expedients. The scheme has on the whole worked out fairly well, for it is sufficiently elastic to meet the needs of the individual students, who naturally come with preparation that is quite varied. Almost invariably students who, on account of their course in high school chemistry, are excused from the general basal course in college chemistry have been handicapped forever afterward in their advanced work in the subject.

Organization of first-year course — General chemistry

The first year's work in college chemistry consists of general chemistry. It is basal for all work that is to follow, and yet at the same time it is a finished course, giving a well-rounded survey of the subject to all who do not care to pursue it further. This basal course is commonly given in the freshman year, though sometimes it is deferred to the sophomore year. Its content is now fairly uniform in different colleges, the first semester being commonly devoted to general fundamental considerations and the chemistry of the non-metals, while the metals receive attention in the second semester, the elements of qualitative analysis being in some cases taught in connection with the chemistry of the metals.

The work is almost universally conducted by means of lectures, laboratory work, and recitations. The lectures have the purpose to unfold the subject, give general orienta-

tion as to the most important fundamental topics and points of view, and furnish impetus, guidance, and inspiration for laboratory study and reading. To this end the lectures should be illustrated by means of carefully chosen and well-prepared experiments. These serve not only to illustrate typical chemical processes, and fundamental laws, but they also stimulate interest and teach the student many valuable points of manipulation, for it is well-nigh impossible to watch an expert manipulator without absorbing valuable hints on the building up, arranging, and handling of apparatus. In the lectures the material should be presented slowly, carefully, and clearly, so that it may readily be followed by the student. Facts should always be placed in the foreground, and they should be made the basis of the generalization we call laws, and then the latter naturally lead to theoretical conceptions. It is a great mistake to begin with the atomic theory practically the first day and try to bolster up that theory with facts later on as concrete cases of chemical action are studied. On the other hand, it is also quite unwise to defer the introduction of theoretical conceptions too long, for the atomic theory is a great aid in making rapid progress in the study of chemistry. At least two or three weeks are well spent in studying fundamental chemical reactions as facts quite independent of any theories whatsoever, in order that the student may thoroughly appreciate the nature of chemical change and become familiar with enough characteristic and typical cases of chemical action so that the general laws of chemical combination by weight and by volume may be logically deduced and the atomic and molecular theories presented as based upon those laws.

Up to this stage the reactions should be written out in words and all formulation should be avoided, so that the student will not get the idea that "chemistry is the science of signs and symbols," or that "chemistry is a hypothetical science," but that he will feel that chemistry deals with certain very definite, characteristic, and fundamental changes of matter in which new substances are formed,

and that these processes always go on in accordance with fixed and invariable laws, though they are influenced by conditions of temperature, pressure, light, electricity, and the presence of other substances in larger or smaller amounts. The theory and formulation when properly introduced should be an aid to the student, leading him to see that the expression of chemical facts is simplified thereby. Thus he will never make the error of regarding the symbol as the fundamental thing, but he will from the very outset look upon it simply as a useful form of shorthand expression, as it were, which is also a great aid in chemical thinking. Facts and theories should ever be kept distinct and separate in the student's mind, if he is to make real progress in the science.

A thoroughgoing, logical presentation of the subject, leading the student slowly and with a sense of perfect comprehension into the deeper and more difficult phases, should constitute one of the prime features of the work of the first year. Interest should constantly be stimulated by references to the historical development of the subject, to the practical applications in the arts and industries, to sanitation and the treatment of disease, to the providing of proper food, clothing, fuel, and shelter, to the problems of transportation and communication, to the chemical changes that are constantly going on in the atmosphere, the waters, and the crust of the earth as well as in all living beings. Nevertheless, all the time the *science* should be taught as the backbone of the entire course. The allusions to history and the manifold applications to daily life are indeed very important, but they must never obscure the science itself, for only thus can a thorough comprehension of chemistry be imparted and the benefits of the mental drill and culture be vouchsafed to the student.

Methods of teaching — The Lecture method

For the freshman and sophomore, two lectures per week are sufficient for this type of instruction. In these exercises the student should give his undivided attention to what is presented by the lecturer. The taking of notes is to be discouraged rather than encouraged, for it results in divid-

ing the attention between what is presented and the mechanical work of writing. To take the place of the usual lecture notes, students of this grade had better be provided with a suitable text, definite chapters in which are assigned for reading in connection with each lecture. The text thus serves for purposes of review, and also as a means for inculcating additional details which cannot to advantage be presented in a lecture, but are best studied at home by perusing a book, the contents of which have been illuminated by the experimental demonstrations, the explanations on the blackboard, the charts, lantern slides, and above all the living development and presentation of the subject by the lecturer. The lectures should in no case be conducted primarily as an exercise in dictation and note taking. If the lectures do not give general orientation, illumination, and inspiration for further study in laboratory and library, they are an absolute failure and had better be omitted entirely. On the other hand, when properly conducted the lectures are the very life of the course.

The laboratory work

The laboratory work should be well correlated with the lectures, especially during the first year. The experiments to be performed by the student should be carefully chosen and should not be a mere repetition of the lecture demonstrations. The laboratory experiments should be both qualitative and quantitative in character. They should on the one hand illustrate the peculiar properties of the substances studied and the typical concomitant changes of chemical action, but on the other hand a sufficient number of quantitative exercises in the laboratory should be introduced to bring home to the student the laws of combining weights and volumes, thus giving him the idea that chemistry is exact and that quantitative relations always obtain when chemical action takes place. At the same time the quantitative exercises lay the basis for the proper comprehension of the laws of combining weights and volumes and the atomic and molecular theories. At least three periods of two consecutive hours each should

be spent in the laboratory per week, and the laboratory exercises should be made so interesting and instructive that the student will feel inclined to work in the laboratory at odd times in addition if his program of other studies permits. The laboratory should at all times be, as its name implies, a place where work is done. Order and neatness should always prevail. Apparatus should be kept neat and clean, and in no case should slovenly habits of setting up apparatus be tolerated. The early introduction of a certain amount of quantitative experimentation in the course makes for habits of order and neatness in experimentation and guards against bringing up " sloppy " chemists.

The laboratory notebook should be a neat and accurate record of the work in the laboratory. To this end the entries in the notebook should be made in the laboratory at the time when the experiment is actually being performed. The writing of data on loose scratch paper and then finally writing up the notebook later at home from such sheets is not to be recommended, for while thus the final appearance of the notebook may be improved, it is no longer a first-hand record such as every scientist makes, but rather a transcribed one. The student, in making up such a transcription, is only too apt to draw upon his inner consciousness to make the book appear better; indeed, when he has neglected to transcribe his notes for several days, he is bound to produce anything but a true and accurate record, to say nothing about being put to the temptation to " fake " results which he has either not at all obtained in the laboratory, or has recorded so imperfectly on the scratch paper that he can no longer interpret his record properly. The only true way is to have the notes made directly in the permanently bound notebook at the time when the experiment is actually in progress. The student ought not to take the laboratory notebook home at all without the instructor's knowledge and permission. Each experiment should be entered in the notebook in a brief, businesslike manner. Long-winded, superfluous discussions should be avoided. As a rule, drawings of ap-

paratus in the notes are unnecessary, it being sufficient to indicate that the apparatus was set up according to Figure so-and-so in the laboratory manual or according to the directions given on page so-and-so. The student should be made to feel that the laboratory is the place where careful, purposeful experimentation is to be done, that this is the main object of the laboratory work, and that the notebook is merely a reliable record of what has been accomplished. To this end the data in the notebook should be complete, yet brief and to the point, so that what has been done can be looked up again and that the instructor may know that the experiment has been performed properly, that its purpose was understood by the student, and that he has made correct observations and drawn logical conclusions therefrom. While in each case the notes should indicate the purpose of the experiment, what has actually been done and observed, and the final conclusions, it is on the whole best not to have a general cut-and-dried formula according to which each and every experiment is to be recorded. It is better to encourage a certain degree of individuality in this matter on the part of each student. Notebooks should be corrected by the teacher every week, and the student should be asked to correct all errors which the teacher has indicated. A businesslike atmosphere should prevail in the laboratory at all times, and this should be reflected in the notebooks. Anything that savors of the pedantic is to be strictly avoided. Small blackboards should be conveniently placed in the laboratory so that the instructor may use them in explaining any points that may arise. Usually the same question arises with several members of the class, and a few moments of explanation before the blackboard enable the instructor to clear up the points raised. This not only saves the instructor's time, but it also stimulates interest in the laboratory when explanations are thus given to small groups just when the question is hot.

The student's laboratory record

It is, of course, assumed that the necessary amount of apparatus, chemicals, and other supplies is available, and

that the laboratory desks, proper ventilation of the rooms, and safeguards in the case of all experiments fraught with danger have received the necessary painstaking attention on the part of the instructor, who must never for a moment relax in looking after these matters, which it is not the purpose to discuss here. At all times the student should work intelligently and be fully aware of any dangers that are inherent in what he is doing. It need hardly be said that a beginner should not be set at experiments that are specially dangerous. Having been given proper directions, the student should be taught to go ahead with confidence, for working in constant trepidation that an accident may occur often creates a nervous state that brings about the accident. Too much emphasis cannot be laid upon proper, definite laboratory instructions, especially as to kinds and amounts of materials to be used. Such directions as "take a *little* phosphorus," for example, should be strictly avoided, for the direction as to amount is absolutely indefinite and may in the case where phosphorus or any other dangerous substance is used lead to dire accidents. The student should be given proper and very definite directions, and then he should be taught to follow these absolutely and not use more of the materials than is specified, as the beginner is so apt to do, thus often wasting his time and the reagents as well. Economy and the correct use of all laboratory supplies should be inculcated indirectly all the time. A fixed set of printed rules for the laboratory is generally neither necessary nor desirable when students are properly directed to work intelligently as they go, and good directions are given in the laboratory manual. Thus a spirit of doing intelligently what is right and proper, guarding against accidents, economizing in time and materials of all kinds will soon become dominant in the laboratory and will greatly add to the efficiency of the workers. Minor accidents are almost bound to occur at times in spite of all precautions, and the instructor should be ready to cope with these promptly by means of a properly supplied first-aid kit.

Recitations and quizzes

For students of the first year quizzes or recitations should be held at least twice a week. In these exercises the ground covered in the lectures and laboratory work should be carefully and systematically reviewed. The quiz classes should not be too large. Twenty-five students is the upper limit for a quiz section. The laboratory sections too should not be larger than this, and it is highly desirable that the same instructor conduct both the recitation and the immediate laboratory supervision of the student. Lecture classes can, of course, be very much larger in number. In most colleges the attendance upon classes in chemistry is so large that it is not possible for the professor to deliver the lectures and also personally conduct all of the laboratory work and recitations. It is consequently necessary to divide the class up into small sections for laboratory and quiz purposes. It is highly desirable that the student become well acquainted with his individual instructor in laboratory and quiz work, and therefore it would be unfortunate to have one instructor in the laboratory and still another instructor in the quiz. It might be argued that it is a good thing to have the student become acquainted with a number of instructors, but in the writer's experience such practice results to the disadvantage of the student, and is consequently not to be recommended.

In the recitations the student is to be encouraged to do the talking. He is to be given an opportunity to ask questions as well as to answer the queries put by the teacher. Short written exercises of about ten minutes' duration can be given to advantage in each of these recitations. In this way the entire class writes upon a well-chosen question or solves a numerical chemical problem and thus a great deal of time is saved. The quiz room should be well provided with blackboards which may be used to great advantage in the writing of equations and the solution of chemical problems just as in a class in mathematics. The textbook, from which readings are assigned to the student in connection with the lectures, should contain questions which recapitulate the contents of each chapter. When

such questions are not contained in the book, they ought to be provided by the teacher on printed or mimeographed sheets. When properly conducted, the recitation aids greatly in clarifying, arranging and fixing the important points of the course in the mind of the student. Young instructors are apt to make the mistake of doing too much talking in the quiz, instead of encouraging the student to express his views. In these days, when foreign languages and mathematics are more or less on the wane in colleges, the proper study of chemistry, particularly in the well-conducted quiz, will go far toward supplying the mental drill which the older subjects have always afforded.

Summary of first-year course

If the work of the first year has been properly conducted, it will have given the student a general view of the whole field of chemistry, together with a sufficient amount of detail so securely anchored in careful laboratory work and practical experience as to form a basis for either more advanced work in chemical lines or in the pursuance of the vocations already mentioned in which a knowledge of chemistry is basal. It is hardly necessary to add that if well taught, the student will at the end of such a course have a desire for more chemistry.

Organization of second-year course

The work of the second year of chemistry in college generally consists of quantitative analysis, though the more intensive study of the compounds of carbon, known as organic chemistry, is also frequently taken up at this time, and there is much to be said in favor of such practice.

Content of the course in quantitative analysis

In the quantitative analysis, habits of neatness and accuracy must be insisted upon. It is well to give the general orientation and directions by means of lectures. One or two such exercises per week will suffice. There should also be recitations. When two lectures per week are given, it will suffice to review the work with the student in connection with such lectures, provided the class is not too large for quiz purposes. Intelligent work should characterize a course in quantitative analysis. To this end the student should be taught how to take proper representa-

tive samples of the material to be analyzed. He should then be taught how to weigh or measure out that sample with proper care. The manipulations of the analytical process should be carried out so that each step is properly understood and its relations to the general laws of chemistry are constantly before the mind. In carrying out the process, the various sources of error must be thoroughly appreciated and guarded against. The final weighing or measuring of the form in which the ingredient sought is estimated should again be carried out with care, and in the calculation of the percentage content due regard should be had for the limits of error of experimentation throughout the entire analytical process. The student feels that a large number of the exercises in quantitative analysis are virtually cases of making chemical preparations of the highest possible purity, thus connecting his previous chemical experience with his quantitative work. The course in quantitative analysis should cover the determination of the more important basic and acid radicals, and should consist of both gravimetric and volumetric exercises.

The choice of the exercises is of great importance. It may vary, and should vary considerably in different cases. Thus a student in agriculture is naturally interested in the methods of estimating lime, phosphorus, nitrogen, potash, silica, sulphur, etc., whereas a student in engineering would be more interested in work with the heavy metals and the ingredients which the commercial samples of such metals are apt to contain. Thus, analytical work on solder, bearing metal, iron and steel, cement, etc., should be introduced as soon as the student in engineering is ready for it. It is quite possible to inculcate the principles of quantitative analysis by selecting exercises in which the individual student is interested, though, to be sure, certain fundamental things would naturally have to be taken by all students, whatever be the line for which they are training. A few exercises in gas analysis and also water analysis should be given in every good course in quantitative analysis that occupies an entire year. Careful attention should be given to the note-

book in the quantitative work, and the student should also be made to feel that in modern quantitative analysis not only balances and burettes are to serve as the measuring instruments, but that the polariscope and the refractometer also are very important, and that at times still other physical instruments like the spectroscope, the electrometer, and the viscometer may prove very useful indeed.

The quantitative analysis offers a splendid opportunity for bringing home to the student what he has learned in the work of the first year, showing him one phase of the application of that knowledge and making him feel, as it were, the quantitative side of science. This latter view can be imparted only to a limited degree in the first year's work, but the quantitative course offers an unusual opportunity for giving the student an application of the fundamental quantitative laws which govern all chemical processes. It is not possible to analyze very many substances during any college course in quantitative analysis. The wise teacher will choose the substances to be analyzed so as to keep up the interest of the student and yet at the same time give him examples of all the fundamental cases that are commonly met in the practice of analytical work. A careful, painstaking, intelligent worker should be the result of the course in quantitative analysis. Toward the end of the course, too, a certain amount of speed should be insisted upon. The student should be taught to carry on several processes at the same time, but care should be taken not to overdo this.

The course in organic chemistry

In the course in organic chemistry, lectures, laboratory work, and recitations, arranged very much as to time as in the first year, will be found advantageous. If the intensive work in organic chemistry is postponed to the third year in college, there are certain advantages. For example, the student is more mature and has had drill and experience in the somewhat simpler processes commonly taught in general and analytical chemistry. On the other hand, the postponing of organic chemistry to the third year has the disadvantage that the student goes through his basal training

in quantitative analysis without the help of that larger horizon which can come to him only through the study of the methods of organic chemistry. The general work of the first year, to be sure, if well done compensates in part for what is lost by postponing organic chemistry till the third year, but it can never entirely remove the loss to the student. Teachers will differ as to whether the time-honored division of organic chemistry into the aliphatic and aromatic series should be maintained pedagogically, but they will doubtless all agree that the methods of working out the structure of the chemical compound are peculiarly characteristic of the study of the compounds of carbon, and these methods must consequently constitute an important point to be inculcated in organic chemistry. The derivation of the various types of organic compounds from the fundamental hydrocarbons as well as from one another, and the characteristic reactions of each of these fundamental forms which lead to their identification and also often serve as a means of their purification, should naturally be taught in a thoroughgoing manner. The numerous practical applications which the teacher of organic chemistry has at his command will always serve to make this subject one of the deepest interest, if not the most fascinating portion of the entire subject of chemistry. No student should leave the course in organic chemistry without feeling the beautiful unity and logical relationship which obtains in the case of the compounds of carbon, the experimental study of which has cast so much light upon the chemical processes in living plants and animals, processes upon which life itself depends. The analysis of organic compounds is probably best taught in connection with the course in organic chemistry. It is here that the student is introduced to the use of the combustion furnace and the method of working out the empirical formulæ of the compounds which he has carefully prepared and purified. The laboratory practice in organic chemistry generally requires the use of larger pieces of apparatus. Some of the experiments also are connected with peculiar dangers of their

own. These facts require that the student should not approach the course without sufficient preliminary training. Furthermore, the teacher needs to exercise special care in supervising the laboratory work so as to guard the student against serious accidents.

The historical development of organic chemistry is especially interesting, and allusions to the history of the important discoveries and developments of ideas in organic chemistry should be used to stimulate interest and so enhance the value of the work of the student. The practical side of organic chemistry should never be lost sight of for a moment, and under no condition should the course be allowed to deteriorate into one of mere picturing of structural formulæ on the blackboard. All chemical formulas are merely compact forms of expression of what we know about chemical compounds. There are, no doubt, many facts about chemical compounds which their accepted formulas do not express at all, and the wise teacher should lead the student to see this. There is peculiar danger in the course in organic chemistry that the pupil become a mere formula worshiper, and this must carefully be guarded against.

The applications of organic chemistry to the arts and industries, but especially to biochemistry, will no doubt interest many members of the class of a course in organic chemistry if the subject is properly taught. This will be particularly the case if the teacher always holds before the mind of the pupil the actual realities in the laboratory and in nature, using formulation merely as the expression of our knowledge and not as an end in itself.

Place of physical chemistry in the college curriculum

Physical chemistry, commonly regarded as the youngest and by its adherents the most important and all-pervading branch of chemistry, is presented very early in the college course by some teachers, and postponed to the junior and even the senior year by others. Just as a certain amount of organic chemistry should be taught in the first year, so a few of the most fundamental principles of physical chemistry must also find a place in the basal work of the beginner. However, in the first year's work in chemistry so

many phases of the subject must needs be presented in order to give a good general view, that many details in either organic, analytical, or physical chemistry must necessarily be omitted. What is to be taught in that important basal year must, therefore, be selected with extreme care. Moreover, so far as physical chemistry is concerned, it is in a way chemical philosophy or general chemistry in the broadest sense of the word, and consequently requires for its successful pursuit not only a basal course, but also proper knowledge of analytical and organic chemistry, as well as a grounding in physics, crystallography, and mathematics. At the same time a certain amount of biological study is highly desirable. A good course in physical chemistry postulates lectures, laboratory work, and recitations. In general, these should be arranged much like those in the basal course and the course in organic chemistry. If anything, more time should be put upon the lectures and recitations; certainly more time should be devoted to exercises of this kind than in the course in quantitative analysis, which is best taught in the laboratory. At the same time it would be a mistake to teach physical chemistry without laboratory practice. Indeed, laboratory practice is the very life of physical chemistry, and the more of such work we can have, the better. However, since physical chemistry, as already stated, delves into the philosophical field, discussions in the lecture hall and classroom become of peculiar importance.

Courses in applied chemistry

Many colleges now give additional courses in chemical technology. These would naturally come after the student has had a sufficient foundation in general chemistry, chemical analysis, and organic and physical chemistry. As a rule such applied courses ought not to be given until the junior or senior year. It is a great mistake to introduce such courses earlier, for the student cannot do the work in an intelligent manner.

Enthusiastic teaching a vital factor

In all the courses in chemistry, interest and enthusiasm are of vital importance. These can be instilled only by the teacher himself, and no amount of laying out courses

on paper and giving directions, however valuable they may be, can possibly take the place of an able, devoted, enthusiastic teacher. Chemistry deals with things, and hence is always best taught in the laboratory. The classroom and the library should create interest and enthusiasm for further laboratory work, and in turn the laboratory work should yield results that will finally manifest themselves in the form of good written reports.

The teacher must continue his researches

Original work should always be carried on by the college teacher. If he fails in this, his teaching will soon be dead. There will always be some bright students who can help him in his research work. These should be led on and developed along lines of original thought. From this source there will always spring live workers in the arts and industries as well as in academic lines. Lack of facilities and time is often pleaded by the college teacher as an excuse for not doing original work. There is no doubt that such facilities are often very meager. Nevertheless, the enthusiastic teacher is bound to find the time and also the means for doing some original work. A great deal cannot be expected of him as a rule because of his pedagogical duties, but a certain amount of productive work is absolutely essential to any live college teacher.

Future of chemistry in the college curriculum

The importance of chemistry in daily life and in the industries has been increasing and is bound to continue to increase. For this reason the subject is destined to take a more important place in the college curriculum. If well taught, college chemistry will not only widen the horizon of the student, but it will also afford him both manual training and mental drill and culture of the highest order.

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VI

THE TEACHING OF PHYSICS

THE need of giving to physics a prominent place in the college curriculum of the twentieth century is quite universally admitted. If, as an eminent medical authority maintains, no man can be said to be educated who has not the knowledge of trigonometry, how much more true is this statement with reference to physics? The five human senses are not more varied in scope than are the five great domains of this science. In the study of heat, sound, and light we may strive merely to understand the nature of the external stimuli that come to us through touch, hearing and sight; but in mechanics, where we examine critically the simplest ideas of motion and inertia, we acquire the method of analysis which when applied to the mysteries of molecular physics and electricity carries us along avenues that lead to the most profound secrets of nature. Utilitarian aspects dwindle in our perspective as we face the problem of the structure, origin, and evolution of matter — as we question the independence of space and time. Modern physics possesses philosophic stature of heroic size.

Utilitarian value of the study of physics

But with regard to everyday occurrences a study of physics is necessary. It is trite to mention the development in recent years of those mechanical and electrical arts that have made modern civilization. The submarine, vitalized by storage battery and Diesel engine, the torpedo with its gyroscopic pilot and pneumatic motors, the wireless transmission of speech over seas and continents — these things no longer excite wonder nor claim attention as we scan the morning paper; yet how many understand their mechanism or appreciate the spirit which has given them to the world?

Disciplinary value of the study

If culture means the subjective transformation of information into a philosophy of life, can culture be complete unless it has included in its reflections the marvelously

simple yet intricate interrelations of natural phenomena? The value of this intricate simplicity as a mental discipline is equaled perhaps only in the finely drawn distinctions of philosophy and in the painstaking statements of limitations and the rapid generalizations of pure mathematics; and let us not forget the value of discipline, outgrown and unheeded though it be in the acquisitive life of the present age.

Relation of physics to philosophy and the exact sciences

The professional student, continually increasing in numbers in our colleges, either of science or in certain branches of law, finds a broad familiarity with the latest points of view of the physicist not only helpful but often indispensable. Chemistry can find with difficulty any artificial basis for a boundary of its domain from that of physics. Certainly no real one exists. The biologist is heard asking about the latest idea in atomic evolution and the electrical theories of matter, hoping to find in these illuminating points of view, he tells us, some analogy to his almost hopelessly complex problems of life and heredity. Even those medical men whose interest is entirely commercial appreciate the convenience of the X-ray and the importance of correctly interpreting the pathological effects of the rays of radio-activity and ultra-violet light. One finds a great geologist in collaboration with his distinguished colleague in physics, and from the latter comes a contribution on the rigidity of the earth. Astronomy answers nowadays to the name of astrophysics, and progressive observatories recognize in the laboratory a tool as essential as the telescope. In a word, the professional student of science not only finds that the subject matter of physics has many fundamental points of contact with his own chosen field, but also recognizes that the less complex nature of its material allows the method of study to stand out in bolder relief. Training in the method and a passion for the method are vital to a successful and an ardent career.

In the teaching of physics, then, the aim might at first sight appear to be quite varied, differing with different classes of students. A careful analysis of the situation,

Should the teaching of college physics change its aim for different classes of students?

however, will show, we think, that this conclusion can with difficulty be justified: that it is necessary to conduct college instruction in a fashion dictated almost not at all by the subsequent aims of the students concerned. In the more elementary work, certainly, adherence to this idea is of great importance. The character, design, and purpose of an edifice do not appear in the foundations except that they are massive if the structure is to be great.

Not infrequently this seems an unnecessary hardship to a professional student anxious to get into the work of his chosen field. If such is the case, let him question perhaps whether any study of physics should be attempted, as this query may have different answers for different individuals. But if he is to study it at all, there is but one place where the analysis of physical phenomena can begin, and that is with fundamentals — space, time, motion, and inertia. How can one who is ignorant of the existence and characteristics of rotational inertia understand a galvanometer? How can waves be discussed unless in terms of period, amplitude, frequency, and the like, that find definition in simple harmonic motion? How does one visualize the mechanism of a gas, unless by means of such ideas as momentum interchange, energy conservation, and forces of attraction?

Let us emphasize here, lest we be misunderstood, that we are considering collegiate courses. We do not doubt that descriptive physics may be given after one fashion to farmers, quite differently to engineers, and from still a third point of view to medical students. Unfortunately some collegiate courses never get beyond the high school method. Our aim is not to discuss descriptive courses, but those that approach the subject with the spirit of critical analysis, for these alone do we deem worthy of a place in the college curriculum.

The problem of the descriptive course is the problem of the high school. Because of failure there, too often we see at many a university courses in subfreshman physics. These are made necessary where entrance requirements do not

demand this subject and where subsequent interest along related lines develops among the students a tardy necessity of getting it. From the point of view of the collegiate course it often appears as if the subfreshman course could be raised to academic rank. This is because familiarity with the material must precede an analysis of it. Credit for high school physics on the records of the entrance examiner, unless this credit is based on entrance examination, is often found to stand for very little. Consequently the almost continual demand for the high school work under the direct supervision of a collegiate faculty. The number of students who should go into this course instead of the college course is increasing at the present time in the immediate locality of the writer.

The course in college physics differentiated from the high school course

As contributory testimony here, witness the number of colleges that do not take cognizance at all of high school preparation and admit to the same college classes those who have never had preparatory physics with those who have had it. We are told the difference between the two groups is insignificant. Perhaps it is. If so, this fact reflects as much on the college as on the high school. If we are looking for a solution of our problem in this direction, let us be undeceived; we are looking backwards, not forward.

No one will affirm that to a class of whose numbers some have never had high school physics a course that is really analytical can be given. Wherever a rigorous analytic course is given those who have been well trained in descriptive physics do well in it in general. Let us not beg the question by giving such physics in a college that does not require high school preparation. The college curriculum is full enough as it is without duplication of high school work, and any college physics course that is a first course is essentially a high school course.

Need of adequate high school preparation in physics

Let us rather put the responsibility squarely where it lies. The high school will respond if the urgency is made clear. Witness some of them in our cities already attempting the junior college idea, an idea that has not

been unsuccessful in some of our private schools. If it is made clear that a thoroughgoing course in descriptive physics is a paramount necessity in college work and that no effort will be spared on the part of the university to insure this quality, the men will be found and the proper courses given.

Preparatory work in mathematics essential for success in college physics

We favor a comprehensive examination plan in all cases where the quality of the high school work is either unknown or open to question.

Familiarity, likewise, with the most elementary uses of mathematics should be insured. It would be highly desirable that a course of collegiate grade in trigonometry should immediately precede the physics. This is not because the details of trigonometry are all needed in physics. In fact, a few who have never had trigonometry make a conspicuous success in physics. These, however, are ones who have a natural facility in analysis. To keep them out because of failure to have had a prerequisite course in trigonometry often works an unnecessary hardship. We would argue, therefore, for a formal prerequisite on this subject, reserving for certain students exemption, which should be determined in all cases, if not by the instructor himself, at least by his coöperation with some advisory administrative officer.

Need of testing each student's preparation

Nor is it sufficient with regard to the mathematical preparation or the knowledge of high school physics in either case to go exclusively by the official credit record of the student. It is our firm conviction from several years' experience where widely different aims in the student body are represented that above and beyond all formal records attention to the individual case is of prime importance. The opening week of the course should be so conducted that those who are obviously unequipped can be located and directed elsewhere into the proper work. How this may best be accomplished can be determined only by the circumstances in the individual school, we imagine. Daily tests covering the simplest descriptive information that should be retained from high school physics and requiring

the intelligent use of arithmetic, elementary algebra, and geometry will reveal amazing incapacity in these things. Tuttle, in his little book entitled *An Introduction to Laboratory Physics* (Jefferson Laboratory of Physics, Philadelphia, 1915), gives on pages 15–16 an excellent list of questions of this sort. Any one with teaching experience in the subject whatever can make up an equally good one suited for his special needs and temperament. It should not be assumed that all who fail in such tests should be dropped. Some undoubtedly should be sent back to high school work or its equivalent; others may need double the required work in mathematics to overcome their unreadiness in its use. Personal contacts will show that some are drifting into a scientific course who have no aptitude for it and who will be doomed to disappointment should they continue. In a word, then, we are convinced that the more carefully one plans the work of the first week or so the more smoothly does the work of the rest of the year follow. The number of failures may be reduced to a few per cent without in any way relaxing the standard of the course.

Methods of teaching college physics

With regard to the organization of the college courses in physics there seems to us to be at least one method that leads to a considerable degree of success. This is not the lecture method of instruction; neither is it a wholly unmitigated laboratory method.

Lecture method vs. laboratory method

To kindle inspiration and enthusiasm nothing can equal the contact in lectures with others, preferably leaders in their profession, but at least men who possess one of these qualities. Such contacts need not be frequent; indeed, they should not be. The speaker is apt to make more effort, the student to be more responsive, if such occasions are relatively rare. Even thus, although real information is imparted at such a time, it is seldom acquired. However, perspective is furnished, interest stimulated, and the occasion enjoyed.

For the real acquisition of scientific information, the great method is the working out of a laboratory exercise

Limitations of exclusive use of each method

and pertinent problems, with informal guidance in the atmosphere of active study and discussion engendered among a small group,— the laboratory method. Taken alone, it is apt to become mechanical and uninteresting and the outlook to be obscured by details. Lectures, especially demonstration lectures, are needed to vitalize and inspire. Moreover, many of the most vivid illustrations of physical principles that occur on every hand to focus the popular attention are never met with in the college course because they are unsuited for inexperienced hands or not readily amenable to quantitative experimentation. The more informally such demonstrations can be conducted, the more enthusiastically they are received.

Aims of the laboratory method

With regard to laboratory work, accuracy in moderate degree is important, but too great insistence upon it is apt to overshadow the higher aim; namely, that of the analysis of the phenomena themselves. A determination of the pressure coefficient of a gas to half a per cent, accompanied by a clear visualization of the mechanism by which a gas exerts a pressure and a usable identification of temperature with kinetic agitation, would seem preferable to an experimental error of a tenth per cent which may be exacted which is unaccompanied by these inspiring and rather modern points of view. Especially in electricity is a familiarity with the essentials of the modern theories important. Here supplementary lectures are of great necessity, for no textbook keeps pace with progress in this tremendously important field. Problem solving with class discussion is absolutely essential, and should occupy at least one third of the entire time. In no other way can one be convinced that the student is doing anything more than committing to memory, or blindly following directions with no reaction of his own.

Value of the supplementary lecture

The incorporation recently of this idea into the courses at the University of Chicago has been very successful. Five sections which are under different instructors are combined one day a week at an hour when there are no other university engagements, for a lecture demonstration. This

is given by a senior member of the staff whenever possible. The other meetings during the week are conducted by the individual instructors and consist of two two-hour laboratory periods and two class periods that usually run into somewhat over one hour each. These sections are limited to twenty-five, and a smaller number than this would be desirable. The responsibility for the course rests naturally upon the individual instructors of these small sections. These men also share in the demonstration work, since each is usually an enthusiast in some particular field and will make a great effort in his own specialty to give a successful popular presentation of the important ideas involved. The enthusiasm which this plan has engendered is very great. Attendance is crowded and there is always a row of visitors, teachers of the vicinity, advanced students in other fields of work, or undergraduates brought in by members of the class. These latter especially are encouraged, as this does much to offset current ideas that physics is a subject of unmitigated severity. The particular topics put into these demonstrations will be discussed in paragraphs below, which take up in more detail the organization of the special subdivisions of the material in a general physics course.

Mechanics a stumbling block — How to meet the difficulty

Mechanics is a stumbling block at the outset. As we have indicated above, it must form the beginning of any course that is analytic in aim. There is no question of sidestepping the difficulty: it must be surmounted. A judicious weeding during the first week is the initial part of the plan. Interest may be aroused at once in the demonstration lectures by mechanical tricks that show apparent violations of Newton's Laws. These group around the type of experiment which shows a modification of the natural uniform rectilinear motion of any object by some hidden force, most often a concealed magnetic field. The instinctive adherence of every one to Newton's dynamic definition, that acceleration defies the ratio of force to inertia, is made obvious by the amusement with which a trick in apparent defiance of this principle is greeted. Informality of dis-

cussion in such experiments, questions on the part of the instructor that are more than rhetorical, and volunteer answers and comment from the class increase the vividness of the impressions. A mechanical adaptation of the "monkey on the string" problem, using little electric hoists or clockworks, introduces interesting discussion of the third law in conjunction with the second. A toy cannon and target mounted on easily rolling carriages bring in the similar ideas where impulses rather than forces alone can be measured.

There follow, then, the laboratory experiments of the Atwood machine and the force table, where quantitative results are demanded. It is desirable to have these experiments at least worked by the class in unison. Whatever may be the exigencies of numbers and apparatus equipment that prevent it later, these introductions should be given to and discussed by all together. In the nature of things, fortunately, this is possible. A single Atwood machine will give traces for all in a short time under the guidance of the instructor. The force table experiment is nine-tenths calculation, and verifications may be made for a large number in a short time. Searching problems and discussion are instigated at once, and the notion of rotational equilibrium and force moments brought in. Because of the very great difficulty seeming to attach to force resolutions, demonstration experiments and problems using a bridge structure, such as the Harvard experimental truss, will amply repay the time invested. Another experiment here, which makes analysis of the practice of weighing, is possible, although there will be divergence almost at once due to the personality of the instructor and the equipment by which he finds himself limited. The early introduction of moments is important, however, because it seems as if a great amount of unnecessary confusion on this topic is continually cropping out later. At this point, if limitations of apparatus present a difficulty, a group of more or less independent experiments may be started. Ideas of energy may be illustrated in the determination of the

efficiency and the horse power of simple machines, such as water motors, pulleys, and even small gas or steam engines.

In discussion of power one should not forget that in practical problems one meets power as force times velocity rather more frequently than as rate of doing work, and this aspect should be emphasized in the experiments. Conservation of energy is brought out in these same experiments with reference to the efficiencies involved. In sharp contrast here the principle of conservation of momentum may be brought in by ballistic pendulum experiments involving elastic and inelastic impacts. Most students are unfamiliar with the application of these ideas to the determination of projectile velocities, and this forms an interesting lecture demonstration. Elasticity likewise is a topic that may be introduced with more or less emphasis according to the predilection of the instructor. The moduli of Young and of simple rigidity lend themselves readily to quantitative laboratory experiments. Any amount of interesting material may be culled here from recent investigations of Michelson, Bridgman, and others with regard to elastic limits, departures from the simple relations, variations with pressure, etc., for a lantern or demonstration talk in these connections.

By this time the student should have found himself sufficiently prepared to take up problems of rotational motion. The application of Newton's Laws to pure rotations and combinations of rotation and translation, such as rolling motions, are very many. We would emphasize here the dynamic definition of moment of inertia, $I = \overline{Fh}/a$ rather than the one so frequently given importance for computational purposes, Σmr^2. Quantitative experiments are furnished by the rotational counterpart of the Atwood machine. Lecture demonstrations for several talks abound: stability of spin about the axis of greatest inertia, Kelvin's famous experiments with eggs and tops containing liquids, which suggest the gyroscopic ideas, and finally a discussion of gyroscopes and their multitudinous applications. The book of Crabtree, *Spinning Tops and the Gyroscope*,

and the several papers by Gray in the *Proceedings of the Physical Society of London*, summarize a wealth of material. If one wishes to interject a parenthetical discussion of the Bernouilli principle, and the simplest laws of pressure distributions on plane surfaces moving through a resisting medium, a group of striking demonstrations is possible involving this notion, and by simple combination of it with the precession of a rotating body the boomerang may be brought in and its action for the major part given explanation.

Rotational motion leads naturally to a discussion of centripetal force, and this in turn is simple harmonic motion. This latter finds most important applications in the pendulum experiments, and no end of material is here to be found in any of the textbooks. The greatest refinement of experimentation for elementary purposes will be the determination of "g" by the method of coincidences between a simple pendulum and the standard clock. Elementary analysis without use of calculus reaches its culmination in a discussion of forced vibrations similar to that used by Magie in his general text. Many will not care to go as far as this. Others will go farther and discuss Kater's pendulum and the small corrections needed for precision, for here does precision find bold expression.

It is not our purpose to give a synopsis of the entire general physics course. We have made an especially detailed study of mechanics, because this topic is the one of greatest difficulty by far in the pedagogy. It is too formally given in the average text, and seems to have suffered most of all from lack of imagination on the part of instructors.

Suggested content for the study of phenomena of heat and molecular physics

In the field of heat and molecular physics in general there is much better textbook material. Experiments here may legitimately be called precise, for the gas laws, temperature coefficients, and densities of gases and saturated vapor pressures will readily yield in comparatively inexperienced hands an accuracy of about one in a thousand. In the demonstrations emphasis should be given to the

visualization of the kinetic theory points of view. Such models as the Northrup visible molecule apparatus are very helpful. However, in absence of funds for such elaboration, slides from imaginative drawings showing to scale conditions in solids, liquids, and vapors with average free paths indicated and the history of single molecules depicted will be found ideal in getting the visualization home to the student. Where we have a theory so completely established as the mechanical theory of heat it seems quite fair to have recourse to the eye of the senses to aid the eye of the mind. Brownian movements have already yielded up their dances to the motion picture camera. Need the "movies" be the only ones to profit by the animated cartoon?

Nor should the classical material be forgotten. Boys' experiments in soap bubbles have been the inspiration of generations of students of capillarity. And if the physicist will consult with the physiological chemist he will find a mass of material of which he never dreamed where these phenomena of surface tension enter in a most direct fashion to leading questions in the life sciences.

The teacher of scholarship and understanding is the teacher who uses sound methods

Enough has been said to indicate what we consider the methods of successful teaching of college physics. It is quite obvious, we think, that physics constitutes no exception to the rule that the teacher must first of all know and understand his subject. Right here lies probably nine tenths of the fault with our pedagogy. No amount of study of method will yield such returns as the study of the subject itself. The honest student, and every teacher should belong to this class or he has no claim to the name, is well aware that most of his deficiency in explaining a topic is in direct ratio to his own lack of comprehension of it. In physics, as in every other walk of life, we suffer from lack of thoroughness, from a kind of superficiality that is characteristically human but especially American. We have yet to know of any one who really ranks as a scholar in his subject from whom students do not derive inspiration and enthusiasm. Such a one usually pays little attention to the methods of others, for the divine fire of knowl-

edge itself does not need much of tinder to kindle the torches of others. Our greatest plea is for our teachers to be men of understanding, for then they will be found to be men of method.

The method of analysis dominant in physics

The sequence in which heat, electricity, sound, and light follow mechanics seems quite immaterial. Several equally logical plans may be organized. Preference is usually accorded one or the other on the basis of local conditions of equipment, and needs little reference to pedagogy. If one gives to mechanics its proper importance, the difficulty in giving instruction in the other topics seems very much less. The momentum acquired seems to serve for the balance of the year. Always must analysis be insisted upon, if our college course is going to differ from that of the high school. If we are to let students be content to read current from an ammeter with a calibrated scale and not have the interest to inquire and the ambition to insist upon the knowledge of how that calibration was originally made, we have no right to claim any collegiate rank for our courses. But if we define electrical current in terms of mechanical force which exhibits a balanced couple on a system in rotational equilibrium, there can be no dodging of the issue, for in no other way than by the study of the mechanics of the situation can the content and the limitations of our definition be understood. Any college work, so called, that does less than analyze thus is nothing more than a review and amplification of the material that should be within the range of the high school student and in that place presented to him. The first college course reveals a different method, the method of analysis. Science at the present time is so far developed that in no branch is progress made by mere description and classification. The method of analysis is dominant in the biological and the earth sciences as well as in the physics and chemistry of today.

On the more advanced college courses which follow the general physics course little comment is needed. Problems and questions here also exist, but they have a strongly local color and are out of place in a general discussion. The

Teaching of advanced courses in physics

student body is no longer composed of the rank and file, half of whom are driven, by some requirement or other, into work in which they have but a passing interest at best. It is no longer a problem of seeing how much can be made to adhere in spite of indifference, of how firm a foundation can be prepared for needs as yet unrecognized in the subject of the effort. A very limited number, comparatively, enter further work of senior college courses, and these have either enthusiasm or ability and often both. Of course, a cold neglect or bored indifference in the attitude of the teacher will be resented. It will kill enthusiasm and send ability seeking inspiration elsewhere. But any one who is fond of his subject, and of moderate ability and industry, should have no difficulty in developing senior college work. If our instructor in the general course must be a scholar to be successful, the man in more advanced work must be one *a fortiori*. If he is not, few who come in contact with him have so little discernment as to fail to recognize the fact.

Organization of advanced courses

Organization of senior college work may be in many ways. One method where an institution follows the quarter system is the plan of having eight or ten different and rather unrelated twelve-week major courses which may be taken in almost any order. Half of these are lecture courses, the other half exclusively laboratory courses. There should be a correspondence of material to some extent between the two. Lectures on the kinetic theory of gases should have a parallel course in which the classical experiments of the senior heat laboratory are performed,—such experiments, for example, as vapor density, resistance and thermocouple pyrometry, bomb calorimetry viscosity, molecular conductivity, freezing and boiling points, recalescence, etc. A course of advanced electrical measurements should have a parallel lecture course in which the theoretical aspects of electromagnetism, the classical theories, and the equations that represent transitory and equilibrium conditions in complex circuits are discussed. In optics, likewise, there is ample material of great importance: physical,

geometrical optics, spectroscopy, photography, X-ray crystallography, etc. The advanced student in these fields finds more elasticity and opportunity for cultivating a special interest in having a large number of limited interest courses from which to choose than in having such material presented in a completely organized course covering one or two years of complete work. Instructors who are specialists have opportunity of working up courses in their own fields which they do more efficiently under this plan. Research begins at innumerable places along the way, and the senior college courses so organized are the feeders of all graduate work.

Dangers of formalizing methods of instruction

In all of the above discussion it should be clearly remembered that no single plan or no one particular method has the final word or ever will have. As long as a science is growing and unfinished, points of view will continually be shifting. We are largely orthodox in our teaching. If brought up on the laboratory method of instruction it may seem the best one for us, but others may prefer another way which they have inherited. Let us appeal, then, for a constructive orthodoxy. Let us be as teachers of a subject to which we are devoted, truly and sincerely open-minded, quick to recognize and sincere in our efforts to adopt what is better wherever we meet it: waiting not to meet it, either, but going out to seek it. From the humblest college to the greatest university we shall find it here and there. Not alone in schools but in the legion of human activities about us on every hand are people who are doing things more efficiently, more thoroughly, and more skillfully than we do things. If we would be of the number that lead, we must be among the first to recognize these facts and profit by them.

First, let our work be organized with respect to that of others — the high schools; not discounting their labor but having them truly build for us.

Second, let us be open-minded enough to see that all methods of instruction have their advantages and make such combinations of the best elements in each as best suit our purpose.

Above all things, let us know our subject. Here is a task before which we quail in this generation of vast vistas. But there is no alternative for us. No amount of method will remove the curse of the superficially informed. Let us devote ourselves to smaller fields if we must, but let us not tolerate ignorance among those who bear the burden of passing on, with its flame ever more consuming, the torch of knowledge.

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VII

THE TEACHING OF GEOLOGY

Values of the study of geology diverse

SO wide is the scope of the science of the earth, so varied is its subject matter, and so diverse are the mental activities called forth in its pursuit, that its function in collegiate training cannot be summed up in an introductory phrase or two. Geology is so composite that it is better fitted to serve a related group of educational purposes than a single one alone. Besides this, these possible services have not yet become so familiar that they can be brought vividly to mind by an apt word or phrase; they need elaboration and exposition to be valued at what they are really worth. Geology is yet a young science and still growing, and as in the case of a growing boy, to know what it was a few years ago is not to know what it is today. Its disciplines take on a realistic phase in the main, but yet in some aspects appeal powerfully to the imagination. Its subject matter forms a constitutional history of our planet and its inhabitants, but yet largely wears a descriptive or a dynamic garb.

Geology a study of the process of evolution

Though basally historical, a large part of the literature of geology is concerned with the description of rocks, structural features, geologic terrains, surface configurations and their modes of formation and means of identification. A notable part of the text prepared for college students relates primarily to phenomena and processes, leaving the history of the earth to follow later in a seemingly secondary way. This has its defense in a desire first to make clear the modes of the geologic processes, to the end that the parts played by these processes in the complexities of actions that make up the historical stages may be better realized. This has the effect, however, of giving the impression that geology is primarily a study of rocks and rock-forming processes, and this impression is confirmed by the great mass of descriptive literature that has sprung almost

necessarily from the task of delineating such a multitude of formations before trying to interpret their modes of origin or to assign them their places in the history of the earth. The descriptive details are the indispensable data of a sound history, and they have in addition specific values independent of their service as historical data. But into the multiplicity and complexity of the details of structure and of process, the average college student can wisely enter to a limited extent only, except as they form types, or appear in the local fields which he studies, where they serve as concrete examples of world-forming processes.

Disciplinary worth of study of geology

The study of these structures, formations, configurations, and processes yields each its own special phase of discipline and its own measure of information. The work takes on various chemical, mechanical, and biological aspects. As a means of discipline it calls for keenness and diligence in observation, circumspection in inference, a judicial balancing of factors in interpretation. An active use of the scientific imagination is called forth in following formations to inaccessible depths or beneath areas where they are concealed from view.

While thus the study of structures, formations and configurations constitutes the most obtrusive phase of geologic study and has given trend to pedagogical opinion respecting its place in a college course, such study is not, in the opinion of the writer, the foremost function of the subject in a college curriculum that is designed to be really broad, basal, and free, in contradistinction to one that is tied to a specific vocational purpose.

This study concerned primarily with the typical college course, not with vocational courses

While we recognize, with full sympathy, that the subject matter of geology enters vitally into certain vocational and prevocational courses, and, in such relations, calls for special selections of material and an appropriate handling, if it is to fulfill these purposes effectively, this seems to us aside from the purpose of this discussion, which centers on typical college training — training which is liberal in the cosmic sense, not merely from the homocentric point of view.

Knowledge of geology contributes to a truly liberal education

To subserve these broader purposes, geology is to be studied comprehensively as the evolution of the earth and its inhabitants. The earth in itself is to be regarded as an organism and as the foster-parent of a great series of organisms that sprang into being and pursued their careers in the contact zones between its rigid body and its fluidal envelopes. These contact zones are, in a special sense, the province of geography in both its physical and its biotic aspects. The evolution of the biotic and the psychic worlds in these horizons is an essential part of the history of the whole, for each factor has reacted powerfully on the others. An appreciative grasp of these great evolutions, and of their relations to one another, is essential to a really broad view of the world of which we are a part; it is scarcely less than an essential factor in a modern liberal education.

Geology embraces all the great evolutions

Let us agree, then, at the outset, that a true study of the career of the earth is not adequately compassed by a mere tracing of its inorganic history or an elucidation of its physical structure and mineral content, but that it embraces as well all the great evolutions fostered within the earth's mantles in the course of its career.

Greatest among these fostered evolutions, from the homocentric point of view, are the living, the sentient, and the thinking kingdoms that have grown up with the later phases of the physical evolution. It does not militate against this view that each of these kingdoms is, in itself, the subject of special sciences, and that these, in turn, envelop a multitude of sub-sciences, for that is true of every comprehensive unit. Nor is it inconsistent with this larger view of the scope of geology that it is, itself, often given a much narrower definition, as already implied. In its broader sense, geology is an enveloping science, surveying, in a broad historical way, many subjects that call for intensive study under more special sciences, just as human history sweeps comprehensively over a broad field cultivated more intensively by special humanistic sciences. In a comprehensive study of the earth as an organism, it is essential that there be embraced a sufficient consideration

of all the vital factors that entered into its history to give these their due place and their true value among the agencies that contributed to its evolution. A true biography of the earth can no more be regarded as complete without the biotic and psychic elements that sprang forth from it, or were fostered within its mantles, than can the biography of a human being be complete with a mere sketch of his physical frame and bodily growth. The physical and biological evolutions are well recognized as essential parts of earth history. Although the mental evolutions have emerged gradually with the biological evolutions, and have run more or less nearly parallel with them — have, indeed, been a working part of them — they have been less fully and frankly recognized as elements of geological history. They have been rather scantily treated in the literature of the subject; but they are, none the less, a vital part of the great history. They have found some recognition, though much too meager, in the more comprehensive and philosophical treatises on earth-science. It may be safely prophesied that the later and higher evolutions that grace our planet will be more adequately emphasized as the science grows into its full maturity and comes into its true place among the sciences. It is important to emphasize this here, since it is preëminently the function of a liberal college course to give precedence to the comprehensive and the essential, both in its selection of its subject matter and in its treatment of what it selects. It is the function of a liberal course of study to bring that which is broad and basal and vital into relief, and to set it over against that which is limited, special, and technical, however valuable the latter may be in vocational training and in economic application.

In view of these considerations — and frankly recognizing the inadequacies of current treatment — let us note, before we go further, what are the physical and dynamic boundaries of the geologic field, that we may the better see how that field merges into the domains of other sciences. This will the better prepare us to realize the

Physical and dynamic boundaries of geology — Implications for teaching

nature of the disciplines for which earth-science forms a suitable basis, as well as the types of intellectual furniture it yields to the mind. Obviously these disciplines and this substance of thought should determine the place of the science in the curriculum of any course that assumes the task of giving a broad and liberal education.

Earth-science is the domestic chapter of celestial science. Our planet is but a modest unit among the great celestial assemblage of worlds; but, modest as it is, it is that unit about which we have by far the fullest and most reliable knowledge. The earth not only furnishes the physical base-line of celestial observation, but supplies all the appliances by which inquiry penetrates the depths of the heavens. Not alone earth-science, as such, but several of the intensive sciences brought into being through the intellectual evolutions that have attended the later history of the earth, have been prerequisites to the development of the broad science of the outer heavens. The science of the lower heavens is a factor of earth-science in the definition we are just about to give. At the same time, the whole earth, including the lower heavens, is enveloped by the more comprehensive domain of celestial science.

If we seek the most logical limit that may be assigned the realm of earth-science, as distinguished from that of celestial science, of which it is the home unit, it may be found at that borderline *within which* any passive body obeys the call of the earth, as against the call of all the outer worlds, and *without which* such a passive body obeys the call of the outer worlds, the call of the sun in particular. This limit is *the dynamic dividing line* between the kingdom of the earth and the kingdom of the outer heavens. This boundary, according to Moulton, incloses a spheroid whose minimum radius is about 620,000 miles, and whose maximum radius is about 930,000 miles. We may, then, conveniently say that the earth's sphere of control stretches out a million kilometers from its center and that this defines its true realm. At the same time, this defines the logical limit of the earth's ultra-atmosphere and appears

to mark a zone of exchange between the ultra-atmosphere of the earth and the ultra-atmosphere of the sun. It thus appears to imply the place and the mode of an exchange of vital elements upon which probably hangs the wonderful maintenance of the earth's atmosphere for many millions of years and the equally wonderful regulation of the essential qualities of the atmosphere so that these have always remained within the narrow range subservient to terrestrial life. It is needless to add that this regulation also conditions the present intellectual status of the thinking factor among the inhabitants of the earth out of which — may I be pardoned for saying? — has grown the present educational discussion.

If this last shall seem to squint toward special pleading, let it be considered that, as we see things, it is precisely those views that take hold of the issues upon which our very being and all its activities depend, that serve best to train youth to broad views and penetrating thought. Such thinking seems to me to form the very essence of a really liberal education.

Not only is this definition of the sphere of geology comprehensive, but it has the special merit of being *dynamic*, rather than material. Such a dynamic definition comports with the view that earth-study should center on the forces and energies that actuated its evolution, since these are the most vital feature of the evolution itself. It is important to form adequate concepts of the energies that have maintained the past ongoings of the earth not only, but that still maintain its present activities and predetermine its future. It is the study of the forces and the processes of past and of present evolutions that constitute the soul of the science, rather than the apparently fixed and passive aspects of the earth's formations and configurations which are but the products of the processes that have gone before. Even the apparent passiveness of the geologic products is illusive, for they are in reality expressions of continued internal activities of an intense, though occult, order. These escape notice largely because they are balanced against one another

in a system of equilibrium which pervades them and gives them the appearance of fixity. To serve their proper functions as sources of higher education, the concepts of the constitution of the earth should penetrate even to these refined aspects of physical organization and should bring the whole into harmony with the most advanced views of the real nature of physical organisms. This removes from the whole terrestrial organism every similitude of inertness and gives it a fundamental refinement, activity, and potency of the highest order. To form a true and consistent concept, the enveloping earth-science must be assumed to embrace, potentially at least, the essentials of all that was evolved within it and from it, with, of course, due recognition of what was added from without.

The history of the earth should therefore be taught in college courses as a succession of complex dynamic events, great in the past and great in future potentialities.

The formations and configurations left by the successive phases of action are to be studied primarily as the *vestiges* of the processes that gave them birth, and hence as their historic credentials. They are to be looked upon less as the vital things in themselves, than as the *record* of the events of the time and as the forerunners of the subsequent events that may be potential in them. And so, primarily, the geologic records are to be scrutinized to find *the deeper meanings which they embody*, whether such meanings lie in the physical, the biological, or the psychological world.

Geology the means of developing scientific imagination of time and space

Turning to specific phases of the subject, it may first be noted that geology is singularly suited to develop clear visions of vast stretches of time; it opens broad visions of the panorama of world events, a panorama still passing before us. While the celestial order of things no doubt involves greater lapses of time, these are not so easily realized, for they are not so well filled in with a succession of records of the passing stages that make up the whole. But even the lapses of geologic time are greater than immature minds can readily grasp; however, their *powers of realization* are greatly strengthened by studying so pro-

tracted a record, built up stage upon stage. The very slowness with which the geologic record was made, as well as the evidences of slowness in each part of the record, help to draw out an appreciation of the immensity of the whole. The round period covered by the more legible range of the geologic record rises to the order of a hundred million years, perhaps to several hundred million years. The large view of history which this implies has already come to form the ample background on which are projected the concepts of the broader class of thinkers; such largeness of view will quite surely be held to be an indispensable prerequisite to the still broader thinking of the future for which the better order of students are now preparing.

While this is preëminently true of the concept of time, the concept of space is fairly well cultivated by geologic study, though far less effectively than is done by astronomical study. Astronomy and geology work happily together in contributing to largeness of thought.

The study of the origin and early history of the earth brings the student into touch with the most far-reaching problems that have thus far called forth the intellectual efforts of man. If rightly handled, these great themes may be made to teach the true method of inquiry into past natural events whose vastness puts them quite beyond the resources of the laboratory. This method finds its key in a search for the history of such vast and remote events by a scrutiny of the vestiges these events have left as their own automatic record. This method stands in sharp contradistinction to simple speculation without such search for talismanic vestiges, a discredited method which is too often supposed to be the only way of dealing with such themes. To be really competent in the field of larger and deeper thinking, every courageous mind should be able to cross the threshold of any of the profound problems of the universe with safe and circumspect steps, however certain it may be that only a slight measure of penetration of the problem may be attainable. A well-ordered mind will remain at once complacent and wholesome when brought to

the limit of its effort by the limit of evidence. The problem of the origin of celestial worlds, of which the genesis of the earth is the theme of largest human interest, is admirably suited to give college students at once a modest sense of their limitations and a wholesome attitude toward problems of the vaster type. Without having acquired the power to make prudent and duly controlled excursions into the vaster fields of thought, the mind can scarcely be said to have been liberalized.

Geology a means of training in thinking in scientific experiences

From the very outset, the tracing of the earth history forces a comprehensive study of the co-workings of the three dominant states of matter massively embodied in the atmosphere, the hydrosphere, and the lithosphere, the great terrestrial triumvirate. The strata of the earth are the joint products of these three elements and constitute their lithographic record. These three coöperating and contending elements not only bring into view the three typical phases of physical action, but they present this action in such titanic aspects as to force the young mind to think along large lines, with the great advantage that these actions are controlled by determinate laws, while the causes and the results are both tangible and impressive.

While there is a large class of tangible and determinate problems of this kind, embracing shiftings of matter on the earth's surface, distortions of strata, and changes of bodily form, there are also problems of a more hidden nature such as internal mutations. These give rise to mathematical, physical, and chemical inquiries while at the same time they call into play the use of the scientific imagination and are thus rich in the possibilities of training. Thus in varied ways geological work joins hands with chemical, physical, mechanical, and mathematical work.

When life first appears in the record, there is occasion to raise the profound question of its origin, and with this arises a closely related question as to the nature of the conditions that invited life, which leads on to the further question, what fostered the development of life throughout its long history? While the obscurity of the earliest record

leaves the question of origin indeterminate for the present, duly guarded thought upon the subject should foster a wholesome spirit toward inquiry in this vital line as well as a hospitable attitude toward whatever solution may finally await us. In all such studies the student should be invited to look to *the vestiges left automatically by the process itself* for the answer, and he should learn to accept the teachings of evidence precisely as it presents itself. So also when a problem is, for the present, indeterminate, it is peculiarly wholesome for the inquirer to learn to rest the case where the light of evidence fails, and to be complacent in such suspension of judgment and to wait further light patiently in serene confidence that the vestiges left by the actuating agencies in their constructive processes are the surest index of the ultimate truth and are likely to be sooner or later detected and read truly.

Relation of geology to botany, zoölogy, psychology, and sociology

In the successive records of past life impressed on strata piled one upon another until they form the great paleontologic register, there is an ample and a solid basis for the study of the historic evolution of life. With this also go evidences of the conditions that attended this life progress and that gave trend to it. This record of the relations of life to the environing physical conditions forms one of the most stimulating fields of study that can engage the student who seeks light on the great problems of biological progress. Here geology joins hands with botany and zoölogy in a mutual helpfulness that is scarcely less than indispensable to each.

Following, or perhaps immediately attending, the introduction of physiological life, there appeared signs of sentient life. The preservation of certain of the sense organs, taken together with the collateral evidences of sense action, as early as Cambrian times, furnish the groundwork for a historical study of the progress of sentient life, eventuating in the higher forms of mental life. Here the problems of geology run hand in hand with the problems of psychology. The limitations of the evidence bearing on psychological phenomena, while regrettable, are not with-

out some compensation in that they center the attention on the simpler aspects of the protracted deployment of the psychological functions.

In addition to the clear evidences of psychic action, in at least its elementary forms, there appeared early in the stratigraphic records intimations of some of the relationships that sentient beings then bore to one another; and this relationship gives occasion to study the primitive aspects of sociological phenomena. If nothing more is learned than the important lesson that sociology is not a thing of today, not an untried realm inviting all kinds of ill-digested projects, but on the contrary is a field of vast and instructive history, the gain will not be inconsiderable. There are intimations of the early existence and effective activity of those affections that precede and that cluster about the parental relationship, the nucleus of the most vital of all the sociological relationships. In contrast to the affections, there are distinct evidences of antagonistic relations, of pursuit and capture, of attack and defense; there were tools of warfare and devices for protection. In time, a wide-ranging series of experiments, so to speak, were tried to secure advantage, to avoid suffering, to escape death, and to preserve the species. There were even suggestions of the cruder forms of government. The many stages in the evolution of the various devices, as well as the stages of their abandonment, that followed one another in the course of the ages recorded the results of a multitude of efforts at sociological adjustment. They raise the question whether a common set of guiding principles does not underlie all such relationships, earlier and later, whatever their rank in our scale of valuation. And so this great field of inquiry — too narrowly regarded as merely humanistic — comes into view early in the history of the earth. The geological and the sociological sciences find in it common working ground. If the geologic and the humanistic sciences are given each their widest interpretation and their freest application, the advantage cannot be other than mutual.

It is perhaps not too much to say that studies in the physiological, the psychological, the sociological, and the allied fields necessarily lack completeness if they do not bring into their purview the data of their common historical record traced as far back as it is found to contain intimations of their actual extension.

It is customary to speak of the geologic ages as though they were wholly past; they are, indeed, chiefly past as the record now stands, but time runs on and earth history continues; the processes of the past are still active, and they are likely to work on far into the future. And so geologic study links itself fundamentally into all such present terrestrial interests as take hold of the distant future. The forecast of the earth's endurance, attended by conditions congenial to life and to the mental and moral activities, hinges on a sound insight into the great actuating forces inherent in the earth, together with those likely to come into play from the celestial environment. All human interests, in so far as they are dependent on a protracted future, center in the prognosis of the earth based on its present and its past. The latest phases of geologic doctrine prophesy a long future habitability of the earth. They thus give meaning and emphasis to the deeper purposes sought in all the higher endeavors, not the least of which is education, particularly those phases of education that lead to effects which may be handed down from age to age.

Standard for selecting subject matter for the general college course: select fundamentals or that which bears on fundamentals

Out of all this vast physical, biological, and psychological history, the things to be selected for substance of thought and for service in mental training in a college course are, first of all, those that are either fundamental in themselves, or that have vital bearings on what is fundamental. These are chiefly the great dynamic factors, the agencies that gave trend to the master events, the forces that actuated the basal processes by which the vast results were attained. The material formations and the surficial configurations that resulted are to be duly considered, to be sure, for they form the basis of interpretation and they are, besides, the repositories of economic values of indispensable worth;

but, as already urged, in a course of intellectual training, these are to be regarded rather as the relics of the great agencies and the proofs of their actions, than as the most vital subjects of study, which are the agencies themselves. As already remarked, the geologic formations are to be treated rather as the credentials of the potencies that reside in the earth organism, than as the vital things themselves. The vestiges of creation and the footprints of historical progress embody the soul of the subject; they constitute the chief source of inspiration to those who aspire to think in large, deep ways of really great things. It is of little value, from the viewpoint of liberal culture, to know that there is a certain succession of sandstones, shales, and limestones; that professional convention has given them certain names, more or less infelicitous in derivation and in phonic quality; but it is of vital consequence to learn how and why these relics of former processes came to be left as they were left, and thus came to be witnesses to the history of the far past. It was a wise thing, no doubt, that the fathers of geology strongly insisted that there should be a rigorous and rather literal adhesion to the terrestrial record in all earth studies, because in those times of transition from the loose, more or less fantastic thought that marked the adolescent stage of the human race, it was imperative that students should stick close to the immediate evidence of what had transpired, and should withhold themselves from much enlargement of view based on the less tangible evidences; but at the present stage, when the general nature of the earth's history has been firmly established, it would be an error on the part of those who seek for the most liberalizing and broadening values of the science, to treat the record merely as a material register of immediate import only, to the neglect of the less tangible but more vital teachings immanent in its great forces and processes. The seeker of liberal culture should direct his attention to the great events, and, above all, to the larger and deeper meanings implied by these events.

And so — may I be pardoned for reëmphasizing? — the

teacher of geology whose essential purpose is liberal training, leading to broad and firm knowledge and to sound processes of thought, will critically observe the distinction between geology taught appropriately from the collegiate point of view, and geology taught specifically from the professional and technical points of view. In these latter, specific details in specific lines are important, and may even be essential, but it is the function of the college teacher of geology *to select* from the great mass of material of the science such factors as are basal, vital, and talismanic. He will give these emphasis, while he neglects the multitude of details that lack significance as working elements or as landmarks of progress, whatever their value in other relations. This selection is equally important, whether applied to the great physical processes that have shaped the earth into its present configuration, or to the great chemical and mineralogical processes that have determined its texture and its structure, or to the great biological and psychological processes that have given trend to the development of its inhabitants.

Even if the undergraduate course in geology is pursued less for the purpose of liberal culture than as a means of preparing for a professional career as an economic geologist, no essential departure from an effort to master first the basal features and the broader aspects of the science, especially the dynamic aspects, is to be advised. The shortest road to *declared success* in professional and economic geology lies through the early mastery of its fundamentals. No doubt immediate and apparent success may often be sooner reached by a narrower and shallower study of such special phases of the subject as happen just now to be most obviously related to the existing state of the industries; but industrial demands are constantly changing — indeed, at present, rather rapidly — and new aspects follow one another in close succession. These new aspects almost inevitably spring from the more basal factors as these rise into function with the progress of experience or the stress of new demands. Those who have sought only

the immediate and the superficial, at the expense of the basal, and especially those who have neglected to acquire *the power and the disposition to search out the fundamentals*, are quite sure to be left among the unfortunates who trail behind; they are little likely to be found among those who lead at the times when leadership counts. In the judgment of those master minds that lead in affairs and that take large and penetrating views, the lines along which the most vital contributions to economic interests are being made connect closely with basal studies of the actuating agencies that condition great enterprises. In the judgment of the writer, it is a false view to suppose that any short, superficial study of so vast a subject as the constitution and history of the earth can result in economic competency. In so far as time for study is limited, it should be concentrated on the great underlying factors that constitute the essentials of the science. It is here assumed that men who care to take a college course at all are seeking for a large success and are ambitious for a high personal career. If they look ultimately to professional work in economic lines, they may safely be advised that the straight road to declared success lies in a search for the vital forces, the critical agencies, and the profound principles that make for great results, not along the by-paths whose winding, superficial courses are turned hither and thither by adventitious conditions whose very nature invites distrust rather than confidence.

Evaluations of methods of teaching

Turning to some of the more formal phases of treatment, three types of work are presented: (1) the use of nature's laboratory, the world itself, (2) the use of the college collections and laboratories, and (3) the use of the literature of the subject.

(1) Fortunately, there is no place on the face of the earth where there is not some natural material for geologic study, for even in the most artificialized locations geological processes are active. In crowded cities these processes may be easily overlooked, but yet they are susceptible of effective use. Within easy access from almost every college

site there are serviceable fields of study, and these, in any live course, will be assiduously cultivated. They may be relatively modest in their phenomena; they may seem to lack that impressiveness which has played so large a part in the popular notion of the content of geology, but they may nevertheless serve as most excellent training grounds for young geologists. If students are so situated as to be brought at the beginning of study under the influence of very impressive displays of geologic phenomena — precipitous mountains, rugged cliffs, deep cañons, and the like — there is danger that their mental habits may become diffusive rather than close and keen; the emotions may be called forth in wonder rather than turned into zest in the search for evidence. If students are to be trained to diligence in inquiry and to the highest virility in inference and interpretation, it is perhaps fortunate for them if they are located where only modest records of geological processes are presented for study. In such regions they are more likely to be led to scrutinize the field keenly, sharply, and diligently for data on which to build their interpretations. The scientific use of their imaginations is all the better trained if, in their endeavor to build up a consistent concept of the whole structure that underlies their field, they are forced to project their inferences from a few outcrops far beneath the cover of the adjacent mantle that shuts off direct vision. Few teachers have, therefore, any real occasion to long for richer fields than those accessible to them, if they have the tact to render these fertile in stimulus and suggestion.

(2) Laboratory work upon the material collected in the field work, as well as laboratory work upon the college collections, are essential adjuncts. Ample provisions for this supplementary work, however modest the appointments, are important and can usually be secured by ingenuity and diligence in spite of financial limitations.

Both field and laboratory work should be well correlated with one another and with the systematic work on the text that guides the study, so that each shall whet the edge of

the other and all together accomplish what neither could alone.

(3) The text selected should be such as lends itself, in some notable degree at least, to the general purposes set forth above. It should be supplemented, so far as may be, by judicious assignments for reading and for special study. Lectures may be made a valuable aid to the discussions of the classroom, but with college classes they can rarely be made an advantageous substitute for the discussions. Lecturing, so far as used, is best woven informally into the classroom discussions. Supplementary lecturettes may be advised if they are of such an informal sort that they may almost unconsciously take their start from any vital point encountered in the course of discussion, may run on as far as the occasion invites, and may then give way again to the discussion with the utmost informality. Such little participations in the work of the classroom, on the part of the teacher, are likely to be cordially welcomed. At the same time, if well done, they will set an excellent example in the presentative art as also in an apt organization of thought.

Organization of courses

If the stated course in earth-science is limited to the junior and senior years by the existing requirements of the curriculum of the institution or by the rulings of its officers — as is not uncommonly the case at present — it is relatively immaterial whether the sections of the course are marshaled under the single name "geology" or whether they are given separate titles as sub-sciences, provided the special subjects are arranged in logical sequence and in consecutive order. If, on the other hand, the teacher's choice of time and relations is freer, the more accessible phases of earth study, now well organized under the name of "physiography," form an excellent course for either freshmen or sophomores. It opens their minds to a world of interesting activities about them which have probably been largely overlooked in previous years. It gives them substance of thought that will be of much service in the pursuit of other sciences. It has been found that it is not without

rather notable service to young students as the basis of efforts in the art of literary presentation, a felicity to which teachers of this important art frequently give emphatic testimony. The secret seems to lie in the fact that physiography gives varied and vivid material susceptible of literary presentation, while the fixed qualities of the subject matter control the choice of terms and the mode of expression.

If geography and physiography are given in the earlier years, the course in historical geology, as well as the study of the more difficult phases of geological processes, of the principles of dynamic geology, together with mineralogy, petrology, and paleontology, may best fall into the later years, even if some interval separates them from the geography and physiography.

One hundred and twenty classroom hours, or their equivalent in laboratory and field work, are perhaps to be regarded as the irreducible minimum in a well-balanced undergraduate course, while twice that time or more is required to give a notably strong college course in earth-science.

A consideration of the sequences among the geological sub-subjects, as also among the subjects that are held to be preliminary to the earth-sciences, is important, but it would lead us too far into details which depend more or less on local conditions. In the experience of American teachers it appears to have been found advisable to put geological processes and typical phenomena to the front and to take up geological history afterwards. The earlier method of taking up the history first, beginning with recent stages and working backward down the ages,— once in vogue abroad,— has been abandoned in this country. It was the order in which the science was developed and it had the advantage of starting with the living present and with the most accessible formations, but this latter advantage is secured by studying the living processes, as such, first, and turning to the history later. This permits the study of the history in its natural order, which seems better to call

forth the relations of cause and effect and to give emphasis to the influence of inherited conditions.

Respecting antecedents to the study, the more knowledge of physics, chemistry, zoölogy, and botany, the better, but it is easy to over-stress the necessity for such preparation, however logical it may seem, for in reality all the natural sciences are so interwoven that, in strict logic, a complete knowledge of all the others should be had before any one is begun, a *reductio ad absurdum.* The sciences have been developed more or less contemporaneously and progressively, each helping on the others. They may be pursued much in the same way, or by alternations in which each prior study favors the sequent one. They may even be taken in a seemingly illogical order without serious disadvantage, for the alternative advantages and other considerations may outweigh the force of the logical order, which is at best only partially logical. It is of prime importance to stimulate in students a habit of observing natural phenomena at an early age. It may be wise for a student to take up physiography, or its equivalent, early in the college course, irrespective of an ideal preparation in the related sciences. It is unfortunate to defer such study to a stage when the student's natural aptitude for observation and inference has become dulled by neglect or by confinement to subjects devoid of naturalistic stimulus. To permit students to take up earth-science in the freshman and sophomore years, even without the ideal preparation, is therefore probably wiser than to defer the study beyond the age of responsiveness to the touch of the natural environment. The geographic and geologic environment conditioned the mental evolution of the race. It left an inherited impress on the perceptive and emotional nature, only to be awakened most felicitously, it would seem, at about the age at which the naturalistic phases of the youth's mentality were originally called into their most intense exercise.

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VIII

THE TEACHING OF MATHEMATICS

Recent changes and some of their sources

IN recent years the teaching of mathematics has undergone remarkable changes in many countries, both as regards method and as regards content. With respect to college mathematics these changes have been evidenced by a growing emphasis on applications and on the historic setting of the various questions. To understand one direct source of these changes it is only necessary to recall the fact that in about 1880 there began a steady stream of American mathematical students to Europe, especially to Germany. Most of these students entered the faculties of our colleges and universities on their return to America. It is therefore of great importance to inquire what mathematical situation served to inspire these students.

The German mathematical developments of the greater part of the nineteenth century exhibited a growing tendency to disregard applications. It was not until about 1890 that a strong movement was inaugurated to lay more stress on applied mathematics in Germany.[1] Our early American students therefore brought with them from Germany a decided tendency toward investigations in mathematical fields remote from direct contact with applications to other scientific subjects, such as physics and astronomy, which had so largely dominated mathematical investigations in earlier years.

This picture would, however, be very incomplete without exhibiting another factor of a similar type working in our own midst. J. J. Sylvester was selected as the first professor of mathematics at Johns Hopkins University, which opened its doors in 1876 and began at once to wield a powerful influence in starting young men in higher research. Sylvester's own investigations related mainly to the

[1] P. Zühlke. *Zeitschrift für Mathematischen und Naturwissenschaftlichen Unterricht*, Vol. 45 (1915), page 483.

formal and abstract side of mathematics. Moreover, "he was a poor teacher with an imperfect knowledge of mathematical literature. He possessed, however, an extraordinary personality, and had in remarkable degree the gift of imparting enthusiasm, a quality of no small value in pioneer days such as these were with us." [1]

Influence of researches in mathematics on methods of teaching

Mathematical research was practically introduced into the American colleges during the last quarter of the nineteenth century, and the wave of enthusiasm which attended this introduction was unfortunately not sufficiently tempered by emphasis on good teaching and breadth of knowledge, especially as regards applications. In fact, the leading mathematician in America during the early part of this period was glaringly weak along these lines. By means of his bountiful enthusiasm he was able to do a large amount of good for the selected band of gifted students who attended his lectures, but some of these were not so fortunate in securing the type of students who are helped more by the direct enthusiasm of their teacher than by the indirect enthusiasm resulting from good teaching.

The need of good mathematical teaching in our colleges and universities began to become more pronounced at about the time that the wave of research enthusiasm set in, as a result of the growing emphasis on technical education which exhibited itself most emphatically in the development of the schools of engineering. While the student who is specially interested in mathematics may be willing to get along with a teacher whose enthusiasm for the new and general leads him to neglect to emphasize essential details in the presentation, the average engineering student insists on clearness in presentation and usability of the results. As the latter student does not expect to become a mathematical specialist, he is naturally much more interested in good teaching than in the mathematical reputation of his teacher, even if his reputation is not an entirely insignificant factor for him.

[1] Committee No. XII, American Report of the International Commission on the Teaching of Mathematics, 1912, page 9.

During the last decade of the nineteenth century and the first decade of the present century the mathematical departments of our colleges and universities faced an unusually serious situation as a result of the conditions just noted. The new wave of research enthusiasm was still in its youthful vigor and in its youthful mood of inconsiderateness as regards some of the most important factors. On the other hand, many of the departments of engineering had become strong and were therefore able to secure the type of teaching suited to their needs. In a number of institutions this led to the breaking up of the mathematical department into two or more separate departments aiming to meet special needs.

In view of the fact that the mathematical needs of these various classes of students have so much in common, leading mathematicians viewed with much concern this tendency to disrupt many of the stronger departments. Hence the question of good teaching forced itself rapidly to the front. It was commonly recognized that the students of pure mathematics profit by a study of various applications of the theories under consideration, and that the students who expect to work along special technical lines gain by getting broad and comprehensive views of the fundamental mathematical questions involved. Moreover, it was also recognized that the investigational work of the instructors would gain by the broader scholarship secured through greater emphasis on applications and the historic setting of the various problems under consideration.

To these fundamental elements relating to the improvement of college teaching there should perhaps be added one arising from the recognition of the fact that the number of men possessing excellent mathematical research ability was much smaller than the number of positions in the mathematical departments of our colleges and universities. The publication of inferior research results is of questionable value. On the other hand, many who could have done excellent work as teachers by devoting most of their energies to this work became partial failures both as teachers and as

investigators through their ambition to excel in the latter direction.

Range of subjects and preparation of students

It should be emphasized that the college and university teachers of mathematics have to deal with a wide range of subjects and conditions, especially where graduate work is carried on. Advanced graduate students have needs which differ widely from those of the freshmen who aim to become engineers. This wide range of conditions calls for unusual adaptability on the part of the college and university teacher. This range is much wider than that which confronts the teachers in the high school, and the lack of sufficient adaptability on the part of some of the college teachers is probably responsible for the common impression that some of the poorest mathematical teaching is done in the colleges. It is doubtless equally true that some of the very best mathematical teaching is to be found in these institutions.

In some of the colleges there has been a tendency to diminish the individual range of mathematical teaching by explicitly separating the undergraduate work and the more advanced work. For instance, in Johns Hopkins University, L. S. Hulburt was appointed "Professor of Collegiate Mathematics" in 1897, with the understanding that he should devote himself to the interests of the undergraduates. In many of the larger universities the younger members of the department usually teach only undergraduate courses, while some of the older members devote either all or most of their time to the advanced work; but there is no uniformity in this direction, and the present conditions are often unsatisfactory.

The undergraduate courses in mathematics in the American colleges and universities differ considerably. The normal beginning courses now presuppose a year of geometry and a year and a half of algebra in addition to the elementary courses in arithmetic, but much higher requirements are sometimes imposed, especially for engineering courses. In recent years several of the largest universities have reduced the minimum admission requirement in

algebra to one year's work, but students entering with this minimum preparation are sometimes not allowed to proceed with the regular mathematical classes in the university.

Variety of college courses in mathematics

Freshmen courses in mathematics differ widely, but the most common subjects are advanced algebra, plane trigonometry, and solid geometry. The most common subjects of a somewhat more advanced type are plane analytic geometry, differential and integral calculus, and spherical trigonometry. Beyond these courses there is much less uniformity, especially in those institutions which aim to complete a well-rounded undergraduate mathematical course rather than to prepare for graduate work. Among the most common subjects beyond those already named are differential equations, theory of equations, solid analytic geometry, and mechanics.

A very important element affecting the mathematical courses in recent years is the rapid improvement in the training of our teachers in the secondary schools. This has led to the rapid introduction of courses which aim to lead up to broad views in regard to the fundamental subjects. In particular, courses relating to the historical development of concepts involved therein are receiving more and more attention. Indirect historical sources have become much more plentiful in recent years through the publication of various translations of ancient works and through the publication of extensive historical notes in the *Encyclopédie des Sciences Mathématiques* and in other less extensive works of reference.

The problem presented by those who are preparing to teach mathematics may at first appear to differ widely from that presented by those who expect to become engineers. The latter are mostly interested in obtaining from their mathematical courses a powerful equipment for doing things, while the former take more interest in those developments which illumine and clarify the elements of their subject. Hence the prospective teacher and the prospective engineer might appear to have conflicting mathematical interests. As a matter of fact, these interests are not con-

flicting. The prospective teacher is greatly benefited by the emphasis on the serviceableness of mathematics, and the prospective engineer finds that the generality and clarity of view sought by the prospective teacher is equally helpful to him in dealing with new applications. Hence these two classes of students can well afford to pursue many of the early mathematical courses together, while the finishing courses should usually be different.

The rapidly growing interest in statistical methods and in insurance, pensions, and investments has naturally directed special attention to the underlying mathematical theories, especially to the theory of probability. Some institutions have organized special mathematical courses relating to these subjects and have thus extended still further the range of undergraduate subjects covered by the mathematical departments. The rapidly growing emphasis on a college education specially adapted to the needs of the prospective business man has recently led to a greater emphasis on some of these subjects in several institutions.

The range of mathematical subjects suited for graduate students is unlimited, but it is commonly assumed to be desirable that the graduate student should pursue at least one general course in each one of broader subjects such as the theory of numbers, higher algebra, theory of functions, and projective geometry, before he begins to specialize along a particular line. It is usually taken for granted that the undergraduate courses in mathematics should not presuppose a knowledge of any language besides English, but graduate work in this subject cannot be successfully pursued in many cases without a reading knowledge of the three other great mathematical languages; viz., French, German, and Italian. Hence the study of graduate mathematics necessarily presupposes some linguistic training in addition to an acquaintance with the elements of fundamental mathematical subjects.

Historical studies make especially large linguistic demands in case these studies are not largely restricted to predigested material. This is particularly true as regards the

older historical material. In the study of contemporary mathematical history the linguistic prerequisites are about the same as those relating to the study of other modern mathematical subjects. With the rapid spread of mathematical research activity during recent years there has come a growing need of more extensive linguistic attainments on the part of those mathematicians who strive to keep in touch with progress along various lines. For instance, a thriving Spanish national mathematical society was organized in 1911 at Madrid, Spain, and in March, 1916, a new mathematical journal entitled *Revista de Matematicas* was started at Buenos Aires, Argentine Republic. Hence a knowledge of Spanish is becoming more useful to the mathematical student. Similar activities have recently been inaugurated in other countries.

History of college mathematics

Until about the beginning of the nineteenth century the courses in college mathematics did not usually presuppose a mathematical foundation carefully prepared for a superstructure. According to M. Gebhardt, the function of teaching elementary mathematics in Germany was assumed by the gymnasiums during the years from 1810 to 1830.[1] Before this time the German universities usually gave instruction in the most elementary mathematical subjects. In our own country, Yale University instituted a mathematical entrance requirement under the title of arithmetic as early as 1745, but at Harvard University no mathematics was required for admission before 1803.

On the other hand, *L'Ecole Polytechnique* of Paris, which occupies a prominent place in the history of college mathematics, had very high admission requirements in mathematics from the start. According to a law enacted in 1795, the candidates for admission were required to pass an examination in arithmetic; in algebra, including the solution of equations of the first four degrees and the theory of series; and in geometry, including trigonometry, the applications of algebra to geometry, and conic sec-

[1] *Internationale Mathematische Unterrichtskomission*, Vol. 3, No. 6 (1912), page 2.

tions.[1] It should be noted that these requirements are more extensive than the usual present mathematical requirements of our leading universities and technical schools, but *L'Ecole Polytechnique* laid special emphasis on mathematics and physics and became the world's prototype of strong technical institutions.

The influence of *L'Ecole Polytechnique* was greatly augmented by the publication of a regular periodical entitled *Journal de l'Ecole Polytechnique*, which was started in 1795 and is still being published. A number of the courses of lectures delivered at *L'Ecole Polytechnique* and at *L'Ecole Normale* appeared in the early volumes of this journal. The fact that some of these courses were given by such eminent mathematicians as J. L. Lagrange, G. Monge, and P. S. Laplace is sufficient guarantee of their great value and of their good influence on the later textbooks along similar lines. In particular, it may be noted that G. Monge gave the first course in descriptive geometry at *L'Ecole Normale* in 1795, and he was also for a number of years one of the most influential teachers at *L'Ecole Polytechnique.*

A most fundamental element in the history of college mathematics is the broadening of the scope of the college work. As long as college students were composed almost entirely of prospective preachers, lawyers, and physicians, there was comparatively little interest taken in mathematics. It is true that the mental disciplinary value of mathematics was emphasized by many, but this supposed value did not put any real life into mathematical work. The dead abstract reasonings of Euclid's *Elements*, or even the number speculations of the ancient Pythagoreans, were enough to satisfy most of those who were looking to mathematics as a subject suitable for mental gymnastics.

On the other hand, when the colleges began to train men for other lines of work, when the applications of steam led to big enterprises, like the building of rail-

[1] *Journal de l'Ecole Polytechnique*, Vol. 1 (1896), part 4, page lx.

roads and large ocean steamers, mathematics became a living subject whose great direct usefulness in practical affairs began to be commonly recognized. Moreover, it became apparent that there was great need of mathematical growth, since mathematics was no longer to be used merely as mental Indian clubs or dumb-bells, where a limited assortment would answer all practical needs, but as an implement of mental penetration into the infinitude of barriers which have checked progress along various lines and seem to require an infinite variety of methods of penetration.

The American colleges were naturally somewhat slower than some of those of Europe in adapting themselves to the changed conditions, but the rapidity of the changes in our country may be inferred from the fact that in the first half of the nineteenth century Harvard placed in comparatively short succession three mathematical subjects on its list of entrance requirements; viz., arithmetic in 1802, algebra in 1820, and geometry in 1844. Although Harvard had not established any mathematical admission requirements for more than a century and a half after its opening, she initiated three such requirements within half a century. It is interesting to note that for at least ninety years from the opening of Harvard, arithmetic was taught during the senior year as one of the finishing subjects of a college education.[1]

The passage of some of the subjects of elementary mathematics from the colleges to the secondary schools raised two very fundamental questions. The first of these concerned mostly the secondary schools, since it involved an adaptation to the needs of younger students of the more or less crystallized textbook material which came to them from the colleges. The second of these questions affected the colleges only, since it involved the selection of proper material to base upon the foundations laid by the secondary schools. It is natural that the influence of the colleges

[1] F. Cajori, *Teaching and History of Mathematics in the United States*, 1890, page 22.

should have been somewhat harmful with respect to the secondary schools, since the interests of the former seemed to be best met by restricting most of the energies of the secondary teachers of mathematics to the thorough drilling of their students in dexterous formal manipulations of algebraic symbols and the demonstration of fundamental abstract theorems of geometry.

Relation of mathematics in secondary schools and college

Students who come to college with a solid and broad foundation but without any knowledge of the superstructure can readily be inspired and enthused by the erection of a beautiful superstructure on a foundation laid mostly underground, with little direct evidence of its value or importance. The injustice and shortsightedness of the tendency to restrict the secondary schools to such foundation work would not have been so apparent if the majority of the secondary school students would have entered college. As a matter of fact it tended to bring secondary mathematics into disrepute and thus to threaten college mathematics at its very foundation. It is only in recent years that strong efforts have been made to correct this very serious mathematical situation.

Much progress has been made toward the saner view of letting secondary mathematics build its little structure into the air with some view to harmony and proportion, and of requiring college mathematics to build *on* as well as *upon* the work done by the secondary schools. The fruitful and vivifying notions of function, derivative, and group are slowly making their way into secondary mathematics, and the graphic methods have introduced some of the charms of analytic geometry into the same field.

This transformation is naturally affecting college mathematics most profoundly. The tedious work of building foundations in college mathematics is becoming more imperative. The use of the rock drill is forcing itself more and more on the college teacher accustomed to use only hammer and saw. As we are just entering upon this situation, it is too early to prophesy anything in regard to its permanency, but it seems likely that the secondary

teachers will no more assume a yoke which some of the college teachers would so gladly have them bear and which they bore a long time with a view to serving the interests of the latter teachers.

As many of the textbooks used by secondary teachers are written by college men, and as the success of these teachers is often gauged by the success of their students who happen to go to college, it is easily seen that there is a serious temptation on the part of the secondary teacher to look at his work through the eyes of the college teacher. The recent organizations which bring together the college and the secondary teachers have already exerted a very wholesome influence and have tended to exhibit the fact that the success of the college teacher of mathematics is very intimately connected with that of the teachers of secondary mathematics.

While it is difficult to determine the most important single event in the history of college teaching in America, there are few events in this history which seem to deserve such a distinction more than the organization of the Mathematical Association of America which was effected in December, 1915. This association aims especially to promote the interests of mathematics in the collegiate field and it publishes a journal entitled *The American Mathematical Monthly*, containing many expository articles of special interest to teachers. It also holds regular meetings and has organized various sections so as to enable its members to attend meetings without incurring the expense of long trips. Its first four presidents were E. R. Hedrick, Florian Cajori, E. V. Huntington, and H. E. Slaught.

An event which has perhaps affected the very vitals of mathematical teaching in America still more is the founding of the American Mathematical Society in 1888, called the New York Mathematical Society until 1894. Through its *Bulletin* and *Transactions*, as well as through its meetings and colloquia lectures, this society has stood for inspiration and deep mathematical interest without

which college teaching will degenerate into an art. During the first thirty years of its history it has had as presidents the following: J. H. Van Amringe, Emory McClintock, G. W. Hill, Simon Newcomb, R. S. Woodward, E. H. Moore, T. S. Fiske, W. F. Osgood, H. S. White, Maxime Bôcher, H. B. Fine, E. B. Van Vleck, E. W. Brown, L. E. Dickson, and Frank Morley.

Aims of college mathematics: methods of teaching

The aims of college mathematics can perhaps be most clearly understood by recalling the fact that mathematics constitutes a kind of intellectual shorthand and that many of the newer developments in a large number of the sciences tend toward pure mathematics. In particular, "there is a constant tendency for mathematical physics to be absorbed in pure mathematics.[1] As sciences grow, they tend to require more and more the strong methods of intellectual penetration provided by pure mathematics.

The principal modern aim of college mathematics is not the training of the mind, but the providing of information which is absolutely necessary to those who seek to work most efficiently along various scientific lines. Mathematical knowledge rather than mathematical discipline is the main modern objective in the college courses in mathematics. As this knowledge must be in a usable form, its acquisition is naturally attended by mental discipline, but the knowledge is absolutely needed and would have to be acquired even if the process of acquisition were not attended by a development of intellectual power.

The fact that practically all of the college mathematics of the eighteenth century has been gradually taken over by the secondary schools of today might lead some to question the wisdom of replacing this earlier mathematics by more advanced subjects. In particular, the question might arise whether the college mathematics of today is not superfluous. This question has been partially answered by the preceding general observations. The rapid scientific advances of the past century have increased the mathe-

[1] A. E. H. Love, *Proceedings of the London Mathematical Society*, Vol. 14 (1915), page 183.

matical needs very rapidly. The advances in college mathematics which have been made possible by the improvements of the secondary schools have scarcely kept up with the growth of these needs, so that the current mathematical needs cannot be as fully provided for by the modern college as the recognized mathematical needs of the eighteenth century were provided for by the colleges of those days.

There appears to be no upper limit to the amount of useful mathematics, and hence the aim of the college must be to supply the mathematical needs of the students to the greatest possible extent under the circumstances. In order to supply these needs in the most economical manner, it seems necessary that some of them should be supplied before they are fully appreciated on the part of the student. The first steps in many scientific subjects do not call for mathematical considerations and the student frequently does not go beyond these first steps in his college days, but he needs to go much further later in life. College mathematics should prepare for life rather than for college days only, and hence arises the desirability of deeper mathematical penetration than appears directly necessary for college work.

Advanced work in college mathematics

Another reason for more advanced mathematics than seems to be directly needed by the student is that the more advanced subjects in mathematics are a kind of applied mathematics relative to the more elementary ones, and the former subjects serve to throw much light on the latter. In other words, the student who desires to understand an elementary subject completely should study more advanced subjects which are connected therewith, since such a study is usually more effective than the repeated review of the elementary subject. In particular, many students secure a better understanding of algebra during their course in calculus than during the course in algebra itself, and a course in differential equations will throw new light on the course in calculus. Hence college mathematics usually aims to cover a rather wide range of subjects in a comparatively short time.

Since mathematics is largely the language of advanced science, especially of astronomy, physics, and engineering, one of the prominent aims of college mathematics should be to keep in close touch with the other sciences. That is, the idea of rendering direct and efficient services to other departments should animate the mathematical department more deeply than any other department of the university. The tendency toward disintegration to which we referred above has forcefully directed attention to the great need of emphasizing this aspect of our subject, since such disintegration is naturally accompanied by a weakening of mathematical vigor. It may be noted that such a disintegration would mean a reverting to primitive conditions, since some of the older works treated mathematics merely as a chapter of astronomy. This was done, for instance, in some of the ancient treatises of the Hindus.

Mathematics and technical education

The great increase in college students during recent years and the growing emphasis on college activities outside of the work connected with the classroom, especially on those relating to college athletics, would doubtless have left college mathematics in a woefully neglected state if there had not been a rapidly growing interest in technical education, especially in engineering subjects, at the same time. Naval engineering was one of the first scientific subjects to exert a strong influence on popularizing mathematics. In particular, the teaching of mathematics in the Russian schools supported by the government began with the founding of the government school for mathematics and navigation at Moscow in 1701. It is interesting to note that the earlier Russian schools established by the clergy after the adoption of Christianity in that country did not provide for the teaching of any arithmetic whatever, notwithstanding the usefulness of arithmetic for the computing of various dates in the church calendar, for land surveying, and for the ordinary business transactions.[1]

The direct aims in the teaching of college mathematics

[1] V. V. Bobynin, *L'Enseignement Mathématique*, Vol. 1 (1899), page 78.

have naturally been somewhat affected by the needs of the engineering students, who constitute in many of our leading institutions a large majority in the mathematical classes. These students are usually expected to receive more drill in actual numerical work than is demanded by those who seek mainly a deeper penetration into the various mathematical theories. The most successful methods of teaching the former students have much in common with those usually employed in the high schools and are known as the recitation and problem-solving methods. They involve the correction and direct supervision of a large number of graded exercises worked out by the students on the blackboard or on paper, and aim to overcome the peculiar difficulties of the individual students.

The lecture method, on the other hand, aims to exhibit the main facts in a clear light and to leave to the student the task of supplying further illustrative examples and of reconsidering the various steps. The purely lecture method does not seem to be well adapted to American conditions, and it is frequently combined with what is commonly known as the "quiz." The quiz seems to be an American institution, although it has much in common with a species of the French "conference." It is intended to review the content of a set of lectures by means of discussions in which the students and the teacher participate, and it is most commonly employed in connection with the courses of an advanced undergraduate or of a beginning graduate grade.

A prominent aim in graduate courses is to lead the student as rapidly as possible to the boundary of knowledge along the particular line considered therein. While some of the developments in such courses are apt to be somewhat special or to be too general to have much meaning, their novelty frequently adds a sufficiently strong element of interest to more than compensate losses in other directions. Moreover, the student who aims to do research work will thus be enabled to consider various fields as regards their attractiveness for prolonged investigations of his own.

Preparation of the college teacher of mathematics

The fact that the college teacher has need of much more mathematical knowledge than he can possibly secure during the period of his preparation, especially if he expects to take an active part in research and in directing graduate work, has usually led to the assumption that the future teacher of college mathematics should devote all his energies to securing a deep mathematical insight and a wide range of mathematical knowledge.[1] On the other hand, students prepared in accord with this assumption have frequently found it very difficult to adapt themselves to the needs of large freshman classes of engineering students entering upon the duties for which they were supposed to have been prepared.

The breadth of view and the sweep of abstraction needed for effective graduate work have little in common with accuracy in numerical work and emphasis on details which are so essential to the young engineering students. The difficulty of the situation is increased by the fact that the young instructor is often led to believe that his advancement and the appreciation of his services are directly proportional to his achievements in investigations of a high order. This belief naturally leads many to begrudge the time and thought which their teaching duties should normally receive.

The young college teacher of mathematics is thus confronted with a much more complex situation than that which confronts the mathematics teachers in secondary school work. Here the success in the classroom is the one great goal, and the mathematical knowledge required is comparatively very modest. Possibly the situation of the college teacher could be materially improved if it were understood that his first promotion would be mainly dependent upon his success as a teacher, but that later promotions involved the element of productive scholarship in an increasing ratio.

The schools of education which have in recent years

[1] The Training of Teachers of Mathematics, 1917, by R. C. Archibald. Bulletin No. 27, 1917, United States Bureau of Education.

been established in most of our leading universities have thus far had only a slight influence on the preparation of the college teachers, but it seems likely that this influence will increase as the needs of professional training become better known. It is probably true that the ratio of courses on methods to courses on knowledge of the subject will always be largest for the elementary teacher, in view of the great difference between the mental maturity of the student and the teacher, somewhat less for the secondary teacher and least for the college teacher; but this least should not be zero, as is so frequently the case at present, since there usually is even here a considerable difference between the mathematical maturity of the student and that of the teacher.

It may be argued that the future college teacher will probably profit more by noting the methods employed by his instructors than he would by the theoretic discussions relating to methods. This is doubtless true, but it does not prove that the latter discussions are without value. On the other hand, these discussions will often serve to fix more attention on the former methods and will lead the student to note more accurately their import and probable adaptability to the needs of the younger students.

Among the useful features for the training of the future mathematics teachers are the mathematical clubs which are connected with most of the active mathematical departments. In many cases, at least, two such clubs are maintained, the one being devoted largely to the presentation of research work while the other aims to provide opportunities for the presentation of papers of special interest to the students. The latter papers are often presented by graduate students or by advanced undergraduates, and they offer a splendid opportunity for such students to acquire effective and clear methods of presentation. The same desirable end is often promoted by reports given by students in seminars or in advanced courses.

Prominent factors in the training of the future college teachers are the teaching scholarships or fellowships and the assistantships. Many of the larger universities pro-

vide a number of positions of this type. It sometimes happens that the teaching duties connected with these positions are so heavy as to leave too little energy for vigorous graduate work. On the other hand, these positions have made it possible for many to continue their graduate studies longer than they could otherwise have done and at the same time to acquire sound habits of teaching while in close contact with men of proved ability along this line.

It should be emphasized that the ideal college teacher of mathematics is not the one who acquires a respectable fund of mathematical knowledge which he passes along to his students, but the one imbued with an abiding interest in learning more and more about his subject as long as life lasts. This interest naturally soon forces him to conduct researches where progress usually is slow and uncertain. Research work should be animated by the desire for more knowledge and not by the desire for publication. In fact, only those new results should be published which are likely to be helpful to others in starting at a more favorable point in their efforts to secure intellectual mastery over certain important problems.

Half a century ago it was commonly assumed that graduation from a good college implied enough training to enter upon the duties of a college teacher, but this view has been practically abandoned, at least as regards the college teacher of mathematics. The normal preparation is now commonly placed three years later, and the Ph.D. degree is usually regarded to be evidence of this normal preparation. This degree is supposed by many to imply that its possessor has reached a stage where he can do independent research work and direct students who seek similar degrees. In view of the fact that in America as well as in Germany the student often receives much direct assistance while working on his Ph.D. thesis, this supposition is frequently not in accord with the facts.[1]

The emphasis on the Ph.D. degree for college teachers has in many cases led to an improvement in ideals, but

[1] Cf. M. Bôcher, *Science*, Vol. 38 (1913), page 546.

in some other cases it has had the opposite effect. Too many possessors of this degree have been able to count on it as accepted evidence of scientific attainments, while they allowed themselves to become absorbed in non-scientific matters, especially in administrative details. Professors of mathematics in our colleges have been called on to shoulder an unusual amount of the administrative work, and many men of fine ability and scholarship have thus been hindered from entering actively into research work. Conditions have, however, improved rapidly in recent years, and it is becoming better known that the productive college teacher needs all his energies for scientific work; and in no field is this more emphatically true than in mathematics. Some departmental administrative duties will doubtless always devolve upon the mathematics teachers. By a careful division of these duties they need not interfere seriously with the main work of the various teachers.

The mathematical textbook

The American teachers of mathematics follow the textbook more closely than is customary in Germany, for instance. Among college teachers there is a wide difference of view in regard to the suitable use of the textbook. While some use it simply for the purpose of providing illustrative examples and do not expect the student to begin any subject by a study of the presentation found in the textbook, there are others who expect the normal student to secure all the needed assistance from the textbook and who employ the class periods mainly for the purpose of teaching the students how to use the textbook most effectively. The practice of most teachers falls between these two extremes, and, as a rule, the textbook is followed less and less closely as the student advances in his work. In fact, in many advanced courses no particular textbook is followed. In such courses the principal results and the exercises are often dictated by the teacher or furnished by means of mimeographed notes.

The close adherence to the textbook is apt to cultivate the habit on the part of the student of trying to understand what the author meant instead of confining his atten-

tion to trying to understand the subject. In view of the fact that the American secondary mathematics teachers usually follow textbooks so slavishly, the college teacher of mathematics who believes in emphasizing the subject rather than the textbook often meets with considerable difficulty with the beginning classes. On the other hand, it is clear that as the student advances he should be encouraged to seek information from all available sources instead of from one particular book only. The rapid improvement in our library facilities makes this attitude especially desirable.

An advantage of the textbook is that it is limited in all directions, while the subject itself is of indefinite extent. In the textbook the subject has been pressed into a linear sequence, while its natural form usually exhibits various dimensions. The textbook presents those phases about which there is usually no doubt, while the subject itself exhibits limitations of knowledge in many directions. From these few characteristics it is evident that the study of textbooks is apt to cultivate a different attitude and a different point of view from those cultivated by the unhampered study of subjects. The latter are, however, the ones which correspond to the actual world and which therefore should receive more and more emphasis as the mental vision of the student can be enlarged.

The number of different available college mathematical textbooks on the subjects usually studied by the large classes of engineering students has increased rapidly in recent years. On the other hand, the number of suitable textbooks for the more advanced classes is often very limited. In fact, it is often found desirable to use textbooks written in some foreign language, especially in French, German, or Italian, for such courses. This procedure has the advantage that it helps to cultivate a better reading knowledge of these languages, which is in itself a very worthy end for the advanced student of mathematics. This procedure has, however, become less necessary in recent years in view of the publication of various excellent advanced works in the English language.

The greatest mathematical treasure is constituted by the periodic literatures, and the larger colleges and universities aim to have complete sets of the leading mathematical periodicals available for their students. This literature has been made more accessible by the publication of various catalogues, such as the *Subject Index*, Volume I, published by the Royal Society of London in 1908, and the volumes "A" of the annual publications entitled *International Catalogue of Scientific Literature*. All students who have access to large libraries should learn how to utilize this great store of mathematical lore whenever mathematical questions present themselves to them in their scientific work. This is especially true as regards those who specialize along mathematical lines.

In some of the colleges and universities general informational courses along mathematical lines have been organized under different names, such as history of mathematics, synoptic course, fundamental concepts, cultural course, etc. Several books have recently been prepared with a view to meeting the needs of textbooks for such courses. College teachers of mathematics usually find it difficult to interest their students sufficiently in the current periodic literature, and one of the greatest problems of the college teacher is to instill such a broad interest in mathematics that the student will seek mathematical knowledge in all available sources instead of confining himself to the study of a few textbooks or the work of a particular school.

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For articles on the teaching of mathematics which appeared during the nineteenth century, consult 0050 *Pedagogy* in the *Royal Society Index*, Vol. 1, Pure Mathematics, 1908. For literature appearing during the first twelve years of the present century the reader may consult the *Bibliography of the Teaching of Mathematics*, 1900–1912, by D. E. Smith and Charles Goldziher, published by the United States Bureau of Education, Bulletin, 1912, No. 29. More recent literature may be found by consulting annual indexes, such as the *International Catalogue of Scientific Literature*, A, Mathematics, under 0050, and *Revue Semestrielle des Publications Mathématiques*, under V 1. The volumes of the international review entitled *L'Enseignement Mathématique*, founded in 1899, contain a large number of articles relating to college teaching. This subject will be treated in the closing volumes of the large French and German mathematical encyclopedias in course of publication.

IX

PHYSICAL EDUCATION IN THE COLLEGE

Lessons for physical education from the world war

THE events of the four years between the summer of 1914 and the winter of 1918 have brought us to a full realization of the real significance of physical education in the training of youth. America and her allies have had very dramatic reasons for regretting their careless indifference to the welfare of childhood and youth in former years. Only yesterday, we were told that the great war would be won by the country that could furnish the last man or fight for the last quarter of an hour. America and her allies looked with a new and fearful concern upon the army of young men who were found physically unfit for military service.

With the danger of war past, there is no lack of evidence that we and our allies will make practical application of this particular lesson. It will be fortunate indeed if the enlightened people of the earth are really permanently awake to the importance of the physical education of their citizens-in-the-making.

Governmental agencies have already started the movement to guarantee to the coming generation more extensive and more scientific physical education. Public and private institutions are joining forces so that the advantages of this extended program of physical education will be enjoyed by the young men and young women in industry and commerce as well as by those in schools and colleges.

It is to be hoped that the American college will do its full share and neglect no reasonable measure whereby the college graduate may be developed into the vigorous and healthy human being that the mentally trained ought to be. It must be admitted that our findings by the military draft boards, as well as other evidences secured through physical examinations, are not such as to make the American college proud of the quality or the extent of physical edu-

cation which it has given in the past. We must express our keen disappointment at the prevalence of under-development, remediable defects, and unachieved physical and functional possibilities in our college graduates.

Aims of physical education

Physical training is concerned with the achievement and the conservation of human health. It has to do with conditioning the human being for the exigencies of life in peace or in war. Its standards are not set by a degree of health which merely enables the individual to keep out of bed, eat three meals a day, and run no abnormal temperature. Physical training is concerned with developing vigorous, enduring health that is based upon the perfect function, coördination, and integration of every organ of the human body; health that is not found wanting at the military draft; health that meets all its community obligations; health that is not affected by diseases of decay; and health that resists infection and postpones preventable death.

Formulations of aims and scope of physical education in official documents — By Regents of the State of New York

Official statements and information from reliable sources indicate that physical education and hygiene and physical training are regarded by authorities as covering about the same general field. The general plan and syllabus for physical training adopted by the Regents of the University of the State of New York in 1916 interprets physical training as covering " (1) Individual health examinations and personal health instruction (medical inspection); (2) instruction concerning the care of the body and the important facts of hygiene (recitations in hygiene); (3) physical examinations as a health habit, including gymnastics, elementary marching, and organized, supervised play, recreation, and athletics."

By national committee on physical education

In March of 1918 a National Committee on Physical Education, formed of representatives from twenty or more national organizations, adopted the following resolutions:

I. That a comprehensive, thoroughgoing program of health education and physical education is absolutely needed for all boys and girls of elementary and secondary school age, both rural and urban, in every state in the Union.

II. That legislation, similar in purpose and scope to the provisions and requirements in the laws recently enacted in California, New York State, and New Jersey, is desirable in every state, to provide authorization and support for state-wide programs in the health and physical education field.

III. That the United States Bureau of Education should be empowered by law, and provided with sufficient appropriations, to exert adequate influence and supervision in relation to a nation-wide program of instruction in health and physical education.

IV. That it seems most desirable that Congress should give recognition to this vital and neglected phase of education, with a bill and appropriation similar in purpose and scope to the Smith-Hughes Law, to give sanction, leadership, and support to a national program of health and physical education; and to encourage, standardize, and, in part, finance the practical program of constructive work that should be undertaken in every state.

V. That federal recognition, supervision, and support are urgently needed, as the effective means, under the Constitution, to secure that universal training of boys and girls in health and physical fitness which are equally essential to efficiency of all citizens both in peace and in war.

By five national organizations

In December, 1918, five national organizations, assembled in regular annual meeting, adopted resolutions which read in part as follows:

First: That this Society shall make every reasonable effort to influence the Congress of the United States and the legislatures of our various states to enact laws providing for the effective physical education of all children of all ages in our elementary and secondary schools, public, institutional and private, a physical education that will bring these children instruction in hygiene, regular periodic health examinations and a training in the practice of health habits with a full educational emphasis upon play, games, recreation, athletics and physical exercise, and shall further make every possible reasonable effort to influence communities and municipalities to enact laws and pass ordinances providing for community and industrial physical training and recreative activities for all classes and ages of society.

Second: That this Association shall make persistent effort to influence state boards of education, or their equivalent bodies, in all the states of the United States, to make it their effective rule that on or after June, 1922, or some other reasonable date, no applicant may receive a license to teach any subject in any school who does not first present convincing evidence of having covered in creditable manner a satisfactory course in physical education in a reputable training school for teachers.

Third: And that this Association hereby directs and authorizes its president to appoint a committee of three to take such steps as may be necessary to put the above resolutions into active and effective operation, and to coöperate in every practical and substantial way with the National Committee on Physical Education, the division of physical education of the Playground and Recreation Association of America, and any other useful agency that may be in the field for the purpose of securing the proper and sufficient physical education of the boys and girls of to-day, so that they may to-morrow constitute a nation of men and women of normal physical growth, normal physical development and normal functional resource, practicing wise habits of health conservation and possessed of greater consequent vitality, larger endurance, longer lives and more complete happiness — the most precious assets of a nation.

By the United States Interdepartmental Social Hygiene Board

In January, 1919, the United States Interdepartmental Social Hygiene Board suggested the following organization of a department of hygiene for the purpose of establishing such a department in at least one normal school, college, or university training school for teachers in each state of the Union.

SUGGESTED ORGANIZATION OF A DEPARTMENT OF HYGIENE

I. *Division of Informational Hygiene.* (Stressing in each of its several divisions with due proportion and with appropriate emphasis, the venereal diseases, their causes, carriers, injuries, and prevention):

(*a*) The principles of hygiene. Required of all students at least twice a week for at least four terms.

(1) General hygiene. (The agents that injure health, the carriers of disease, the contributory causes of poor health, the defenses of health, and the sources of health.)

(2) Individual hygiene. (Informational hygiene, the care of the body and its organs, correction, and repair, preventive hygiene, constructive hygiene.)

(3) Group hygiene. (Hygiene of the home and the family, school hygiene, occupational hygiene, community hygiene.)

(4) Intergroup hygiene. (Interfamily, intercommunity, interstate, and international hygiene.)

(*b*) Principles of physical training. (Gymnastics, exercise, athletics, recreation, and play.) Required of all students. To be given at least twice a week for two terms in the Junior or Senior Years.

(*c*) Health examinations —

(1) Medical examination required each half year of every student. (Making reasonable provisions for a private, personal, confidential relationship between the examiner and the student.)

(2) Sanitary surveys and hygienic inspections applied regularly to all divisions of the institution, their curriculums, buildings, dormitories, equipment, personal service, and surroundings.

II. *Division of Applied Hygiene.*

(*a*) Health conference and consultations.

(1) Every student advised under "c" above (health examinations) must report to his health examiner within a reasonable time, as directed, with evidence that he has followed the advice given, or with a satisfactory explanation for not having done so.

(2) Must provide student with opportunities for safe, confidential consultations with competent medical advisors concerning the intimate problems of sex life as well as those of hygiene in general.

(*b*) Physical training.

(1) Gymnastic exercises, recreation, games, athletics, and competitive sports. Required of all students six hours a week every term.

(2) Reconstructional and special training and exercise for students not qualified organically for the regular activities covered in "1" above. It is assumed that every teacher-in-training physically able to go to school is entitled to and should take some form of physical exercise.

III. *Division of Research.*

(*a*) Investigations, tests, evaluating measurements, records, and reports required each term covering progress made under each division and subdivision of the department, for the purpose of discovering and developing more effective educational methods in hygiene.

(*b*) Provide facilities for the sifting, selection, and investigation of problems in hygiene that may be submitted to or proposed by the department of hygiene.

(*c*) Arrange for frequent lectures on public hygiene and public health from competent members of municipal,

state, and national departments of health, and from other appropriate sources.

IV. *Personnel requisite for such a department.*— Men and women should be chosen for service in the several divisions of the Department, who have a sane, well-balanced, and experienced appreciation of the importance of the whole field of hygiene as well as of the place and relations of the venereal diseases.

(1) One director or head of department. Must have satisfactory scientific training and special experience, fitting him for supervision, leadership, teaching, research, and administrative responsibility.

(2) One medical examiner for men and one medical examiner for women. There should be one examiner for each 500 students. Must be selected with special care because of the presence of extraordinary opportunities to exercise a powerful intimate influence upon the mental, moral, and physical health of the students with whom such examiners come in contact.

(3) One special teacher of physical training (a "Physical Director") for each group of 500 students. There must be a man for the men and a woman for the women students. The physical training instructors employed in this department should be in charge of and should cover satisfactorily all the directing, training, and coaching carried on in the department and in the institution in its relation to athletics and competitive sports. The men and women who are placed in charge of individual students and groups of students engaged in the various activities of physical training (gymnastics, athletics, recreation and play) should be selected with special reference to their wholesome influence on young men and young women.

(4) One coördinator (this function may be covered by one of the personnel covered by "1," "2" or "3" above). Will serve to influence every teacher in every department on the entire staff of the institution to meet his obligations, in relation to the individual hygiene of the students in his classes and to the sanitation of the class rooms in which he meets his students. The coordinator should bring information to all teachers and assist them to meet more satisfactorily their opportunities to help students in their individual problems in social hygiene.

(5) Special lectures on the principles and progress of public hygiene and public health. A close coördination

should be secured between this department and community agencies like the Department of Health that are concerned with public hygiene.

(6) Sufficient clerical, stenographic and filing service to meet the needs of the department.

In February, 1919, the field service of the National Committee on Physical Education issued a tentative outline for a state law for physical education, suggested for use in planning future legislation. The purposes of physical education as stated in the preamble of this law read as follows:

1. In order that the children of the State of.....shall receive a quality and an amount of physical education that will bring to them the health, growth and a normal organic development that is essential to their fullest present and future education, happiness and usefulness; and in order that the future citizenship of the State of.....may receive regularly from the growing and developing youth of the Commonwealth a rapidly increasing number of more vigorous, better educated, healthier, happier, more prosperous and longer lived men and women, we, the people of the State of.....represented in the Senate and Assembly do enact as follows:

By Legislative Committee of National Committee on Physical Education

In February, 1919, the legislative committee of the National Committee on Physical Education prepared a bill for federal legislation for the purpose of assisting the states in establishing physical education in their schools. This proposed federal law stated the purpose and aim of physical education as follows:

The purpose and aim of physical education in the meaning of this act shall be: more fully and thoroughly to prepare the boys and girls of the nation for the duties and responsibilities of citizenship through the development of bodily vigor and endurance, muscular strength and skill, bodily and mental poise, and such desirable moral and social qualities as courage, self-control, self-subordination and obedience to authority, coöperation under leadership, and disciplined initiative. The processes and agencies for securing these ends shall be understood to include: comprehensive courses of physical training activities, periodical physical examination; correction of postural and other remediable defects; health supervision of schools and school children; practical instruction in the care of the body and in the principles of health; hygienic school life, sanitary

school buildings, playgrounds, and athletic fields and the equipment thereof; and such other means as may be conducive to these purposes.

An analysis of these several authoritative and more or less official documents indicates very clearly a unanimity as to scope and aims of physical education, for they all seek to promote and conserve, in the broadest sense of the term, the health of the nation.

Poor type of physical education in secondary schools intensifies problem in the college

The problem of physical education in the college is intensified by the fact that freshmen come to their chosen institutions with a variety of experience in physical training, but unfortunately this experience is, too often, either inadequate or ineffective. The natural physical training of the earlier age periods produces whatever neuro-muscular development, whatever neuro-muscular coördination, whatever neuro-muscular control, and whatever other organic growth, development, or functional perfection is achieved by the young human concerned. A program of physical training wisely planned with reference to infancy, childhood, and early youth would include types of exercises, play, games, and sports, that would perfect the neuro-muscular and other functions far more completely than is commonly accomplished through the natural unsupervised and undirected physical training of those early age periods either in city or in rural communities. The force of modern habits of life has led to the destruction of those natural habits of work, play, and recreation that gave a proportion of our forebears a fairly complete natural program of physical exercise during the plastic or formative periods of life. As a result, many students reach college nowadays with stunted growths and with poorly developed, poorly trained, or poorly controlled neuro-muscular equipment. Some of these matriculates are physically weak. They lack alertness; their response is slow. Others are awkward and muscularly inefficient, though their physical growth is objectively — height and weight — normal or even above normal.

The College Department faces these problems through special provisions made for the purpose of supplying a belated neuro-muscular training to such cases. It often happens that successful training along these lines is possible only through individual instruction of a most elementary sort, taking the student through simple exercises that ought to have been a part of his experience in early childhood.

Individual needs of students augment problem of department of physical education

For the same reasons that are stated above, the College Department of Physical Training finds it necessary to concern itself with individual students who need special attention directed to specified organs or groups of organs whose training or care could have been accomplished ordinarily far better at an earlier period. These students present problems of posture, lung capacity, and regional weakness.

Supervision of athletics and recreation adds further to its problem

The College Department of Physical Training finds also a significant opportunity and an urgent duty in the fact that various types of physical exercise are intimately associated with social, ethical, and moral consequences. No other human activity gives the same opportunity for the development of a social spirit and personal ethical standards as do play, games, and sports of children and adolescents. Unsupervised, these activities degenerate and bring unmoral practices and an anti-social spirit in their wake.

Because of these opportunities and obligations, College Departments of Physical Training are including within their programs and jurisdictions more and more supervision of college athletics, and assume an ever increasing rôle in the direction of recreational activities of college students. It remains true, however, that these influences of supervised play and athletics should operate long before the individual reaches college age.

The intense interest of college students in athletic competitions, united with the opportunity which athletics offer for social and character training, has decided a number of colleges to turn athletic training over to the Department of Physical Training. This preparation for the supreme physical and physiological test must be built upon a founda-

tion of safe and sound health. There is no more fitting place in the collegiate organization for these athletic and recreational activities.

Organization of Department of Physical Education

The college departments that cover this field in whole or in part are known by various names. We have departments of Physical Training; of Physical Education; of Physical Culture; of Hygiene; of Physiology and Physical Education; of Hygiene and Physical Education; of Physical Training and Athletics, and so on.

An analysis of these college departments shows that they all concern themselves with much the same important objects, although they differ in their lines of greater emphasis. We find, too, that in some colleges the department includes activities that form separate, though related departments in other institutions.

The activities of such departments fall into three large divisions, each one of which has its logical subdivisions. One of these large divisions may be called the division of health examination. It has to do with the health examination of the individual student and with the health advice that is based on and consequent to such examination. The second division has to do with health instruction covering the subject matter of physical training. The third division covers directed experiences in right living and the formation of health habits, and includes the special activities noted above.

We often refer to the first division noted above as the division of medical inspection, physical examination, or health examination; to the second as hygiene, physiology, biology, or bacteriology; and to the third as gymnastics, physical exercise, organized play, recreation, athletics, or narrowly as physical training.

The prime purpose of collegiate physical training, then, is to furnish the student such information and such habit-forming experiences as will lead him to formulate and practice an intelligent policy of personal health control and an intelligent policy of community health control. The collateral and special objects of physical training vary with the

individual student under the influence of his previous training and his present and future life plans.

The Collegiate Department of Physical Training is primarily concerned, therefore, with the acquisition and conservation of human health — mental, moral, and physical health. Because of his physical training, the college man should live longer; he should meet his environments obligations more successfully; he should be better able to protect himself from, and better able to avoid, injury; he should lose less time on account of injury, poor health, and sickness; he should get well more rapidly when he is sick; he should be better able to recover his health and strength after injury or illness; and he should therefore give to society a fuller, happier, and more useful life.

Such a department is concerned secondarily with (*a*) those special defects of earlier physical training that bring to college, students in need of neuro-muscular training and organic development, (*b*) with social, ethical, and character training, and (*c*) with the conditioning and special training of students for athletic competition or for other extraordinary physical and physiological demands.

In the light of the above statements, the objects of physical training may be summarized as follows:

I. The fundamental and ever present object of physical training is the acquisition and conservation of vigorous, enduring health, the summated effect of perfect functions in each and every organ of the human body.

II. The special objects of physical training vary in their needs for emphasis at different age periods and under the changing stresses of life. Among the more important of these special objects are:

(1) General, normal growth. An object in the early age periods.
(2) Neuro-muscular development, coördination, and control. Accomplished best in early age periods.
(3) Special organic (anatomical and functional) development. Optimum period in childhood and youth.

(4) Social, ethical, and moral training. Character building. Objects more easily secured in childhood and youth.

(5) Preparation for some supreme physical and physiological test; e. g., athletic competition, police or fire service, military service. Most desirable training period in late youth and early maturity. Must depend, however, on the effects of earlier physical training.

(6) The formation of health habits. Best accomplished in early life but commonly an important function of the College Department of Physical Training.

(7) The conservation of health. Always an object, but more particularly so in the middle and later life.

THE MEDICAL EXAMINATION

In the American college of today, the student's first contact with the Department of Physical Training is very likely to be in the examining room. In the College of the City of New York [1] it has become the established custom to require a satisfactory health examination before admitting the applicant to registration as a student in the college. Entering classes are enrolled in this institution at the beginning of each term, and in each list of applicants there are always a few to whom admission is denied because of unsatisfactory health conditions.

In each case in which admission is denied because of unsatisfactory health, the individual is given careful advice relative to his present and probable future condition, and every effort is made to help the applicant plan his life so that he may be able at a later time to enter the college. Of course, it occasionally happens that applicants are found with serious and incurable health defects which make it very improbable that they will ever be in condition to attempt a college education.

[1] The construction of this chapter on the teaching of physical training is based very largely upon the experiences and organization of the Department of Hygiene in the College of the City of New York.

Scope of health examination

The health examination of the student should cover those facts in his family and personal health history that are likely to have a bearing upon his present or future health, and the examination should include a very careful investigation of the important organs of his body. This examination calls for expert medical and dental service.

How to conduct health examination

The most useful examiner is he who is at the same time a teacher. Nowhere else is a better or even an equally good opportunity given to drive home impressively, and sometimes dramatically, important lessons in individual hygiene. Through a pair of experimental lenses placed by his examiner before his hitherto undiscovered visual brain cells, the young student who has had poor vision and has never known it, may obtain, for the first time, a glimpse of the beauty in his surroundings.

The dental examiner who finds bad teeth and explains bad teeth to the student whose health is being, or may be, destroyed by such teeth, has before him all the elements necessary for very effective health instruction.

The health examination should be a personal and private affair. It is often best not to have even a recorder present. The student should understand that whatever passes between him and his examiner is entirely confidential.

All advice given a student at these examinations should be followed up if it is the kind of advice that can be followed up. If the advice involves the attention of a dentist or treatment by a physician, time should be allowed for making arrangements and for securing the treatment necessary. After that time has elapsed the student should be called upon to report with information from his parent or guardian, or from his family health adviser, indicating what has been done or will be done for the betterment of the conditions for which the advice was originally given. In the hands of a tactful examiner — one who is a teacher as well as an examiner — the student and parent, particularly the parent, will coöperate effectively in this plan for the development of health habits of the student. Less

than three tenths of one per cent of the parents of City College students refuse to secure special health attention for their boys when we do so advise.

These examinations should be repeated at reasonable intervals throughout the entire college course. We have found in the College of the City of New York that a repetition every term is none too frequent. Visual defects, dental defects, evidences of heart trouble and signs of pulmonary tuberculosis, and other defects, not infrequently arise in cases of individuals who have been seen several times before without showing any evidence of poor health. It is hoped that these repeated examinations may lead to the continuation of such habits of bodily care in postgraduate years.

A careful and concise record must be made covering the main facts of each examination and of each conference with the student subsequent to his examination. These memoranda enable the examiner at each later examination to talk to the student with a knowledge of what has been found and what has been said and what has been done on preceding examinations, and on preceding follow-up conferences. As a result, the examiner-teacher is in position to be very much more useful not only because of significant facts before him concerning the student with whom he is talking, but also because of the greater confidence which the student will necessarily have in an examiner who is obviously interested in him and who possesses such an accurate record of his health history.

These examinations should apply to every student in a college or a university, regardless of the division to which he belongs. The need for health instruction or for the establishment of health habits, in order that one may be physically trained for the exigencies of life, is not peculiar to any student age period or to any academic or technicological group, or to a college for men or a college for women.

One of the dangers present in these college examinations is the tendency of the examiner to become more interested

in the number of students examined and the number of diagnoses made than in the good influence he may have upon the health future of the student.

Every "case" should be treated by the health examiner as if it were the first and only case on hand for the day. The student certainly classifies the examiner as the first and only one he has had that day. The examiner should plan to make every contact he has with a student a help to the student.

HEALTH INSTRUCTION

A second large division of physical training deals with health instruction. As has been pointed out above, the division of health examination produces a very important and very useful opportunity for individual health instruction.

Content of hygiene instruction

Hygiene, however, is presented commonly to groups of students in class organization rather than individually. Anatomy, physiology, psychology, bacteriology, pathology, general hygiene, individual hygiene, group hygiene, and intergroup hygiene are sciences, or combinations of sciences, from which physical training draws its facts. These sciences and those phases of economics and sociology that have to do with the economic and social influences of health and disease, of physical efficiency and physical degeneracy, supply physical training with its general subject matter.

Health instruction, then, as a part of physical training, draws its content from these sources. A logical plan of class instruction would, therefore, include the elements of anatomy, physiology, psychology, bacteriology (and general parasitology), pathology, economics, and sociology, as a basis for a more complete presentation of the facts of general hygiene, individual hygiene, group hygiene, and intergroup hygiene.

Method of health instruction

The most satisfactory presentation of these subjects involves the grouping of students into small classes, the em-

ployment of laboratory methods, the use of reference libraries, and the assignment of problems for investigation and study, with a general group discussion of these problems.

Unfortunately, college classes are large and the number of teachers employed in the department of physical training, or in those departments from which physical training draws its science and its philosophy, is small, so that it is impractical to plan to give this instruction to small groups of students covering this range of subject matter.

As a result, the lecture method with its obvious defects and shortcomings is the common medium for the health instruction of college students organized into classes. The more intimate and detailed instruction in these subjects is is secured in special courses and in professional schools.

In the College of the City of New York, we expect that students who come to us from high schools and preparatory schools have had the elements of anatomy and physiology either in courses on those subjects or in courses in biology.[1] Our health instruction, therefore, has been developed along the lines of lectures on general hygiene, individual hygiene, group hygiene, and intergroup hygiene running through the four terms of the freshman and sophomore years.

These lectures are given in periods of from ten to fifteen minutes each, preceding class work in various forms of physical exercise. They are often called "floor talks." The shortness of the presentation favors vigor of address; necessitates a concise organization of material and a clarity and brevity of statement; and is more likely to command student attention and concentration. It has, however, its obvious defects. In these lectures persistent effort is made to influence the daily habits of the student. The lecture content is selected with reference to the practical problems of the daily life of the individual and of the community of which he is a part. It is obvious that the amount of

[1] This precollegiate instruction is, unfortunately, uniformly poor in so far as it relates to health.

time devoted to the presentation of the subject matter is utterly inadequate.

Short written tests are given once each month, and a longer written test is given at the end of each term. These examinations stimulate the student to organize his information and make it more completely his own property. The classes are too large [1] and the instructional force relatively too small to permit the assignment of references, presentation of reports, and the conduct of investigations.

Further instruction in physiology and bacteriology is secured in this institution through elective courses open to students in their junior and senior years. These elective courses, however, are not planned primarily for the health education of the student, but rather for his partial preparation as a teacher of physical training, a student of medicine, a scientific specialist, or for public health work.

HEALTH-FORMING ACTIVITIES OF THE DEPARTMENT OF PHYSICAL EDUCATION

The third division of activities contains the health-habit-forming influences covered by the Department of Physical Training. These influences are formed partly in connection with the follow-up activities associated with the health examinations and advice noted above; partly through impressions made by way of individual and class instruction concerning the laws of health (also noted above); and partly through systematic class work, group work, and individual work in gymnastics, organized recreation, games, play, and athletics.

The student who has been given a health examination each term throughout his college career will be very likely to continue the practice as a habit after graduation. This habit will follow more surely if the examiner has been a real health teacher and not a perfunctory recorder of observations made upon the student. A lack of sympathy

[1] The present enrollment in these classes, February, 1919, is approximately 1500.

and tact may easily prejudice the student against the examination.

The student who has been led regularly to care for defects of one sort or another; whose contact with his examiner-teacher in conferences following up the advice that has been given at the time of examination has been accompanied by the right sort of explanation and mutual understanding, will be more likely to continue to exercise that sort of care for the welfare of his body after he is no longer under the influence of the college.

The student who has seen the application of class health talks to his everyday problems is likely to be influenced to the practice of consequent health habits, particularly if those short lectures serve to correlate his various habit-forming experiences while in college.

And finally, the student who is brought into contact with regular systematic exercise may, if the exercise is attractive and interesting, achieve a health habit that will be carried out into his postgraduate life.

The existence of the Department of Physical Training would be amply justified if its influence upon the health and vigor of the student were limited to the period of his stay in college. The full success of this department, however, like that of all other college departments, must be measured by its influence upon the life of the student after he has left college. The formation of lasting health habits is, therefore, the most important object of this department.

Place of physical exercise in program for physical education

Regular appropriate physical exercise is one of our most important health habits. It is perhaps safe to say that for the average individual it is the most important health habit. This is true because of its intimate and impressive influence upon all the fundamental organic functions of the body. Physical exercise in the American college is provided either as organized class work in the gymnasium, or by means of voluntary recreational opportunities, or through athletics.

Class work in physical exercise

Class work may include: marching, mass drills with or without light apparatus, work on heavy apparatus, games,

dancing, swimming, and track and field work. This class work may be indoors or outdoors, depending on the season or climate.

Additional facilities for physical exercise

Voluntary recreational opportunities are offered through free mass drills open to all students who may desire to take them regularly or irregularly; through open periods for apparatus work; and through facilities and space for games, swimming, mass athletics, and so on.

Recreational activities and athletics

Competitive athletics are typical of the American college. Theoretically, athletics are open to all students. Practically, in many of our colleges athletics are made available only to the student with leisure time and exceptional physique. Consistent effort is being made today by college authorities to provide opportunities for intramural (interclass, intergroup, and mass) athletics for the whole student body; at the same time preserving the desirable features of the more specialized intercollegiate competitions.

Inculcating habits of physical exercise

Physical exercise in these various forms has its immediate and valuable influence upon the health condition of the individual student, if taken in sufficient quantity. It has its lasting and very much more important influence in those cases in which physical exercise becomes a habit. It has, therefore, become the increasing concern of the college teacher of physical training to develop activities in physical exercise that the student may use after graduation. Teachers of physical training have become more and more impressed with the importance of interesting exercise, not only because interesting exercise is more likely to become habitual exercise, but also because exercise that is accompanied by the play spirit, by happiness and joy, is physiologically and therefore healthfully of very much more value to the individual. The relationship between cheerfulness and good health has become very firmly established through the scientific researches of the modern physiologist. We know that health habits which are associated with cheerfulness and happiness are bound to be more effective.

The teacher of physical training finds opportunity for incidental and yet very important instruction leading to the

Opportunities for character building

formation of fine qualities of character and fine standards of personal conduct. These opportunities arise constantly in the various general types of physical exercise found in the curriculum of the department of physical training. They are especially present in those activities in which competition occurs, as in play, games, and athletics. These activities do not in themselves produce excellent qualities of character or high standards of conduct, but the teacher — whether he be called a coach or a trainer or a professor of hygiene — who sets a good example and who insists that every game played, and every contest, whether it be in a handball court between college chums or on the football field between college teams, shall be clean and fair, is using in the right way one of the opportunities present in the entire college life of the student, for the formation of fine character.

SPECIAL EXERCISES FOR SPECIAL GROUPS

In any given group of college students one will find a number of individuals in need of special or modified physical exercise. These students may be grouped commonly under the following heads: (1) undeveloped, (2) bad posture, (3) awkward, (4) originally weak, (5) deformed.

Some of these students suffer from defects that are remediable. Some of these defects are due to poor physical training in earlier years. Some are the results of disease. All of them call for modified exercise and recreation. The fact that a student may fall into one of these groups in no way justifies the assumption that he is therefore no longer subject to the laws of health or to the need for rational health habits. As a matter of fact, such cases generally call for greater care and attention in the formulation and operation of a rational policy of right living.

Every student physically able to go to college is physically able to exercise. No student in attendance on recitations anywhere can offer a rational plea for exemption from exercise. The individual whose physical condition con-

traindicates all forms of exercise needs careful medical advice and probably needs hospital or sanitarium treatment.

College Departments of Physical Training are planning for cases in need of special or modified exercise, through the organization of special classes and through individual attention. In the College of the City of New York we attempt to group the weak students in a given class, into squads of four such students with a squad leader, a student. The awkward students are grouped in the same manner. The exercise of the cripple and the student with serious organic weakness is individualized. These special individualized cases are under the direct supervision of a physician on the staff.

ORGANIZATION OF THE STUDENTS FOR PRESCRIBED WORK IN THE COLLEGE COURSES

In this college, organized, directed physical exercise as outlined above is covered in the division of physical training, the division of recreation, and the division of athletics, all of which are subdivisions of the Department of Hygiene.

The enrollment in the required classes in the division of Physical Training varies from thirty in the smaller classes to over two hundred in the larger. The total enrollment has been approximately eleven hundred each term for several years. These courses are required of all students during the first four collegiate terms. Each of these four courses requires three hours a week, distributed over two or into three periods, and credits the student with one half point toward graduation. This time allowance is, however, inadequate.

The class organization in the division of the Department of Hygiene is based on a unit composed of five students. Each of these units or squads contains one student who is designated as the " leader " of that unit.

Persistent effort is made to assign students of like physical development and needs to the same squads. In this man-

ner a single class of a hundred young men will have a graduation on the basis of proficiency which makes it possible for the teacher to come very near to the rational application of exercise for the individual student.

These units or squads are organized into divisions, each division being made up of four squads. Each division is under the supervision and instruction of a member of the departmental staff. In any given class, then, there is a regular instructor for each group of twenty students, and a student leader for each group of four students. The aim in this organization is to establish a relationship between the instructor and his twenty students that will secure for him an intimate knowledge of each young man, relating to his physical training needs, general and special.

A class period in physical exercise

A typical class period is made up of a short health talk, 10 minutes; a mass drill, 10 minutes; apparatus period, two changes, 20 minutes; and a play period, 15 minutes. If the health talk is not given the play period is lengthened.

The mass drills referred to above are made up of drill in marching and in gymnastics with and without hand apparatus. These drills are graded within the term and from term to term so that a desirable variety is secured. They are devised for disciplinary, postural, developmental, and health purposes. During the progress of the drill the instructors present inspect the posture and work of the students in their divisions.

The apparatus periods referred to include work on the conventional pieces of gymnastic apparatus, with the addition of chest weights, an indoor track, and a swimming pool. The squad organization for this work gives opportunity for the development of student leadership which is often of extraordinary educational value to the individual boy. These periods, because of this squad organization, may be utilized for such *special exercise* emphasis as may be decided upon for any given group of students. It is here that *special conditioning* may be given those young men who are planning for military training or who need selected exercise for neuro-muscular development.

The play period in the regular class program is devoted largely to looser games that contain a predominating element of big muscle activities. Competition is a fairly constant factor. Here, again, our squad unit permits us to assign selected groups of students to special types of games. It is feasible, in this organization, to satisfy a need for the training that is furnished by highly organized games, fighting games, and by games and out-of-door events that develop special groups of muscles and special coördinations.

A well-organized Collegiate Department of Physical Training could coöperate very effectively with a Collegiate Department of Military Training. The squad organization in apparatus periods and in play periods offers the best possible avenue for a successful emphasis of several of the very important phases of military physical training.

Recreational facilities in addition to prescribed work

The division of recreation in the Department of Hygiene in the College of the City of New York, takes charge of all recreational and athletic space and all recreational and intramural athletic activities in those periods of the day in which regular class work does not take precedence. Students of all classes are admitted freely throughout their four collegiate years to these activities, and a studied effort is made to increase their attractiveness as well as to secure from them their full social and character-training values. Such values depend to a very large degree upon the experienced supervision and direction given these activities. It does not follow that the creation of play opportunity is bound to produce good citizenship. The quality of the product depends upon the quality of the man or men in charge of the enterprise.

The most important mission of the Recreational Division is its purpose to furnish the student lasting habits of play and recreation based upon the physical development he has secured in his earlier experiences in physical training. After all, one's physical training should begin at birth and continue throughout life.

The Division of Athletic Instruction is concerned with

all plans for intercollegiate athletics, including organization, financing, training, coaching, and scheduling. All these activities are under the direction of members of the staff of the Department of Hygiene. There is no one employed in this relationship who is not a member of the staff. Constant attempts are made, in every reasonable way, to accomplish the athletic ideals that have been set up by the National Collegiate Athletic Association. Clean play, honorable methods, and sportsmanly standards dominate the theory and practice of this athletic instruction and supervision.

The scope and content of physical training which I have attempted to present in these pages is brought out more clearly by the following announcement of the Department of Hygiene of the College of the City of New York:

HYGIENE (1916–17)

The Department of Hygiene is made up of the divisions of Physical Training, Physiology, Bacteriology, Health Examination, Recreational Instruction, and Athletics.

Through these divisions the Department attempts to train young men for the exigencies of life through the establishment of enduring habits of health examination and repair, health information and individual and community protection against the agents that injure health and cause disease, and through the establishment of wise habits of daily life.

This organization gives opportunity for the development of neglected organic and neuromuscular growth, coördination and control; for the social, ethical, and moral training (character building influences) inherent in wisely supervised athletic and recreational experiences; and for the special conditioning that accompanies training for severe physical and physiological competition and other tests.

Finally, preparation may be secured for life work along certain lines of research, certain medical sciences, various phases of public health, physical training and social work.

In addition, this Department is concerned with all those influences within the College which affect the health of the student. Every reasonable effort is made to keep the institution safe and attractive to the clean, healthy individual.

DIVISION OF PHYSICAL TRAINING

1. *Course One.*

(*a*) Lectures. "Some of the common causes of disease."

(*b*) Physical Exercise.

i. Graded mass drills.

(*a*) Elementary drills are used in order to develop obedience, alertness, and ready response to command, accurate execution, good posture and carriage and facility of control.

(*b*) More advanced drills are given in which movements are made in response to commands. Strength, endurance, and coördination are brought into play.

ii. Apparatus work. Continuation of graded exercises for squads of five students each.

iii. Selected, graded, recreative indoor and outdoor games and play.

iv. Swimming. Each student is required to learn to swim with more than one variety of stroke.

Prescribed. Freshman, first term; three hours a week; counts ½.

2. *Course Two.*

(*a*) Lectures. "The carriers of disease."

(*b*) Physical Exercise.

i. Graded mass drills. Two-count movements. These drills are continuations of, but more advanced than those given in the preceding term.

ii. Apparatus work. Continuation of graded exercises for squads of five.

iii. Selected, graded, recreative indoor and outdoor games and play.

iv. Swimming. Each student is required to develop endurance in swimming.

Prerequisite: Hygiene 1.

Prescribed. Freshman, second term; three hours a week; counts ½.

3. *Course Three.*

(*a*) Lectures. "The contributory causes and carriers of disease."

(*b*) Physical Exercise.

i. Graded mass drills. Four-count movements. More advanced work.

ii. Apparatus work. Continuation of graded exercises for squads of five.

iii. Selected, graded, recreative indoor and outdoor games and play.

iv. Swimming. Diving, rescue and resuscitation of the drowning.
Prerequisite: Hygiene 2.
Prescribed. Sophomore, first term; three hours a week; counts ½.

4. *Course Four.*

(*a*) Lectures. "Defenses against poor health and disease."
(*b*) Physical Exercise.

i. Advanced graded mass drills. Eight-count movements.
ii. Advanced graded apparatus work. For squads of five.
iii. Selected, graded, recreative indoor and outdoor games and play.
iv. Swimming. Advanced continuation of requirements outlined for Courses 2 and 3.
Prerequisite: Hygiene 3.
Prescribed. Sophomore, second term; three hours a week; counts ½.

Modified Course.

In each of the above required courses provision is made for those students whose organic condition may permanently disqualify them for the regular scheduled work. This special work is under the immediate direction of a medical member of the Staff.

5. *Intermediate Physical Training.*

This course is planned to supply the student with such organic development and efficiency as will enable him to demonstrate successfully as a teacher various type exercises for classes in elementary and intermediate indoor and outdoor gymnastics, aquatics, games, play and athletics.

Prerequisite: Hygiene 4. Three hours a week; counts ½.

6. *Advanced Physical Training.*

This course is a continuation of Course 5, and is designed for the physical equipment of teachers of more advanced physical work.

Prerequisite: Hygiene 5. Three hours a week; counts ½.

7. *Class Management.*

This course supplies the practical instruction and experience needed for the training of special teachers in the management of elementary and intermediate classes in various forms of physical exercise.

Prerequisite: Hygiene 6 and 32. Fall term, three hours a week; counts 1.

8. *Class Management.*

This course is a continuation of Course 7. It is planned to give a training in the management of more advanced classes.

Prerequisite: Hygiene 7. Spring term, three hours a week; counts 1.

9. *Control of Emergencies and First Aid to the Injured.*

This course supplies instruction concerning the management and protective care of common emergencies. The instruction is practical and rational. It covers such emergencies as: sprains, fractures, dislocations, wounds, bruises, sudden pain, fainting, epileptic attacks, unconsciousness, drowning, electric shock, and so on.

Prerequisite: Hygiene 32. Fall term, two hours a week; counts 1.

10. *Theory and Practice of Individual Instruction in Hygiene and in Departmental Sanitation.*

Students taking this subject will be given practical first hand experience of special use to teachers; (a) in connection with health examination, inspection, conference, consultation, and follow up service carried on in the departmental examining room; and (b) in connection with the sanitary supervision carried on by the department.

Prerequisites or Co-requisites: Hygiene 32, 41 and 48. Spring term, six hours a week in two periods of three hours each; counts 2.

Division of Physiology

32. *Elements of Physiology.*

This subject deals with the general concepts of the science of physiology, the chemical and physical conditions which underlie and determine the action of the individual organs, and the integrative relationship of the parts of the body.

One lecture, one recitation and two laboratory hours a week; counts 3.

33. *Special Physiology.*

A study of the fundamental facts of physiology and methods of investigation. The aim is to give a complete study of certain topics: the phenomena of contraction, conduction, sense perception and the various mechanisms of general metabolism. Laboratory work is arranged to show the methods of physiologic experimentation and to emphasize the necessity of using care and accuracy in their application.

Spring term, two lectures and three laboratory hours a week; counts 3.

34. *Physiology of Nutrition.*

The aim of this subject is to study broadly the metabolism of the human body. In the development of this plan the following topics

will be considered: the food requirements of man, the nutritive history of the physiologic ingredients, the principles of dietetics and their application to daily living.

Fall term, two lectures and three laboratory hours a week; counts 3.

Division of Bacteriology

41. *General Bacteriology.*

Lectures, recitations and laboratory work introducing the student to the technique of bacteriology and to the more important facts about the structure and function of bacteria. Special applications of bacteriology to agriculture and the industries are discussed, and brief references are made to the activities of allied microbes, the yeasts and molds. The general relations of bacteria to disease and the principles of immunity and its control are included.

One lecture, one recitation and four laboratory hours a week; counts 3.

42. *Bacteriology of Foods.*

This includes the bacteriologic examination of water, sewage, air, milk, the various food products together with the methods used in the standardization of disinfectants, a detailed study of yeast and bacterial fermentation and their application to the industries. Numerous trips to industrial plants will be made.

Prerequisite: Hygiene 41.

Fall term, one lecture and six laboratory hours a week; counts 3.

43. *Bacteriology of Pathogenic Micro-organisms.*

This subject is devoted to the laboratory methods of biology as applied in the state and municipal boards of health. Practice will be given in the methods used for the diagnosis of diphtheria, tuberculosis, malaria, rabies, and other diseases caused by micro-organisms, together with a detailed study of the groups to which they belong.

Prerequisite: Hygiene 41.

Spring term, one lecture and six laboratory hours a week; counts 3.

44. *Potable and Industrial Water.*

Very few industries are independent of a water supply. No one is independent of the source of his drinking water. Water varies in its usefulness for definite purposes.

This subject differentiates between various waters, takes them up from industrial and hygienic standpoints, considers softening, filtering, purifying and water analysis.

Work is divided into three groups.

A. Industrial Water } given in the Chemistry Depart-
B. Potable Water } ment.
C. Water Bacteriology (microscopy of water) } given in the Department of Hygiene.

Municipal students may elect any or all of the three groups.

Prerequisite: Chemistry 4 and Hygiene 41. Chemistry 9 is desirable.

Spring term, seven hours a week; counts 3.

48. *Municipal Sanitation.*

Lectures, discussions and visits to public works of special importance. The principles which underlie a pure water supply and the means by which the wastes of the city, its sewage and garbage may be successfully disposed of, and the problems of pure milk and pure food supplies, the housing question with its special phase of ventilation and plumbing, and the methods by which a municipal board of health is organized to fight tuberculosis and other specific diseases will be studied.

Fall term, two lectures and one field trip a week; counts 3.

49. *Municipal Sanitary Inspection.*
Professor B——— and Bureau of Foods and Drugs, New York City Department of Health.

The seminar work of this subject is done in the College and the field work in company with and under the direct supervision of an Inspector of the Department of Health of the City. The subject is limited to six students each semester, and is intended for those planning to go into this branch of the City's service. The qualifications will be based upon individuality, personality playing an important part.

Prerequisite: Hygiene 41 and 48 and Chemistry 19.

Spring term, two seminar hours, one recitation and one inspection tour a week; counts 3.

50. *Research.*

Seniors who have completed satisfactorily a sufficient amount of work in the Department may be assigned some topic to serve as a basis for a thesis which will be submitted as credit for the work at its completion. The student will receive the advice of the instructor in the subject in which the research falls, but as much independent work as possible will be insisted upon. The purpose is to introduce the student into research methods, and also to foster independence.

Division of Health Examination

I. *Individual Instruction in Hygiene.*

This instruction is of a personal confidential character, and is given in the form of advice based upon medical history supplied by the individual, and upon medical and hygienic examinations and inspections of the individual.

(*a*) Medical and hygienic history and examination.

In this relationship with the student the Department attempts to secure such information concerning environmental and habit influences in the life of the student as may be used as a basis for supplying him with helpful advice concerning the organization of his policy of personal health control. The medical examinations are utilized for the purpose of finding remediable physical defects whose proper treatment may be added to the physiological efficiency and therefore to the health possibilities of the student.

Prescribed: freshman, sophomore, junior, senior and special students. Once each term. No credits.

(*b*) Hygiene inspections.

These inspections are applied in the mutual interest of personal, departmental and institutional hygiene.

Prescribed: freshman and sophomore.

(*c*) Conferences.

All students who have been given personal hygienic or medical advice are required to report in conference by appointment in order that the advice may be followed up.

All individuals found with communicable diseases are debarred from all classes until it is shown in conference that they are receiving proper medical treatment, and that they may return to class attendance with safety to their comrades.

All individuals found with remediable physical or hygienic defects are required to report in conference with evidence that the abnormal condition has been brought to the serious attention of the parent, guardian or family medical or hygienic adviser. Students failing to report as directed may be denied admission to all classes.

II. *Medical and Sanitary Supervision.*

(*a*) Sanitary supervision.

An "Advisory Committee on Hygiene and Sanitation" with the Professor of Hygiene as Chairman, has been appointed by the President. This committee has been instructed to "inquire from time to time into all our institutional influences which are likely to affect the health of the student and instructor, and to make such reports with recommendations to the President as may seem wise and expedient."

(*b*) A medical examination is required of all applicants for

admission to the College. Approval of the Medical Examiner must be secured before registration is permitted.

(*c*) Medical consultation.

Open to all students. (Optional.)

(*d*) Medical examination of Athletes.

Required of all students before admission to athletic training and repeated at intervals during the training season.

(*e*) Treatment.

Emergency treatment is the only treatment attempted by the Department. Such treatment will be applied only for the purpose of protecting the individual until he can secure the services he selects for that purpose.

(*f*) Conferences.

(See "*c*" under I.)

(*g*) Laboratory: The Department Laboratories are equipped for bacteriological and other analyses. The water in the swimming pool is examined daily. The laboratory service is utilized to identify disease carriers, and in every other reasonable way to assist in the protection of student health.

Division of Recreational Instruction

Liberal provision is made by the College for voluntary recreational activities indoors and outdoors during six days of the week and throughout vacation periods. Emphasis is laid on recreation as a health habit and a means of social training.

Division of Athletics

(1) *Athletic Supervision.*

Three organizations are concerned:

(*a*) The Faculty Athletic Committee, which has to do with all athletic activities that involve academic relationships.

(*b*) The Athletic Council, a committee of the Department of Hygiene, charged with the supervision of all business activities connected with student athletic enterprises.

(*c*) The Athletic Association of the Student Body.

(2) *Athletic Instruction.*

The Department utilizes various intramural and extramural athletic activities for the purpose of securing a further influence on the promotion of health habits, the development of physical power, and the establishment and maintenance of high standards of sportsmanly conduct on part of the individual and the group.

At present the schedule includes the following sports: base-

ball, basket ball, track and field, swimming and water polo, tennis, soccer foot ball, and hand ball.

THOMAS ANDREW STOREY, M.D.

College of the City of New York

[It was hoped that it would be possible to include with Professor Storey's chapter a number of forms and photographs calculated to serve as aids in the organization and conduct of a College Department of Hygiene. As Professor Storey's work is very distinctive, other institutions which are striving to organize effective departments of physical education would have found his experiences as graphically depicted in these photographs and summed up in these charts extremely helpful. Unfortunately it has proved impossible to print them here on account of limitations of space, but all who are interested in securing further information can obtain these valuable guides in the introductory stages of the inauguration of a Department of Hygiene by applying to the College of the City of New York. EDITOR.]

PART THREE

The Social Sciences

X

THE TEACHING OF ECONOMICS

Conception and aims of economics

EVEN though economics be so defined as to exclude a large part of the field of the social sciences, its scope is still very broad. Economics is less homogeneous in its content, is far less clearly defined, than is any one of the natural sciences. A very general definition of economics is: The study of men engaged in making a living. More fully expressed, economics is a study of men exercising their own powers and making use of their environment for the purposes of existence, of welfare, and of enjoyment. Within such a broad definition of economics is found room for various narrower conceptions. To mention only the more important of these we may distinguish individual economics, domestic economics, business economics, governmental economics (public finance), and political (or national) economics. Any one of these subjects may be approached and treated primarily either with regard to its more immediate financial, material, acquisitive aspects, or to its more far-reaching social, psychical, and welfare aspects. These various ideas appear and reappear most confusingly in economic literature.

The aims that different students and teachers have in the pursuit of economics are as varied as are the conceptions of its nature. The teaching aims are, indeed, largely determined by those conceptions. Moreover, the teaching aims are modified by still other conditions, such as the environment of the college and its constituency, and such as the temperament, business experience, and scholarly training of the teacher. We may distinguish broadly three aims: the vocational, the civic, and the cultural.

The vocational aim is the most elementary and most usual. Xenophon's treatise on domestic "economy" was the nucleus from which have grown all the systematic formulations of economic principles. Vocational econom-

ics is the economics of the craftsman and of the shop. Every practical craft and art has its economic aspect, which concerns the right and best use of labor and valuable materials to attain a certain artistic, mechanical, or other technical end in its particular field. Economics is not mere technology, which has to do with the mastery of materials and forces to attain any material end. Vocational economics, however, modifies and determines technical practice, which, in the last analysis, is subject to the economic rule. The economic engineer should construct not the best bridge that is possible, mechanically considered, but the best possible or advisable for the purpose and with the means at hand. The economic agriculturist should not produce the largest crop possible, but the crop that gives the largest additional value. The rapidly growing recognition of the importance, in all technical training, of cultivating the ability to take the economic view has led to the development of household economics in connection with the teaching of cooking, sewing, decorating, etc.; of the economics of farm management to supplement the older technical courses in natural science, crops, and animal husbandry; of the economics of factory management in connection with mechanical engineering; of the economics of railway location in connection with certain phases of civil engineering; and many more such special groupings and formulations of economic principles with reference to particular vocations and industries.

The ancient and the medieval crafts and mysteries undoubtedly had embodied in their maxims, proverbs, traditional methods, and teachings, many economic principles suitable to their comparatively simple and unchanging conditions. The rapid changes that have occurred, especially in the last half century, in the natural sciences and in the practical arts have rendered useless much of this wisdom of the fathers. Recently there has been a belated and sudden awakening to the need of studying, consciously and systematically, the economic aspects of the new

dynamic forces and industrial conditions. Hence the almost dramatic appearance of vocational, or technical, economics under such names as "scientific management" and the "economics of engineering." Viewed in this perspective such a development appears to be commendable and valuable in its main purpose. Unfortunately, some, if not all, of the adherents of this new cult of "economy" and "efficiency" fail to appreciate how very restricted and special it is, compared with the whole broad economic field.

The civic aim in teaching economics is to fit the student to perform the duties of a citizen. We need not attempt to prove here that a large proportion of public questions are economic in nature, and that in a democracy a wise decision on these questions ultimately depends on an intelligent public opinion and not merely on the knowledge possessed by a small group of specialists.

The civic conception of economics, seen from one point of view, shows little in common with the vocational conception. Yet from another point of view it may be looked upon as the vocational conception "writ large" and is the art of training men to be citizens in a republic. Good citizenship involves an attitude of interest, a capacity to form judgments on public economic issues, and, if need be, to perform efficiently public functions of a legislative, executive or judicial nature. The state-supported colleges usually now recognize very directly their obligation to provide economic training with the civic aim, and, in some cases, even to require it as a part of the work for a college degree. Often also is found the thought that it is the duty of the student while obtaining an education at public expense, to take a minimum of economics with the civic aim even if he regards it as in no way to his individual advantage or if it has in his case no direct vocational bearings. In the privately endowed institutions this policy may be less clearly formulated, but it is hardly less actively practiced. Indeed, the privately endowed institutions have been recognizing more and more fully their fiduciary and

public nature. Their public character is involved in their charters, in their endowments, in their exemption from taxation, and in their essential educational functions. The proudest pages in their history are those recording their services to the state.[1]

Evaluations of aims of teaching economics in college

The cultural aim in economics is to enable the student to comprehend the industrial world about him. It aims to liberate the mind from ignorance and prejudice, giving him insight into, and appreciation of, the industrial world in which he lives. In this aspect it is a liberal study. Economics produces in some measure this cultural result, even when it is studied primarily with the vocational or with the civic aim. But in vocational economics the choice of materials and the mode of treatment are deliberately restricted by the immediate utilitarian purposes; and in economic teaching with a civic purpose there is the continual temptation to arouse the sympathies for an immediate social program and to take a view limited by the contemporary popular interest in specific proposals for reform. Economics at its highest level is the search for truth. It has its place in any system of higher education as has pure natural science, apart from any immediate or, so far as we may know, any possible, utilitarian application. It is a disinterested philosophy of the industrial world. Though it may not demonstrably be a *means* to other useful things, it is itself a worthy *end.* It helps to enrich the community with the immaterial goods of the spirit, and it yields the psychic income of dignity and joy in the individual and national life. And as a final appeal to any doubting Philistine it may be said that just as the cult of pure science is necessary to the continual and most effective progress in the practical arts, so the study of economics on the philosophical plane surely is necessary to the highest and most lasting results in the application of economics to the arts and to civic life.

[1] See article by Charles E. Persons, on Teaching the Introductory Course in Economics, in *Quarterly Journal of Economics* Vol. XXXI, November, 1916, for a strong presentation of this civic ideal in economic study.

The differences in aims set forth in this paragraph result in much of the futile discussion in recent years regarding methods of teaching. Enthusiastic innovators have debated at cross purposes about teaching methods as if they were to be measured by some absolute standard of pedagogic values, not recognizing that the chief differences of views as to teaching methods were rooted in the differing aims. This truth will reappear at many points in the following discussion. "What will you have," quoth the Gods, "pay the price and take it."

Place of economics in the college curriculum

The place assigned to economics in the college curriculum in respect to the year in which the student is admitted to its study is very different in various colleges. In the last investigation of the subject it appeared that the first economics course might be taken first

in the freshman year in 14 per cent of cases,
in the sophomore year in 31 per cent of cases,
in the junior year in 42 per cent of cases,
in the senior year in 13 per cent of cases.[1]

Among those institutions giving an economic course in the freshman year are some small and some large institutions (some of the latter being Stanford, New York University, Pennsylvania, Bryn Mawr, and the state universities of California, Iowa, Nebraska, North Dakota, Colorado, Utah). Frequently the elementary course given to freshmen is in matter and method historical and descriptive, rather than theoretical, and is planned to precede a more rigid course in the principles.[2]

The plan of beginning economics in the sophomore year is the mode among the state universities and larger colleges, including nearly all of the larger institutions that do not begin the subject in the freshman year. This group includes Yale, Hopkins, Chicago, Northwestern, Mount

[1] Compiled by the writer from data in the report of the committee appointed by the conference on the teaching of elementary economics, 1909; *Journal of Political Economy*, November, 1911, Vol. 19, pages 760–789.

[2] See page 767 of the committee report cited above.

Holyoke, Wellesley, Vassar, and (after 1919) Princeton.

The group of institutions beginning economics in the junior year is the largest, but consists mostly of small colleges having some advanced economics courses, but no more than can be given in the senior year. It contains, besides, a few colleges of arts which maintain a more strictly prescribed curriculum for underclassmen (freshmen and sophomores), such as Dartmouth, Columbia, Smith, and Simmons. It should be observed also that in a great many institutions where economics may be taken by some students in the first two years, it is in fact scheduled as late as junior or senior year in the prescribed courses of students in special departments such as agriculture, engineering, and law. This statement applies doubtless to many thousands of technical students.[1]

In view of these divergencies in practice we must hesitate to declare that the subject should be begun at precisely this or that point in the college course. These differences, to be sure, are in many cases the result of accidental factors in the college curriculum, and often have been determined by illogical departmental rivalries within the faculty rather than by wise and disinterested educators studying the merits of the case. But in large part these differences are the expression of different purposes and practical needs in planning a college curriculum, and are neither quite indefensible nor necessarily contradictory in pedagogic theory. In the small college with a nearly uniform curriculum and with limited means, a general course is perhaps best planned for the senior year, or in the junior year if there is an opportunity given to the

[1] Evidently it is not possible to draw from these data any definite conclusions as to the proportion of students beginning economics in each of the four years respectively. But probably three-fourths of all, possibly four fifths, take the general course either in the sophomore or the junior year. Most of the institutions giving economics only in the senior year are small, with a very restricted curriculum, often limited to one general course. But it is a widely observed fact that many students in large institutions postpone the election of the subject till their senior year.

student to do some more advanced work the year following. At the other extreme are some larger institutions in which the pressure of new subjects within the arts curriculum has shattered the fixed curriculum into fragments. This has made possible specialization along any one of a number of lines. Where this idea is carried out to the full, every general group of subjects eventually must make good its claim to a place in the freshman year for its fundamental course. But inasmuch as, in most institutions, the freshman year is still withheld from this free elective plan by the requirement of a small group of general subjects, economics is first open to students in the sophomore year. The license of the elective system is of course much moderated by the requirement to elect a department, usually at the beginning either of the sophomore or of the junior year, and within each department both a more or less definite sequence of courses and a group of collateral requirements are usually enforced. Where resources are very limited it is probably best to give the economics course in the last two years, but where several more specialized courses in economics are given, it should be introduced as early as the sophomore year. If a freshman course in the subject is given it should be historical, descriptive, or methodical (e. g., statistical methods, graphics, etc.) rather than theoretical. The experience (or lack of experience) and knowledge of the industrial world, past and present, possessed by the average American college student is such that courses of that kind meet a great need.[1]

Time to be given to economics in a college curriculum

Teachers of economics today are doubtless attempting the impossible in compressing the present "general course" into three hours for two semesters. No other department of a university attempts to treat in such a brief time so broad a subject, including both principles and applications. Such a course was quite long enough in the days when all economic instruction was given by gray-haired theologians,

[1] Of this see further below, page 226.

philosophers, mathematicians, and linguists, dogmatically expounding the *pons asinorum* of economics, and quizzing from a dusty textbook of foreign authorship. But now the growing and vigorous tribe of specialized economic teachers is bursting with information and illustrations. Moreover, the range of economic topics and of economic interests has expanded wonderfully.

The resulting overcrowded condition of the general course is possibly the main cause of the difficulties increasingly felt by teachers in handling that course satisfactorily. As a part of a general college curriculum " general economics " cannot be satisfactorily treated in less than three hours a week for two years. The additional time should not be spent in narrow specialization but rather in getting a broader understanding of the subject through economic history and geography, through observation and description of actual conditions, through a greater use of problems and examples, and through more detailed, less superficial study of the fundamental principles. As a part of sixteen years of the whole educational scheme from primary grade to college diploma such a course would claim but 2½ per cent of the student's whole time, while the subjects of English, mathematics, and foreign linguistics each gets about 20 per cent, in the case even of students who do not specialize in one of these branches.

Of the replies [1] from nearly three hundred colleges to the question whether economics was required for graduation, about 55 per cent were in the affirmative. Unfortunately the question was ambiguous, and the replies apparently were understood to mean generally that it was required in one or more curricula, not of all graduates (though in some cases the question was probably taken in the other sense). It is noteworthy that more frequently economics is required in the smaller colleges having but one curriculum, that of liberal studies. In the larger institutions economics is usually not required of students in the humanities, although of late it has increasingly been made

[1] Article cited, *Journal of Political Economy*, Vol. 19, page 768.

a part of the technical college curricula, especially in engineering and agriculture.[1] So we are in a fair way to arrive at the situation where no student except in those "liberal" arts courses can get a college diploma without studying economics; only in a modern course in the humanities may the study of human society be left out.

The economists have not been active in urging their subject as a requirement. The call for increasing requirements in economics has come from the public and from the alumni. The steady increase in the number of students electing economic courses without corresponding additions to the teaching forces has made the overworked professors of the subject thankful when nothing more was done to increase by faculty requirements the burden of their class work. It is charged and it is admitted in some institutions that the standards of marking are purposely made more severe in the economics courses than in courses in most other subjects. The purpose avowed is "to cut out the dead timber," so that only the better students will be eligible for enrollment in the advanced economics courses. An unfortunate result is to discourage some excellent students, ambitious for high marks or honors, from electing courses in economics because thereby their average grades would be reduced. In many cases, for this reason, good students take the subject optionally (without credit), though doing full work in it.

Organization of the subject in the college curriculum

We have already, in discussing the place of economics, necessarily touched upon the organization of the courses. In most colleges this organization is very simple. The whole economic curriculum consists of the "general" course, or at most of that plus one or more somewhat specialized courses given the next year. The most usual year of advanced work consists of one semester each of money and banking and of public finance. A not un-

[1] The Society for the Promotion of Engineering Education has had a standing committee on economics, since 1915. The first committee was composed of three engineers (all of them consulting and in practice and two of them also teachers) and the present writer.

usual plan, well suited to the situation in a small college where economics takes the full time of one teacher, is to give the general course in the sophomore year, and to offer a two-year cycle of advanced work, the two courses being given in alternate years, the class consisting of juniors and seniors. In this plan the additional courses may be in transportation, in labor problems, in trusts and corporations, and frequently of late, in accounting. Ordinarily the "general" course itself involves a logical sequence, the first term dealing with fundamental concepts and theories, and the second term covering in a rapid survey a pretty wide range of special problems. The majority of the students take only the general course. Those who go on to more advanced courses retrace the next year some of the ground of the second semester's work, but this is probably for few of them a loss of time. Indeed, in such a subject as economics this opportunity to let first teachings "sink in," and strange concepts become familiar, is for most students of great value. Yet the plan was adopted and is followed as a compromise, using one course as a ready-made fit for the differing needs of two groups of students. We have seen above (page 221) that preceding the general, or systematic, course, there is in a number of colleges a simpler one. In some cases [1] the experiment has been undertaken of studying first for a time certain broad institutional features of our existing society, such as property, the wage system, competition, and the amount and distribution of wealth. The need of such a course is said to be especially great in the women's colleges. If so, it is truly urgent, for most young men come to college with very meager experience in economic lines. Few, if any, teachers would deny that such an introductory

[1] In Amherst, as described in *Journal of Political Economy* by Professor W. H. Hamilton, on "The Amherst Program in Economics"; and in Chicago University beginning in 1916. See also, by the same writer, a paper on "The Institutional Approach to Economic Theory," in the *American Economic Review*, Supplement, page 309, March, 1919.

course preceding the principles is distinctly of advantage.[1] Some would favor it even at the price of shortening materially the more general course. But most teachers would agree that together the introductory course and the general course should take two full years (three hours a week, twelve college credit hours, as usually reckoned), an amount of time which cannot be given by the "floater" electing economics. And to accommodate both those who have had the introductory course and those who have not, the general course would have to be given in two divisions and in two ways. Again we come to the thought, suggested above, that probably we are attempting too much in too brief a time in the general course today. A longer time for the study would permit of a sequence that would be more logically defensible. It would begin with historical and descriptive studies, both because they are fundamentally necessary and because, being of more concrete nature, they may be given in a form easier for the beginner to get. In this period a good deal of the terminology can be gradually familiarized. Then should come the more elementary analytical studies and fundamental principles, followed by a discussion of a number of practical problems. In conclusion should come a more systematic survey of general principles, of which most students now get but a superficial idea. The work in the specialized elective courses would then be built upon much firmer foundations than is the case at present.

Methods of teaching

The main methods that have been developed and tested in the teaching of undergraduate classes in economics may be designated as the lecture method, the textbook method, the problem method. Any one of these may be used well-

[1] At the meeting of the American Economic Association in 1897, at which was discussed "The Relation of the Teaching of Economic History to the Teaching of Political Economy," the opinion was expressed by one teacher that economic history should follow the general course. But all the others agreed that such a course should begin the sequence, and this seems to be the almost invariable practice. See *Economic Studies*, Volume III, pages 88–101, Publications of the American Economic Association, 1898.

nigh exclusively, or, as is more usual, two or more may be combined in varying proportions; e. g., lectures with "supplementary" (or "collateral") readings, with or without an occasional meeting in a quiz section. Along with these main methods often are used such supplementary methods as topical reports requiring individual library work; laboratory exercises, as in statistics, accounting, etc.; individual field work to study some industrial problem; and visits, as a class, and with guidance, to factories and industrial enterprises.

The choice of these particular methods of teaching is, however, largely conditioned by the teacher's antecedent choice between the deductive or the inductive forms of presentation. This is an old controversy ever recurring. But it should be observed that the question here is not whether induction or deduction is a greater aid in arriving at new truth, but it is whether the inductive or the deductive process is the better for the imparting of instruction to beginners. In teaching mathematics, the most deductive of the sciences, use may be made of such inductive aids as object lessons, physical models, and practical problems; and *per contra,* in the natural sciences, where induction is the chief instrument of research, elementary instruction is largely given in a deductive manner by the statement of general propositions, the workings of which are then exemplified. The decision of the question which is the better of these two pedagogic methods in a particular case, depends (*a*) partly on the average maturity and experience of the class; (*b*) partly on the mental quality of the students; and (*c*) partly on the interest and qualifications of the teacher.

(*a*) The choice of the best method of teaching is of course dependent on the same factors that have been shown above to affect the nature and sequence of the courses. The simpler method leading to more limited results is more suitable for the less mature classes; but the scientific stage in the treatment of any subject is not reached until general principles are discussed. If one is content with a vocational

result in economic teaching, stopping short of the theoretical, philosophic outlook, more can be accomplished in a short time by the concrete method. But such teaching would seem to belong in a trade school rather than in a college of higher studies, and in any case should be given by a vocational teacher rather than by a specialist in social, or political, economy.

Various methods evaluated

(*b*) Every college class presents a gradation of minds capable (whether from nature or training) of attaining different states of comprehension. Of students in the lower half of the classes in American colleges, it may be said broadly that they never can or will develop the capacity of thinking abstractly and that the concrete method of teaching would give better results in their cases. Therefore the teacher attempts to compromise, to adopt a method that fits the "mode," the middle third of the class, wasting much of the time of the brighter (or of the more earnest) students, and letting those in the lowest third trail along as best they can. This difficulty may be met with some success where there are several sections of a class by grouping the men in accordance with their previous scholarship records. This grouping is beneficial alike to those lower and to those higher than the average in scholarship.

(*c*) Quite as important in this connection as this subjective quality of the students, is the characteristic quality of the teacher. A particular teacher will succeed better or worse with any particular method according as it fits his aim and is in accord with his endowment and training. If he is himself of the "hard-headed" unimaginative or unphilosophic type, he will of course deem effort wasted that goes beyond concrete facts. He will give little place to the larger aspects and principles of "political" economy, but will deal exhaustively with the details of commercial economy. If the teacher is civic-minded and sympathetic, he will be impelled to trace economic forces, in their actions and interactions, far beyond the particular enterprise, to show how the welfare of others is affected. To do this

rightly, knowledge of the conditions must be combined with a deeper theoretical insight; but the civic aim operates selectively to limit the choice of materials and analysis to those contemporary issues that appeal at the time to the textbook writer, to the teacher, or to the public. Still different is the case of the teacher who finds his greatest joy in the theoretical aspects of economics, possesses a clean-cut economic philosophy (even though it may not be ultimate truth), and has faith in economics as a disciplinary subject. Such a teacher will (other things being equal) have, relatively, his greatest success with the students of greatest ability; he will get better results in teaching the "principles" than in teaching historical and descriptive facts. None will deny that this type of education has an important place. Even in the more descriptive courses appeal should be made to the higher intellectual qualities of the class, leaving a lasting disciplinary result rather than a memory stored with merely ephemeral and mostly insignificant information.

The teacher with colorless personality and without interest in, and knowledge of, the world of reality, will fail, whatever be the purpose of his teaching. The higher the teacher's aim, the farther may he fall below its attainment. A college teacher whose message is delivered on the mental level of grammar school children should, of course, score a pretty high percentage of success in giving a passing mark to sophomores, juniors, and seniors in American colleges. But is this really a success, or is it rather not evidence of a failure in the whole school curriculum, and of woful waste in our system of so-called "higher" education? Are colleges for the training of merely mediocre minds?

Aim and attitude more fundamental than method of instruction

These questions of aim and of attitude are more fundamental than is the question of the particular device of instruction to be used, as lecture, textbook, etc. Yet the latter question is not without its importance. In general it appears that practice has moved and still moves in a cycle. In the American college world as a whole each particular

college repeats some or all of the typical phases with the growth of its economic department.

(1) First is the textbook, with recitations in small classes. (2) Next, the lecture gradually takes a larger place as the classes grow, until, supplemented by required readings, it becomes the main tool of instruction, this being the cheapest and easiest way to take care of the rapidly growing enrollment. (3) Then, when this proves unsatisfactory, the lectures are perhaps cut down to two a week, and the class is divided into quiz sections for one meeting a week under assistants or instructors, the lecture still being the main center of the scheme of teaching. (4) This still being unsatisfactory (partly because it lacks oversight of the students' daily work, and partly because the lecture is unsuited to the development of general principles that require careful and repeated study for their mastery), a textbook is made the basis of section meetings, held usually twice a week, and the lectures are reduced to one a week, given to the combined class, and so changed in character as to be merely supplementary to the class work. The lectures are given either in close connection week by week with the class work or bearing only a general relation with the term's work as a whole. This may be deemed the prevailing mode today in institutions where the introductory course has a large enrollment.[1] (5) Another change completes the cycle; the lecture is dropped and the class is divided, each section, consisting of twenty to thirty students, meeting with the same teacher regularly for class work. This change was made after mature consideration in "the College" in Columbia University; is in operation in Chicago University, where the meetings are held five times a week; and has been adopted more recently still in New York University. There have been for years evidences of the growing desire to abolish the lecture from the introductory course and also to limit its use in some of the

[1] This plan has at various times been followed at Stanford, Cornell, Harvard, and Princeton, to cite only a few of the numerous examples.

special undergraduate courses. The preceptorial plan adopted in 1905 by Princeton University is the most notable instance of the latter change.[1] Even in graduate teaching in economics there has been a growing opinion and practice favorable to the "working" course or "seminar" course to displace lecture courses.[2] Thus the lecture seems likely to play a less prominent rôle, especially in the introductory courses, but it is not likely to be displaced entirely in the scheme of instruction.

Selection of a textbook

Numerous American textbooks on political economy (thirty, it is said) have been published in the last quarter of a century, a fact which has now and then been deplored by the pessimistic critic.[3] Few share this opinion, however. The textbooks have, to be sure, often served, not to unfold a consistent system of thought, but to reveal the lack of one. But they have afforded to the teachers and students, in a period of developing conceptions on the subjects, a wide choice of treatment of the principles much more exactly worked out and carefully expressed than is possible through the medium of lectures as recorded in the students' hastily written notes.

Questions, exercises, and test problems are widely used as supplementary material for classroom discussion.[4]

[1] In this plan the sections are small (three to seven students) and the preceptor is expected to give much time to the personal supervision of the student's reading, reports, and general scholarship. The preceptorial work is rated at more than half of the entire work of the term. The one great difficulty of the preceptorial system is its cost.

[2] A strong plea is made for the "retirement of the lectures" by C. E. Persons, in the *Quarterly Journal of Economics*, Vol. XXXI, "Teaching the Introductory Course in Economics," November, 1916, pages 96–98.

[3] Professor J. H. Hollander, *American Economic Review*, Vol. VI, No. 1, Supplement (March, 1916), page 135. See dissenting opinions in the discussion that followed.

[4] Professor C. E. Persons (art. cited page 86, November, 1916) gives the titles of ten separate books or pamphlets of this kind; since which date have appeared the author's "Manual of References and Exercises," Parts I and II, to accompany *Economic Principles*, 1915, and *Modern Economic Problems*, 1916, respectively.

Separately printed collections of such material date back at least to W. G. Sumner's *Problems in Political Economy* (1884), which in turn acknowledged indebtedness to other personal sources and to Milnes' collection of two thousand questions and problems from English examination papers. With somewhat varying aims, further commented upon below, and in varying degrees, all teachers of economics now make use of such questions in their teaching of both general and special courses. Unquestionably there are, in the use of the problem method, possibilities for good which few teachers have fully realized.[1]

The selection and arrangement of materials for supplementary readings is guided by various motives, more or less intermingling. It may be chiefly to parallel a systematic text by extracts taken largely from the older "classics" of the subject (as in C. J. Bullock's *Selected Readings in Economics*, 1907); or to provide additional concrete material bearing mostly upon present economic problems (as in the author's *Source Book in Economics*, 1912); or to supplement a set of exercises and problems (as in F. M. Taylor's *Some Readings in Economics*, 1907); or to constitute of itself an almost independent textbook of extracts, carefully edited with original introductions to chapters (as Marshall, Wright, and Field's *Materials for the Study of Elementary Economics*, 1913, and W. H. Hamilton's *Readings in Current Economic Problems*, 1914).

Whatever be the particular tool of instruction, whether lecture, textbook with classroom discussion, problem study, or collateral readings, its use may be very different according as the teacher seeks to develop the subject positively or negatively, to present a single definite and (if he can)

[1] Among those most elaborately developing this method has been Professor F. M. Taylor of the University of Michigan. See his paper on the subject and discussion in the *Journal of Political Economy*, Vol. VII, pages 688–703 (December, 1909). Marshall, Wright, and Field published the *Outline of Economics*, developed as a series of problems in 1910, which they used for a time as the main tool of instruction in the introductory course in Chicago University.

coherent body of doctrines, or a variety of opinions that have been held, among which the student is encouraged to choose. Evidently the conditions determining choice in the case of advanced courses are different from those in the introductory course. For the beginner time is required in order that economic principles may sink in, and so he is bewildered if at first he is introduced to a number of theories by different authors. Materials that supplement the general course of principles should therefore be limited to subject matter that is descriptive, concrete, and illustrative. The beginner, somewhat dazed with the variety of new facts, ideas, terminology, and problems in the field into which he has entered, needs guidance to think clearly step by step about them.[1] Not until the pupil has learned to see and apprehend the simpler economic phenomena near him can he be expected to survey the broader fields and to form independent judgments concerning complex situations. He must creep before he can run. In fact, teachers are often self-deceived when they imagine that they are leaving students to judge for themselves among various opinions or to find their way inductively to their own conclusions. The recitation, in truth, becomes the simple game of "hot and cold." The teacher has in mind what he considers the right answer; the groping student tries to guess it; and as he ventures this or that inexpert or lucky opinion he is either gently chided or encouraged. At length some bright pupil wins the game by agreeing with the teacher's theretofore skilfully concealed opinion. This is called teaching by the inductive method.

Undoubtedly it is more desirable to develop in the student the ability to think independently about economic questions than it is to drill him into an acceptance of ready-made opinions on contemporary practical issues. The more fundamental economic theory — the more because its bearing on pecuniary and class interests is not close or obvious

[1] A thoughtful discussion of some phases of this problem is given by Persons, art. cited, pages 98 ff., favoring the more positive treatment with less distracting multiplicity of detail.

— is an admirable organ for the development of the student's power of reasoning. But to give the student this training it is not necessary to keep him in the dark as to what he is to learn. The Socratic method is still unexcelled in the discussion of a text and of lectures in which propositions are clearly laid down and explained. The theorem in geometry is first stated, and then the student is conducted step by step through the reasoning leading to that conclusion. Should not the student of economics have presented to him in a similar way the idea or principle, and then be required to follow the reasoning upon which it is based? Then, through questions and problems,— the more the better, if time permits of their thorough discussion and solution,— the student may be exercised in the interpretation of the principles, and by illustrations drawn from history and contemporary conditions may be shown the various applications of the principle to practical problems. To get and hold the student's *interest*, to fascinate him with the subject, is equal in importance to the method, for without interest good results are impossible.[1]

[1] To a former student of mine and now a successful teacher, Dean J. R. Turner of New York University, I am indebted for the suggestion of the following practical rules, a few among many possible, which should be helpful to younger teachers:

(*a*) Keep the student expecting a surprise, afraid to relax attention for fear of missing something.

(*b*) By Socratic method lead him into error, then have him (under cross fire and criticism of class) reason his way out.

(*c*) Make fallacious argument, then call for criticism giving distinction to him who renders best judgment.

(*d*) Set tasks and have members of class compete in intellectual contests.

(*e*) Make sure that each principle learned is seen in its relationship to practical affairs.

(*f*) Enliven each dry principle with an anecdote or illustration to elucidate it, for principles devoid of interesting features cannot secure attention and so will not be remembered.

(*g*) Accompany the discussion with charts and board work to visualize facts and questions to stimulate thought.

(*h*) Ask questions and so handle the class discussions that a

Tests of teaching results

It must be confessed that no exact objective measure of the efficiency of teaching methods in economics has been found. At best we have certain imperfect indices, among which are the formal examination, the student's own opinion at the close of the course, and the student's revised opinion after leaving college.

The primary purpose of the traditional examination is not to test the relative merits of the different methods of teaching, but to test the relative merits of the various students in a class, whatever be the method of teaching. Every teacher knows that high or low average marks in an entire class are evidences rather of the standard that he is setting than it is of the merits of his teaching methods,—though in some cases he is able to compare the results obtained after using two different methods of exposition for the same subject. But, as was indicated above, such a difference may result from his own temperament and may point only to the method that he can best use, not to the best absolutely considered. Moreover, the teacher may make the average marks high or low merely by varying the form and content of the examination papers or the strictness of his markings.

Each ideal and method of teaching has its corresponding type of examination. Descriptive and concrete courses lend themselves naturally to memory tests; theoretical courses lend themselves to problems and reasoning. A high type of question is one whose proper answer necessitates knowledge of the facts acquired in the course together with an interpretation of the principles and their application to new problems. Memory tests serve to mark off "the sheep from the goats" as regards attention and

few will not do all the talking, that foreign subject matter is not introduced, that a consistent and logical development of thought is strictly adhered to.

(i) The last few minutes of the period might well be devoted to the assignment for the next meeting. The best manner of assignment must depend upon the nature of task, the advancement of the student, the purpose in view.

faithful work; reasoning tests serve to give a motive for disciplinary study and to measure its results. It may perhaps seem easier to test the results of the student's work in memory subjects; but even as to that we know that there are various types of memory and how much less significant are marks obtained by "the cramming process" than are equally good marks obtained as a result of regular attention to daily tasks.

The students' revised and matured judgment of the value of their various college studies generally differ, often greatly, from their judgments while taking or just after completing the courses. Yet even years afterward can man judge rightly in his own case just what has been the relative usefulness to him of the different elements of his complex college training, or of the different methods employed? [1] But the evidence that comes from the most successful alumni to the college teacher in economics is increasingly to the effect that the college work they have come to value most is that which "teaches the student to think." Our judgments in this matter are influenced by the larger educational philosophy that we hold. Each will have his standard of spiritual values.

Moot questions in economics affecting the teaching of the subject

The moot questions in the teaching of the subject have, perhaps, been sufficiently indicated, but we may here add a word as to the bearings which certain moot questions

[1] An interesting study made by the department of education of Harvard University of the teaching methods and results in the department of economics was referred to in President Lowell's report. According to the answers of the alumni their work in economics is now valued mainly for its civic and disciplinary results (these do not seem to have been further distinguished). In the introductory course reading was ranked first, class work next, and lectures least, in value. In the advanced courses the lecture was ranked higher and class work lower, but that may be because the lecture plays a more important rôle there than in the lower classes. Answers regarding such matters are at most significant as indicating the relative importance of the various methods as they have actually been employed in the particular institution, and have little validity in reference to the work and methods of other teachers working under other conditions, and with students having different life aims.

in the theory of the subject may have on the methods of teaching. The fundamental theory of economics has, since the days of Adam Smith, been undergoing a process of continuous transition, but the broader concepts never have been more in dispute than in the last quarter century in America. The possibility of such diversity of opinion in the fundamentals among the leading exponents of the subject argues strongly that economics is still a philosophy — a general attitude of mind and system of opinion — rather than a positive science. At best it is a "becoming science" which never can cease entirely to have a speculative, or philosophic character. This is not the place to go into details of matters in controversy. Suffice it to say that in rivalry to the older school — which is variously designated Ricardian, Orthodox, English, or classical — newer ideas have been developed, dating from the work of the Austrian economists, of Jevons, and of J. B. Clark in the last decades of the nineteenth century. The older school had sought the explanation of value and the theory of distribution in objective factors,— partly in the chemical qualities of the soil, partly in labor, partly in the costs (or outlays) of the employing class. The psychological factor in value had been almost eliminated from this older treatment of value and price, or at best was imperfectly recognized under the name of "utility." The newer school made the psychological element primary in the positive treatment of economic principles, and launched a negative criticism against the older terms and ideas that effectively exposed their unsoundness considered separately and their inconsistency as a system of economic thought. Both the negative criticisms and the proposed amendments taken one by one gained wide acceptance among economists. But when it came to embodying them in a general theory of economics, many economists have balked.[1] Most of the

[1] The typical attitude of many economists is expressed about as follows: It is one thing to give assent to refinements when they are used in the discussion of some single point of theory, and it is quite another thing to accept them when one sees how, in their

American texts in economics and much of our teaching show disastrous effects of this confusion and irresolution. The newer concepts, guardedly admitted to have some validity, appear again and again in the troubled discussions of recent textbook writers, which usually end with a rejection, "on the whole," of the logical implications of these newer concepts. Many teachers thus have lost their grip on any coördinating theory of distribution. They no longer have any general economic philosophy. The old Ricardian cock-sureness had its pedagogic merits. Without faith, teaching perishes. The complaints of growing difficulty in the teaching of the introductory course seem to have come particularly from teachers that are in this unhappy state of mind. They declare that it is impossible longer to interest students successfully in a general theoretical course, and they are experimenting with all kinds of substitutes — de-nicotinized tobacco and Kaffee Hag — from which poisonous theory has been extracted. At the same time, economics "with a punch in it," economics "with a back bone," is being taught by strong young teachers of the new faith more successfully, perhaps, than economics has ever been taught in the past. This greater question of the teacher's conception of economics dominates all the minor questions of method. Economics cannot be taught as an integrated course in principles by teachers without theoretical training and conceptions; in such hands its treatment is best limited to the descriptive phases of concrete special problems,— valuable, indeed, as a background and basis, but never rising to the plane upon

combined effect, they would carry us away from "the old familiar moorings."

Such a view, it need not be urged, reflects an unscientific state of mind. The real cause of the rejection of the ideas probably is the shrinking of over-busy men, in middle life, and absorbed in teaching and in special problems, from the intellectual task of restudying the fundamentals and revising many of their earlier formed opinions — to say nothing of rewriting many of their old lectures and manuscripts.

which alone economics is fully worth the student's while as a college subject.

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XI

THE TEACHING OF SOCIOLOGY

Growth of sociology as a college subject

THE teaching of sociology as a definite college subject in the United States began at Yale nearly forty-five years ago. Since 1873 it has been introduced into nearly 200 American colleges, universities, normal schools, and seminaries. A study of this teaching in 1910 revealed over 700 courses offered to over 8000 undergraduates and 1100 graduate students. It is safe to assume a steady growth during the last six years. Hence the problem of teaching is of no little concern to sociologists. The American Sociological Society early recognized this fact and in 1909 appointed a Committee of Ten to report on certain aspects of the problem. But that all teachers of sociology have not grasped the bearing of pedagogy upon their work is clear from complaints still heard from students that sociology is vague, indefinite, abstract, dull, or scattered. Not long ago some bright members of a class were overheard declaring that their professor must have been struck by a gust of wind which scattered his notes every day before getting to his desk.

The pedagogy of sociology the pedagogy of all college subjects

Sociology is simply a way of looking at the same world of reality which every other science looks at in its own way. It cannot therefore depart far from the pedagogical principles tried out in teaching other subjects. It must utilize the psychology of attention, interest, drill, the problem method, procedure from the student's known to the new, etc. The universal pitfalls have been charted for all teachers by the educational psychologists. In addition, sociology may offer a few on its own account, partly because it is new, partly because a general agreement as to the content of fundamentals in sociology courses is just beginning to make itself felt, partly because there is so far no really good textbook available as a guide to the beginner.

Methods of teaching sociology determined by a complex of vital factors

Specific methods of teaching vary according to individual temperament, the "set" of the teacher's mind; according to his bias of class, birth, or training; according to whether he has been formed or deformed by some strong personality whose disciple he has become; according to whether he is a radical or a conservative; according to whether he is the dreamy, idealistic type or whether he hankers after concrete facts; according to whether sociology is a primary interest or only an incidental, more or less unwelcome.

Hence part of the difficulty, though by no means all, comes from the fact that sociology is frequently expounded by men who have received no specific training themselves in the subject, or who have had the subject thrust upon them as a side issue. In this connection it is interesting to note that in 1910 sociology was "given" in only 20 cases by sociology departments, in 63 by combinations of economics, history, and politics, in 11 by philosophy and psychology, in 2 by economics and applied Christianity or theology, in 1 by practical theology!

Guiding principles in the teaching of sociology — The teacher as keen analyst, not revivalist

Whatever the path which led into the sociological field or whatever the bias of temperament, experience justifies several preliminary hints for successful teaching. First, avoid the voice, the yearning manner, and the gesture of the preacher. Sociology needs the cool-headed analyst rather than the social revivalist. Let the sentimentalist and the muck-raker stay with their lecture circuits and the newspapers. The student wants enthusiasm and inspiration rather than sentimentality.

Avoiding the formal lecture

Second, renounce the lecture, particularly with young students. There is no surer method of blighting the interest of students, of murdering their minds, and of ossifying the instructor than to persist in the pernicious habit of the formal lecture. Some men plead large classes in excuse. If they were honest with themselves they would usually find that they like large classes as a subtle sort of compliment to themselves. Given the opportunity to break up a class of two hundred into small discussion groups they would frequently refuse, on the score that they would

lose a fine opportunity to influence a large group. Dodge it as you will, the lecture is and will continue to be an unsatisfactory, even vicious, way of attempting to teach social science. No reputable university tries to teach economics or politics nowadays in huge lecture sections. Only an abnormal conceit or abysmal poverty will prevent sociology departments from doing likewise. Remember that education is always an exchange, never a free gift.

Adjusting instruction to the capacities of your students

Third, do not be afraid to utilize commonplace facts and illustrations. A successful professor of sociology writes me that he can remember that what are mere commonplaces now were revelations to him at twenty-one. Two of the greatest teachers of the nineteenth century, Faraday and Huxley, attributed their success to the simple maxim, take nothing for granted. It is safe to assume that most students come from homes where business and petty neighborhood doings are the chief concern, and where a broad, well-informed outlook on life is rare. Since so many of my colleagues insist that young Ph.D.'s tend constantly to "shoot over the heads" of their students, the best way of avoiding this particular pitfall seems to lie along the road of simple, elementary, concrete fact. The discussion method in the classroom will soon put the instructor right if he has gone to the other extreme of depreciating his students through kindergarten methods. Likewise he can guard against being oracular and pedantic by letting out his superior stores of information through free discussion in the Socratic fashion. Nothing is more important to good teaching than the knack of apt illustration. While to a certain extent it can be taught, just as the art of telling a humorous story or making a presentation speech can be communicated by teachers of oral English, yet in the long run it is rather a matter of spontaneous upwellings from a well-stored mind. For example, suppose a class is studying the factors of variation and selection in social evolution: the instructor shows how Nature loves averages, not only by statistics and experiments with the standard curve of distribution, but also, if he is a really illuminated

teacher, by reference, say, to the legend of David and Goliath, the fairy tale of *Little One-Eye, Little Two-Eye, Little Three-Eye*, and Lincoln's famous aphorism to the effect that the Lord must love the common people because he made so many of them. Sad experience advises that it is unsafe for an instructor any longer to assume that college sophomores are familiar with the Old Testament, classic myths, or Greek and Roman history. Hence he must beware of using any recondite allusions or illustrations which themselves need so much explanation that their bearing on the immediate problem in hand is obscured. An illustration, like a funny story, loses its pungency if it requires a scholium.

Pedagogical suggestions summarized

Fourth, adhere to what a friend calls the 16 to 1 basis — 16 parts fact and 1 part theory. Fifth, eschew the professor's chair. The blackboard is the teacher's "next friend." Recent time-motion studies lead us to believe that no man can use a blackboard efficiently unless he stands! The most celebrated teaching in history was peripatetic. Sixth, postpone the reconciling of discrepant social theorizings to the tougher-hided seniors or graduate students, and stick to the presentation of "accessible realities." Finally, an occasional friendly meeting with students, say once or twice a semester at an informal supper, will create an atmosphere of coöperative learning, will break down the traditional barriers of hostility between master and pupil, and may incidentally bring to the surface many useful hints for the framing of discussion problems.

The course of study — (a) Determined by the maturity of the students

To a certain extent teaching methods are determined by the age of the students. In 1910, of all the institutions reporting, 73 stated that sociology instruction began in the junior year; 23 admitted sophomores, 4 freshmen, 39 seniors. But the unmistakable drift is in the direction of introducing sociology earlier in the college curriculum, and even into secondary and elementary schools. Hence the cautions voiced above tend to become all the more imperative. Moreover, while in the past it has been possible

to exact history, economics, political science, philosophy, psychology, or education as prerequisite to beginning work in sociology, in view of the downward trend of sociology courses it becomes increasingly more difficult to take things for granted in the student's preparation. Until the dream of offering a semester or year of general social science to all freshmen as the introduction to work in the specialized branches of social science comes true, the sociologist must communicate to his elementary classes a sense of the relations between his view of social phenomena and the aspects of the same phenomena which the historian, the economist, the political scientist, and the psychologist handle.

(b) Determined by its aims

Both the content and methods of sociological instruction are determined also in part by what its purpose is conceived to be. A study of the beginnings of teaching this subject in the United States shows that it was prompted primarily by practical ends. For example, the American Social Science Association proposal (1878), in so far as it covered the field of sociology, included only courses on punishment and reformation of criminals, public and private charities, and prevention of vice. President White of Cornell in 1871 recommended a course of practical instruction "calculated to fit young men to discuss intelligently such important social questions as the best methods of dealing practically with pauperism, intemperance, crime of various degrees and among persons of different ages, insanity, idiocy, and the like." Columbia University early announced that a university situated in such a city, full of problems at a time when "industrial and social progress is bringing the modern community face to face with social questions of the greatest magnitude, the solution of which will demand the best scientific study and the most honest practical endeavor," must provide facilities for bringing university study into connection with practical work. In 1901 definite practical courses shared honors of first place with the elementary or general course in college announcements. The situation was practically the

same ten years later. Still more recently Professor Blackmar, one of the veterans in sociology teaching, worked out rather an elaborate program of what he called a "reasonable department of sociology for colleges and universities." In spite of the fact that theoretical, biological, anthropological, and psychological aspects of the subject were emphasized, his conclusion was that "the whole aim is to ground sociology in general utility and social service. It is a preparation for social efficiency."

(c) Determined by the social character of the community

The principle of adaptation to environment comes into play also in the choice of teaching methods. An urban department can send its students directly into the field for first-hand observation of industry, housing, sanitation, congestion, playgrounds, immigration, etc., and may encourage "supervised field work" as fulfilling course requirements. But the country or small town department far removed from large cities must emphasize rural social study, or get its urban data second hand through print, charts, photographs, or lantern slides. A semester excursion to the city or to some state charitable institution adds such a touch of vividness to the routine class work. But "slumming parties" are to be ruthlessly tabooed, particularly when featured in the newspapers. Social science is not called upon to make experimental guinea pigs of the poor simply because of their poverty and inability to protect themselves.

The introductory course the vital point of contact between student and the department

For many reasons the most serious problems of teaching sociology center about the elementary or introductory course. Advanced undergraduate and graduate courses usually stand or fall by the inherent appeal of their content as organized by the peculiar genius of the instructor. If the student has been able to weather the storms of his "Introduction," he will usually have gained enough momentum to carry him along even against the adverse winds of bad pedagogy in the upper academic zones. Since the whole purpose of sociology is the very practical one of giving the student mental tools with which to think straight on societal problems (what Comte called the

"social point of view"), and since usually only a comparatively small number find it possible to specialize in advanced courses, the introductory course assumes what at first sight might seem a disproportionate importance. Only one or two teachers of sociology, so far as I know, discount the value of an elementary course. The rest are persuaded of its fundamental importance, and many, therefore, consider it a breach of trust to turn over this course to green, untried instructors. Partly as a recruiting device for their advanced courses, partly from this sense of duty, they undertake instruction of beginners. But it is often impossible for the veteran to carry this elementary work: he must commit it to younger men. For that reason the remainder of this chapter will be given over to a discussion of teaching methods for such an elementary course, with younger teachers in mind.

Teaching suggestions for the introductory course

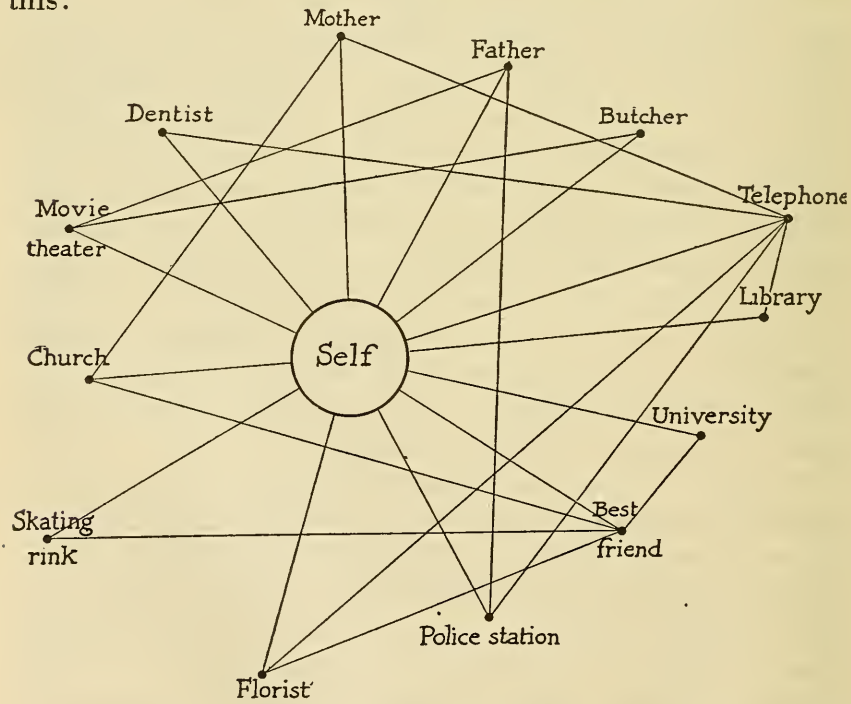
First, two or three general hints. It is unwise, to say the least, to attempt to cover the social universe in one course. Better a few simple concepts, abundantly illustrated, organized clearly and systematically. Perhaps it is dangerous to suggest a few recurrent catch phrases to serve as guiding threads throughout the course, but that was the secret of the old ballad and the folk tale. Homer and the makers of fairy tales combined art and pedagogy in their use of descriptive epithets. Such a phrase as Ward's "struggle for existence is struggle for structure" might furnish the framework of a whole course. "Like-mindedness," "interest-groups," "belief-groups," and "folkways" are also convenient refrains.

Nobody but a thoroughgoing pedant will drag his students through two weeks' lectures and a hundred pages of text at the beginning of the course in the effort to define sociology and chart all its affinities and relations with every other science. Twenty minutes at the first class meeting should suffice to develop an understanding of what the scientific attitude is and a tentative definition of sociology. The whole course is its real definition. At the end of the term the very best way of indicating the relation of sociology

to other sciences is through suggestions about following up the leads obtained in the course by work in biology, economics, psychology, and other fields. This correlation of the student's program gives him an intimate sense of the unity in diversity of the whole range of science.

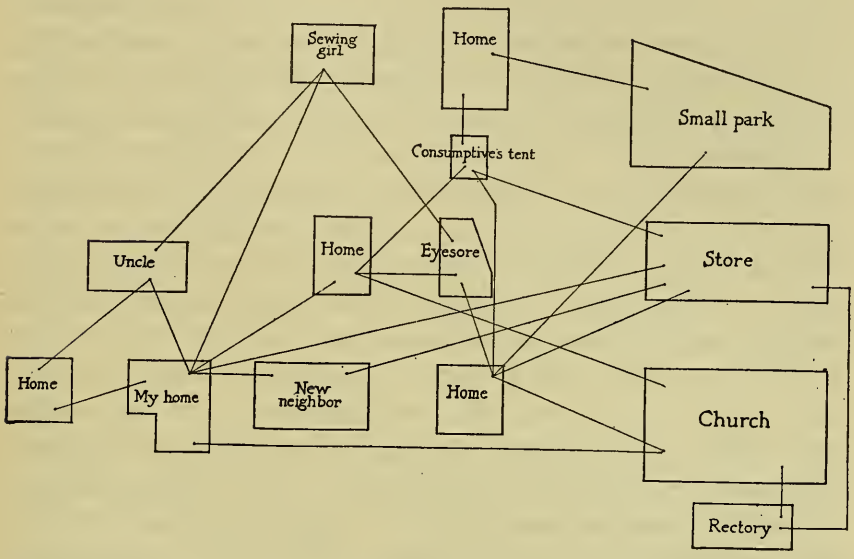
If the student is to avoid several weeks of floundering, he should be led directly to observe societal relations in the making. This can perhaps be accomplished best through assigning a series of four problems at the first class meetings.

Problem I: To show how each student spins a web of social relationship. Let him take a sheet of paper, place a circle representing himself in the middle of it, then add dots and connecting lines for every individual or institution he forms a contact with during the next two or three days. He will get a figure looking something like this:



Problem II: To show how neighborhoods are socially bound up. Let the student take a section, say two or

three blocks square, in a district he knows well, and map it,— showing all the contacts. Again he will get a web somewhat like this:



These diagrams are adapted from students' reports. If they seem absurdly simple, it is well to remember that experience reveals the student's amazing lack of ability to vizualize social relationships without some such device. These diagrams, however, should serve merely as the point of departure. Add to them charts showing the sources of milk and other food supplies of a large city, and a sense of the interdependence and reciprocity of city and country will develop. Take a Mercator's projection map of the world and draw the trade routes and immigration streams to indicate international solidarities. Such diagrams as the famous health tract " A Day in the Life of a Fly " or the story of Typhoid Mary are helpful in establishing how closely a community is bound together.

Problem III: To show the variety and kinds of social activities, i. e., activities that bring two or more people into contact. Have the student note down even the homeliest sorts of such activities, the butcher, the postman, the messenger boy; insist that he go out and look instead of

guessing or reading; require him to group these activities under headings which he may work out for himself. He will usually arrive at three or four, such as getting a living, recreation, political. It may be wise to ask him to grade these activities as helpful, harmful, strengthening, or weakening, in order to accustom him to the idea that sociology must treat of good, bad, and indifferent objects.

Problem IV: To determine what the preponderant social interests and activities are as judged by the amount of time men devote to them. Let the student try a "time budget" for a fortnight. For this purpose Giddings suggests a large sheet of paper ruled for a wide left-hand margin and 32 narrow columns: the first 24 columns for hours of the day, the 25th for the word "daily," and the last seven for the seven days of the week. In the margin the student writes the names of every activity of whatever description during the waking hours. This will furnish excellent training in exact habits of observation and recording, and inductive generalization. When the summary is made at the end of the fortnight, the student will have worked for himself the habitual "planes of interest" along which social activities lie.

At this point he ought to have convinced himself that the subject matter of sociology is concrete reality, not moonshine. Moreover, he should be able to lay down certain fundamental marks of a social group, such as a common impulse to get together, common sentiments, ideas, and beliefs, reciprocal service. From the discovery of habitual planes of interest (self-maintenance, self-perpetua-

INNER URGE OR INTEREST (INSTINCT OR DISPOSITION)	MOTOR EXPRESSION IN ACTIVITY	RESULTANT GROUP HABIT OR INSTITUTION
HUNGER; WILL-TO-LIVE Self-Maintenance	The food-quest	Economic technique, property, invention, material arts of life
SEX: Self-Perpetuation	Procreation and parenthood	The family, ancestor worship, courts of domestic relations, patriarchal government, etc.

tion, self-assertion, self-subordination, etc.) it is a simple step to show diagrammatically how each interest impels an activity, which tends to precipitate itself into a social habit or institution.

To make sociology real make it egocentric

The way is now clear for the two next steps, the concepts of causation and development. Here again why not follow the egocentric plan of starting with what the student knows? Ask him to write a brief but careful autobiography answering the questions — How have I come to be what I am? What influences personal or otherwise have played upon me? [1] The student is almost certain to lay hold of the principle of determining or controlling forces, and of evolution or change; he may even be able to analyze rather clearly the different types of control which have coöperated in his development.

From this start it is easy to develop the genetic concept of social life. The individual grows from simple to complex. Why not the race? Here introduce a comparison between the social group known to the student, a retarded group (such as MacClintock's or Vincent's study of the Kentucky Mountaineers [2]) or a frontier community, and a contemporary primitive tribe (say, the Hupa or Seri Indians, Negritos, Bontoc Igorot, Bangala, Kafirs, Yakuts, Eskimo, or Andaman Islanders). Require a detailed comparison arranged in parallel columns on such points as size, variety of occupation, food supply, security of life, institutions, family life, language, religion, superstitions, and opportunities for culture.

These two points of departure — the student's interest in his own personality and the community influences that have molded it, and the comparative study of a primitive group — should harmonize the two chief rival views of teaching sociologists; namely, those who urge the approach to sociology through anthropology and those who find the best avenue through the concrete knowledge of the *socius*.

[1] In order to secure frank statements, both these autobiographies and the time budgets may be handed in anonymously.

[2] *American Journal of Sociology*, 4:1–20; 7:1–28, 171–187.

Moreover, it lays a foundation for a discussion of the antiquity of man, his kinship with other living things, and his evolution; that is, the biological presupposition of human society. Here let me testify to the great help which Osborn's photographs [1] of reconstructions of the Pithecanthropos, Piltdown, Neanderthal, and Crô-Magnon types have rendered in clearing away prejudices and in vivifying the remote past. Religious apprehensions in particular may be allayed also by referring students to articles on race, man, evolution, anthropology, etc., in such compilations as the *Catholic Encyclopedia* and Hastings' *Encyclopedia of Religion and Ethics.* The opening chapters in Marett's little book on *Anthropology* are so sanely and admirably written that they also clear away many prejudices and fears.

With such a concrete body of facts contrasting primitive with modern civilized social life the student will naturally inquire, How did these changes come about? At this point should come normally the answer in terms of what practically all sociologists agree upon; namely, the three great sets of determining forces or phenomena, the three "controls": (1) the physical environment (climate, topography, natural resources, etc.); (2) man's own nature (psychophysical factors, the factors in biological evolution, the rôle of instinct, race, and possibly the concrete problems of immigration and eugenics); (3) social heredity (folkways, customs, institutions, the arts of life, the methods of getting a living, significance of tools, distribution of wealth, standards of living, etc.). A blackboard diagram will show how these various factors converge upon any given individual.[2]

The amplification of these three points will ordinarily make up the body of an introductory course so far as class work goes. Ethnography should furnish rich illustrative material. But to make class discussions really productive the student's knowledge of his own community must be

[1] In his *Men of the Old Stone Age.*

[2] See such a diagram in Todd, *Theories of Social Progress,* page 240.

drawn upon. And the best way of getting this correlation is through community surveys. The student should be required as parallel laboratory work to prepare a series of chapters on his ward or part of his ward or village, covering the three sets of determining factors. The instructor may furnish an outline of the topics to be investigated, or he may pass around copies of such brief survey outlines as Aronovici's *Knowing One's Own Community* or Miss Byington's *What Social Workers Should Know about Their Own Communities;* he may also refer them to any one of the rapidly growing number of good urban and rural surveys as models. But he should not give too much information as to where materials for student reports may be obtained. The disciplinary value of having to hunt out facts and uncover sources is second only to the value of accurate observation and effective presentation. If the aim of a sociology course is social efficiency, experience shows no better way of getting a vivid, sober, first-hand knowledge of community conditions. And there is likewise no surer way of compelling students to substitute facts for vapid wordiness and snap judgments.

Toward the end of the course many of us have found it profitable to introduce a brief discussion of what may be called the highest term of the series; namely, the evolution of two or three typical institutions, say law and government, education, religion, and the family. These topics will serve to clinch the earlier discussions and to crystallize a few ideas on social control and perhaps even social progress.

Normally such a course will close with a fuller definition of the meaning of sociology, its content, its value in the study of other sciences, and, if time permits, a brief historical sketch of the development of sociology as a separate science.

The use of a text for study

I have no certified advice to offer on the question of textbooks. But the almost universal cry of sociology teachers is that so far no really satisfactory text has been produced. Some men still use Spencer, some write their own books,

some try to adapt to their particular needs such texts as are issued from time to time, some use none at all but depend upon a more or less well-correlated syllabus or set of readings. There is undoubtedly a profitable demand for a good elementary source book comparable to Thomas's *Source Book on Social Origins* or Marshall, Wright, and Field's *Materials for the Study of Elementary Economics.* Nearly any text will need freshening up by collateral reading from such periodicals as *The Survey* or *The New Republic.* In order to secure effective and correlated outside reading, many teachers have found it helpful to require the students to devote the first five or ten minutes of a class meeting once a week or even daily to a written summary of their readings and of class discussions. Such a device keeps readings fresh and enables the teacher to emphasize the points of contact between readings and class work.

The social museum

Every university should develop some sort of a social museum, to cover primitive types of men, the evolution of tools, arts of life, manners and customs, and contemporary social conditions. These can be displayed in the form of plaster casts, ethnographic specimens, photographs, lantern slides, models of housing, statistical charts, printed monographs, etc. The massing of a series of these illustrations sometimes produces a profound effect. For example, the corridor leading to the sociology rooms at the University of Minnesota has been lined with large photographs of tenement conditions, child labor, immigrant types, etc. The student's interest and curiosity have been heightened immensely. Once a semester, during the discussion of the economic factor in social life, we stage what is facetiously called "a display of society's dirty linen." The classroom is decorated with a set of charts showing the distribution of wealth, wages, cost of living, growth of labor unions and other organizations of economic protest. The mass effect is a cumulative challenge.

Field work: values and limitations

Finally, a word about "field work" as a teaching device. Field work usually means some sort of social service

practice work under direction of a charitable agency, juvenile court, settlement, or playground. But beginning students are usually more of a liability than an asset to such agencies; they lack the time to supervise students' work, and field work without strict supervision is a farcical waste of time. If such agencies will accept a few students who have the learner's attitude rather than an inflated persuasion of their social Messiahship, field work can become a very valuable adjunct to class work. In default of such opportunities the very best field work is an open-eyed study of one's own community, in the attempt to find out what actually is rather than to reform a hypothetical evil.[1]

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[1] While accepting full responsibility for the opinions herein set forth, I wish to express my appreciation of assistance rendered by a large group of colleagues in the American Sociological Society.

XII

THE TEACHING OF HISTORY

A. The Teaching of American History

Function of the teacher of history

HISTORY as a science attempts to explain the development of civilization. The investigator of the sources of history must do his part in a truly scientific spirit. He must examine with the utmost scrutiny the many sources on which the history of the past has its foundation. He reveals facts, and through them the truth is established.

But history is more than a science. It is an art. The investigator is not necessarily a historian, any more than a lumberman is an architect. The historian must use all available material, whether the result of his own researches or that of others. He must weigh all facts and deduct from them the truth. He must analyze, synthesize, organize, and generalize. He must absorb the spirit of the people of whom he writes and color the narrative as little as possible with his own prejudices. But the historian must be more than a narrator; he must be an interpreter. As an interpreter he should never lose sight of the fact that all his deductions should be along scientific lines. Even then he will not escape errors. In pure science error is inadmissible. In history minor errors of fact are unavoidable, but their presence need not seriously affect the general conclusions. In spite of many misstatements of fact, a historical work may be substantially correct in the main things — in presenting and interpreting with true perspective the life and spirit of the people of whom it treats.

The historian must be more than a chronicler and an interpreter. He must be master of a lucid, virile, attractive literary style. The power of expression, indeed, must be one of his chief accomplishments. The old notion, it is true, that history is merely a branch of literature is

quite as erroneous as the later theory that history is a pure science and must be dissociated from all literary form.

The teacher of history as the teacher of the evolution of civilization

The pioneer investigator who patiently delves into sources and brings to light new material deserves high praise, but far rarer is the gift of the man who sees history in its true perspective, who can construct the right relationships and can then reproduce the past in compelling literary form. A historian without literary charm is like an architect who cares only for the utility and nothing for the grace and beauty of his building.

The chronological point of view

The history teacher who slavishly follows old chronological methods has not kept pace with modern progress; but the teacher who has discarded the chronological method has ventured without a compass on an unknown sea. Chronology, the sequence of events, is as necessary in history as distance and direction in geography.

The economic point of view

A modern school of history teachers would make economics the sole background of history, would explain all historic events from the economic standpoint — to which school this writer does not belong. Economics has played a great part in the course of human events, but it is only one of many causes that explain history. For example, the Trojan War (if there was a Trojan War), the conquests of Alexander, the Mohammedan invasions, were due chiefly to other causes.

The culture viewpoint

Nor would we agree with the school of modern educators who would eliminate the culture studies from the curriculum, retaining only those which make for present-day utilitarianism. A general education imparts power and enlarges life, and such an education should precede all technical and specialized training. If a young man with the solid foundation of a liberal education fail in this or that walk of life, the fault must be sought elsewhere than in his education. The late E. H. Harriman made a wise observation when he said that though a high school graduate may excel the college graduate in the same employment for the first year, the latter would at length overtake and pass him and henceforth remain in the lead.

Aims of history in the college curriculum

The uses of the study of history are many, the most important of which perhaps is that it aids us in penetrating the present. Our understanding of every phase of modern life is no doubt strengthened by a knowledge of the past. It is trite but true to say that the study of history is a study of human nature, that a knowledge of the origin and growth of the institutions we enjoy makes for a good citizenship, that the study of history is a cultural study and that it ranks with other studies as a means of mental discipline. Finally, the reading of history by one who has learned to love it is an abiding source of entertainment and mental recreation. It is one of the two branches of knowledge (the other being literature) which no intelligent person, whatever his occupation, can afford to lay aside after quitting school.

What can the study of American history give the college student?

The most important historical study is always that of one's own country. In our American colleges, therefore, the study of American history must take precedence over that of any other, though an exception may be made in case a student is preparing to teach the history of some other country or period. It must not be forgotten, however, by the student of American history that a study of the European background is an essential part of it.

From its very newness the history of the United States may seem less fascinating than that of the older countries, and, indeed, it is true that the glamour of romance that gathers around the stories of royal dynasties, orders of nobility, and ancient castles is wanting in American history. But there is much to compensate for this. The coming of the early settlers, often because of oppression in their native land, their long struggle with the forest and with the wild men and wild beasts of the forest, the gradual conquest of the soil, the founding of cities, the transplanting of European institutions and their development under new environment — the successful revolt against political oppression and the fearless grappling with the problem of self-government when nearly all governments in the world were monarchical — these and many other phases of Ameri-

can history furnish a most fascinating story as a mere story.

To the college student American history must be presented as evidence of the success of democracy

But to the student of politics and history the most unique and interesting thing, perhaps, in American history lies in the fact that the United States is the first great country in the world's history in which the federal system has been successful — if we assume that our experimental period has passed. Perhaps the greatest of all governmental problems is just this: How to strike the right balance between these opposing tendencies — liberty and union, democracy and nationality — so that the people may enjoy the benefits of both. The United States has, no doubt, come nearer than any other country to solving this problem, and the fact greatly enhances the interest in our history. This is a question of political science rather than of history, it is true, but the history of any country and its government are inseparably bound together.

Utilitarian value

In the regular college curriculum there should be, in my opinion, two courses in American history.

Organization of courses and methods of teaching

Course I — about 3 hours for one academic year (6 semester-hours) in the freshman or sophomore year, covering the whole story of the United States. About one third of the year's work should cover the Colonial and Revolutionary periods. Of the remaining two thirds of the year I should devote about half to the period since the Civil War.

This course should be required of all students taking the A.B. degree and in all other liberal arts courses; an exception may be made in the case of those taking certain specialized scientific courses — for these students, the history required in the high school may be deemed sufficient.

In this course a textbook is necessary, and if the class is large it is desirable that the text be uniform. The text should be written by a true historian with broad and comprehensive views, by one who knows how to appraise historic values, and, if possible, by one who commands an attractive literary style. If the textbook is written by Dr. Dry-as-dust, however learned he may be, the whole burden

of keeping the class interested rests with the teacher; and, moreover, many of the students will never become lovers of the subject to such a degree as to make it a lifelong study.

The exclusive lecture system is intolerable, and the same is true of the quiz. A teacher will do his best work if untrammeled by rules. He should conduct a class in his own way and according to his own temperament. It is doubtful if the teacher who carefully plans and maps out the work he intends to present to the class is the most successful teacher. A teacher who is free, spontaneous, without a fixed method, ready in passing from the lecture to the quiz and vice versa at any moment, quick in asking unexpected questions, will usually have little trouble in keeping a class alert. Above all, a teacher of college history must explain the meaning of things with far greater fullness than is possible in a condensed textbook, and it is a most excellent practice to ask opinions of members of the class on almost all debatable questions that may arise. The reason for this is obvious.

The usual method of the writer, in as far as he has a method, is to spend the first fifteen or twenty minutes of the class hour in hearing reports from two or three students on special topics that have been assigned them a week or two before, topics that require library reference work and that could not possibly be developed from the textbook. These topics are not on the subject of the day's lesson, but of some preceding lesson. After commenting on these reports and often asking for opinions and comments of the class, we plunge into the day's lesson.

The use of a current periodical in class should be encouraged. It brings the learner into direct contact with life and often illuminates the past.

Current events as presented in the daily papers should often be the subject of comment, but the daily newspaper is not suitable for class use. Even the weekly is, for several reasons, less desirable than the monthly. It must not be forgotten that the basal, fundamental work of the

class is, not to keep posted on current affairs, but to study the elements under the guidance of a textbook and an inspiring teacher to interpret it. The weekly is less accurate than the monthly and less literary in form, and, moreover, it comes too often. It is apt to take too much time from the study of the fundamentals. The use of the periodical in the history class has probably come to stay and it should stay, but it should be only incidental and supplementary.

Course II should be given in the junior or senior year. It should be elective, should cover at least two year-hours, and should be wholly devoted to the national period of American history. Only those having taken Course I should be eligible to this class.

Every student who expects to read law, to enter journalism or politics, or to teach history or political science should take this course. The class will be smaller than in Course I. Uniform textbooks need not be required, or the class may be conducted without a text. Most of the work must be done from the library.

It is assumed that the members of this class have a good knowledge of the narrative, and it is needless to follow it closely again. A better plan is to choose an important phase of the history here and there and study intensively. Much use should be made of original sources such as Presidents' messages, *Congressional Record*, speeches and writings of the times, but the class must not ignore the fact that a vast amount of good material may be had from the historians. It must also be remembered that original research is for the graduate student and the specialist rather than for the undergraduate.

Testing the results of instruction

In conclusion, I shall explain a method of examination that I have frequently employed with apparently excellent results. Two or three weeks before the time of the examination I give the class a series of topics, perhaps fifty or more, carefully chosen from the entire subject that has been studied during the semester. Instead of having the usual review of the text, we talk over these subjects in class during the remainder of the semester. The examination is

oral, not written. The time for examination is divided into three, four, or five minute periods, according to the number in the class. When a student's name is called, he comes forward and draws from a box one of the topics and dilates on it before the class during his allotted time. If he fails on the first topic he may have another draw, but his grade will be reduced. A second failure would mean a "flunk," unless the class marks are very high.

There are three or four real advantages in this form of examination: (1) It saves the teacher hours of labor in reading examination papers; (2) the teacher, in selecting the topics, omits the unimportant and chooses only the salient, leading subjects such as every student should master and remember; (3) the student, knowing that no new questions will be sprung for the examination, will be almost sure to be prepared on every question. Failures under this system have been much less frequent than under the old system of written examinations; (4) it practically eliminates all chance of cheating in examination.

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B. Modern European History

History to be taught as an evolutionary process

TEACHING European history in colleges is, in many ways, not different from teaching any other history. In each instance it is to be remembered that history includes all activities of man and not merely his political life, that facts and data are not intrinsically valuable but are merely a means to an end, that the end of history is to inform us where man came from, what experiences he passed through, and *chiefly*, what were the fundamental forces behind his experiences. The emphasis should be put on the stimuli — economic, political, religious, or social — that lead man to act, instead of narrating his action. In a word, not *what* happened or *when* it happened, but *why* it happened, is of importance in college history. Stressing the stimuli in history will almost inevitably lead to treating history as a continuous or evolutionary process, which of itself greatly increases the interest of the subject.

Because history is an evolution it must explain the present

It is highly desirable that in teaching modern history very much more time be given to recent history than has generally been the case. Frederick William I showed that he accepted this when he instructed the tutors of Frederick (later the Great) to teach the history of the last fifty years to the exactest pitch. So important is this that, even when teaching early periods, constant contrasts or comparisons with present conditions should be made, and the descent of ideas and institutions to modern times should be sketched, as it shows the student that remote events or institutions have a relationship to current life.

Disciplinary values of history

Certain special aims of history have been advocated. It is held to be of disciplinary value, especially in strengthening the memory. Though this is true, it is hardly a good reason for studying history, as the memory can be perfected on almost anything, on the dictionary, poetry, formulæ, family records, gossip, or cans on grocery shelves, some of which may indeed be of more practical value than dates. In college, at least, history should aim to explain

social tendencies and processes in a rational way rather than to develop the memory. The latter method tends to make the student passive and narrow, the former requires cerebration and develops breadth and depth of vision. Understanding history, rather than memorizing it, has cultural value. To be sure, understanding presupposes information; but where there is a desire to understand, the process of seeking and acquiring the information is natural and tends to care for itself.

History is not a prerequisite to professional careers in the way mathematics is to engineering; still, special periods, chiefly the modern, are highly useful to lawyers, journalists, publicists, statesmen, and others, each of whom selects what he finds most useful to his purposes.

Organization of courses in history — What to teach in the beginning course

The point of view in history teaching is more material than the machinery or methods employed. These must and should vary with persons and conditions. Ordinarily, however, it seems preferable to offer some part of European history as the first-year college course, because students have usually had considerable American history in high school, and the change adds new interest. Whether this course be general, medieval, or modern European history is of little importance, though, of course, medieval should precede modern history. In any case, the course should offer the student a good deal more than he may have had in high school, if for no other reason than to justify the profound respect with which he ordinarily comes to college. It should come often enough a week to grip the student, especially the history major.

Gradation of courses determined by content

Gradation of courses in history on the basis of subject matter is largely arbitrary, and turns upon the method of presentation. General courses naturally precede period courses. A sound principle is to select courses adapted to the stages of the student's development. On this principle it has already been suggested that the first college course should be, not American but European history. English, ancient, medieval, or modern history immediately suggest themselves, with strong arguments in favor of the

first if but one freshman course is offered, as it forms a natural projection of American history into the past. Beyond this, what subject matter is offered in the several years is largely a matter of local convenience, as the college student understands the general history of all nations or periods about equally well. It is now clear, however, that the student should know more modern and contemporary European history than he has been getting, and the sound training of an American of the future should include thorough training in modern European history.

Gradation of courses may be determined by method of teaching

Gradation based on the method of presentation is more nearly possible. Graduate courses presuppose training in the auxiliary sciences, in the necessary languages, in research methods, in the special field of research, as well as a knowledge of general history. This establishes a sort of sequence of the methods to be employed, irrespective of subject matter.

Method of teaching introductory courses — Lecture method

The lecture method is convenient for the elementary courses, especially if, as is so often the case, these have a large number of students. It cannot, however, be gainsaid that convenience or, worse still, economy is a weak argument in favor of the lecture course, especially for the first-year student. To him the lecture method is unknown, and he flounders about a good deal if he is left to work out his own salvation; and then, too, just when he needs personal direction and particularly when, as a youth away from home for the first time, he needs some definite and unescapable task that shall teach discipline and duty as well as give information, the lecture system gives him the maximum of liberty with the minimum of aid or direction. These considerations strongly advocate small classes for freshmen, frequent recitations, discussions, tests, papers and maps, library problems — in short, a laboratory system. Every student should always have at least one course in which he is held to rigid and exact performance. These courses should be required, no matter what the special field or period of history, and should form a sequence leading to a degree and providing training for a technical and

professional career. In addition to these courses, designed to assure personal work and supervision, enough other, presumably lecture, courses should be required to secure a general knowledge of history. Beyond that there are always enough electives to satisfy any personal wish or whim of the student.

Topical method in European history

There is much to be said, especially in modern history, for the topical treatment of institutions. In a very specialized course a single institution may be treated; but even in a general course, treating the several human institutions as evolutionary organisms seems preferable and is more interesting than a chronological narrative, which grows more inane the more general the course. Courses which come to modern times can trace existing institutions and their immediate antecedents, thus giving an advantage that many instructors neglect from the mere tradition that history does not come down to living man. No primitive superstition needs to be dispelled more than this, if history is to maintain its hold in the modern college. Indeed, whenever possible — which is always with modern history — a course should start from the present by dwelling on the existing conditions the historical antecedents of which are to be traced. If this is done, the student forthwith secures a vital interest and feels that he is trying to understand his own rather than past times. After this preliminary the past can be traced chronologically or topically as preferred, the textbook serving as a quarry for data, the teacher seeing to it that the change or progress toward the present condition is perceived and understood, and furnishing corroborative and analogous materials from the history of other nations and periods.

Assigned reading

It is the general practice of college courses in history to require outside reading. Though this rests on the sound ground that the student ought to get a large background and learn to know books and writers, it is very doubtful whether this aim is, in fact, achieved. The student often has too much work to permit of much outside reading, and often the library is too limited to give him a good choice, or

to permit him to keep a desirable book until he has finished reading it. Unguided reading is almost certainly a failure; reading guided only by putting a selected list of books before the student is not sure to be a success. The instructor ought from time to time to tell his class something about the books he suggests, and about their authors and their careers, viewpoints and merits, as a reader always profits by knowing these things. As the reading of snatches from collateral books is hardly profitable, so the perusal of longer histories is often impossible, and generally confines the student for a long time to the minutiæ of one period while the class is going forward. In view of these difficulties there is much to be said in favor of putting a large textbook into the hands of a class, and requiring a thorough reading and understanding of it, and correspondingly reducing outside readings. If collateral reading is demanded, it is a good plan to require students to read a biography or a work on some special institution falling within the scope of the course,— some selected historical novel even,— for in that way the student reads, as he will in later life, something he selects instead of a required number of pages, a specific thing is covered, an author's acquaintance is made, and therefore a significant test can be conducted. Furthermore, as some students will buy special volumes of this kind, the pressure on the library is reduced. Direct access to reference shelves is always recommended. One of our universities has a system of renting preferred books to students.

Tests on outside reading

Tests on outside reading are always difficult, but they must be employed if the reading is not to become a farce. By having weekly reading reports on uniform cards, one can often arrange groups of students who have read the same thing and can therefore be tested by a single question. By extending this over several weeks the majority of students, even in a large class, can be tested with relatively few questions. Some instructors require students to hand in their reading notes, others check up the books the students use in the library, still others have consultation

periods in which they inquire into the student's reading. Quiz sections, if there are any, offer a good opportunity to test collateral reading.

Miscellaneous aids in teaching history

Map making, coördinated with the recitations and so designed as to require more than mere tracing, is desirable in introductory courses. The imaginative historical theme written by the student is employed — and successfully, it is declared — in one college. A syllabus is highly useful in the hands of students in lecture courses. It can be mimeographed at comparatively slight expense for each lecture, thus permitting changes in successive years — a distinct advantage over the printed syllabus.

The problem of suitable examination

How to give a fair and telling examination is the college teacher's perennial problem. The less he teaches and insists on facts and details, the greater his quandary. A majority of students incline to parrot what they have heard, to the dismay of the teacher who wants them to make the subject their own. Hence tests calling the memory only into play do not satisfy the true teacher or the thoughtful student. At the least there should be some questions requiring constructive or synthetic thinking by the student. Above all, the instructor of introductory work should form a first-hand personal opinion of the student by requiring him to come to the office for consultation. Nothing can take the place of the personal touch. Quiz masters are better than no touch; but they are a poor substitute for the small class and direct contact, even if the instructor is not one of the masters of the profession.

The worth of topical or institutional treatment

The topical or institutional treatment of history has been mentioned above as being particularly applicable to modern history. If carefully worked out beforehand it can be made to embrace virtually everything — certainly everything significant — that is contained either in the text or in a chronological narrative. To be sure, a topical treatment of this kind places more emphasis on the common experiences of mankind than does national history, and, as some nations or peoples precede others in a given development, history becomes continuous instead of fragmentary.

Perhaps, too, the way certain matters are introduced into "continuous" history may appear forced, unless it be remembered that this impression is created merely by its dissimilarity from the usual interpretation, which is just as arbitrary and forced until one gets accustomed to it.

Classification in topical treatment

It will be serviceable in arranging a topical treatment of any period of history, which shall show a sense of historical continuity and keep in mind the fundamental stimuli and causes of human action, to note that virtually all human interests can be classified under one of the following six heads: physical, ecomomic, social, religious, political, and intellectual (or cultural). Though these are never wholly isolated and are always interactive, one or the other may be specially significant in a given era, and thus we speak of a religious age, an age of rationalism, or the period of the industrial revolution.

SUGGESTED TOPICAL OUTLINE OF MODERN EUROPEAN HISTORY

To apply this more specifically to modern European history, there follows an outline of topics. It is general to about 1789, and more detailed for the period since that time (IV below), the endeavor being to show how a topical treatment of the development of democracy can be made to include practically everything of significance. There are certain cautions necessary here: that the outline is suggestive only, that it does not pretend or aim to be complete, that specific data often found in the sub-heads are to serve as illustrations and not as a complete statement of sub-topics; and that it is in fact merely a skeleton which can be extended and amplified indefinitely by insertions.

I. Background of the modern period.
   - *A.* Economic and social conditions at the close of the Middle Age.
   - *B.* Political nature of feudalism.
     The governments of the 15th century.
   - *C.* The medieval church.

II. The development of religious liberty.
   A. The Reformation.
   B. Varieties of Protestant sects, from state churches to individualistic sects.
   C. The Religious Wars, and toleration.

III. Absolute monarchy.
   A. Dynastic states.
   B. Dynastic wars and the balance of power.

IV. The development of democracy.
   A. The dynastic feudal state *(Ancien Régime).*
      1. Description of the *Ancien Régime.*
      2. Proponents of the *Ancien Régime.*
         Dynasties (divine right monarchs).
         Feudal landlords.
         Higher clergy and state churches.
         The army command (younger sons of the nobility).
         The schools (education for privileged classes only).
   B. The revolutionary elements.
      1. The dissatisfied feudal serf.
      2. The intellectuals, rationalists, political theorists.
         The "social compact." . . Popular sovereignty.
      3. Religious dissenters.
      4. Industrial elements.
         a. The Industrial Revolution.
            Resulting in exportation, markets, and *laissez-faire* doctrines.
         b. The bourgeoisie (employers). . The Third Estate.
         c. The proletariat. . Unorganized labor elements.
   C. The Revolutionary Period, 1789–1800.
      1. Triumph of bourgeoisie over feudal aristoc-

racy in France, 1789–1791. Limited monarchy. Mirabeau.

2. Increasing influence and rise to control of France of the Parisian proletariat. The Republic. . The Terror. . Robespierre.
3. Radiation of revolutionary ideas to other nations.
4. Wars between revolutionary France and monarchical Europe.

The rise of Napoleon.

D. The decline of the revolutionary elements, 1800–1815.

1. France converted from a republic to an empire by Napoleon.
2. The Napoleonic Wars.
   a. Reveal Napoleon's dynastic ambition.
   b. Lead Europe to combine against him and to blame democratic ideas for the sorrows of the time.
   c. Result in the defeat of Napoleon and the triumph of anti-democratic or reactionary elements.

E. The fruits of the principle of popular sovereignty during the 19th century (chronologically England and France lead the other countries in most of these developments).[1]

1. Constitutions, embodying ever-increasing popular rights and powers.
2. Extension of suffrage. Political parties and party politics.
3. The spirit of nationality.
   Independence of Greece and Belgium.
   Unification of Italy and Germany.

[1] This summary of the consequences of the doctrines of democracy is allowed to break into the topical development of the outline, as it gives a sort of general introduction to tendencies since 1815. It will not escape the teacher that he could treat history since 1815 by taking up in order the topics given under this heading.

National revivals in Poland, Bulgaria, Servia, Rumania, Bohemia, Finland, Ireland, and elsewhere.

Pan-Germanism, Pan-Slavism, Imperial Federation.

4. Class consciousness and strife.
   Feudal aristocratic class — leans toward absolute monarchy.
   Bourgeoisie (employing capitalists) — leans toward limited monarchies or republics.
   Labor — leans toward socialism. (The other elements in the society are slow in developing a group consciousness.)
5. Abolition of feudal forms and tenures.
   Fight on great landlords. Encouragement of independent farmers.
   Emancipation and protection of peasants: France, 1789; Prussia, 1808; Austria, 1848; Russia, 1861.
6. Social, socialistic, and humanitarian legislation.
   Factory acts, minimum wage laws, industrial insurance, old age insurance, labor exchanges, child labor laws, prison reform acts, revision of penal codes, abolition of slavery and slave trade, government control or ownership of railways, telephones, telegraph, and mails.
7. Opposition to state or national churches. Disestablishment agitations. . Separation of church and state.
8. Demand for free public schools to replace church or other private schools. State lay schools in England. . Suppression of teaching orders in France. . Kulturkampf in Germany. . Expulsion of Jesuits. . Tendency toward compulsory non-sectarian education.
9. Imperialism.
   Industrial societies depend on imports, ex-

ports, and markets as means of keeping labor employed and people prosperous. This means export of capital, hence, plans for colonies, closed doors, preferential markets, and demands for the protection of citizens abroad and political stability in backward areas.

Partition of Africa, Asia, and Near East.

10. Militarism.

Expansion and colonial acquisition by one country exclude another, thus unsettling the balance of power. Therefore rival nations depend on force and go in for military and naval programs.

F. The conflict between reactionary and bourgeois interests, 1815–1848.

1. Reactionary elements in control — opposed to democracy and revolutionary doctrines.

a. Restore Europe as nearly as possible on old lines at Vienna, 1815.

Ignore liberal tendencies and national sentiments.

b. Seek to maintain *status quo.*

Metternich. . Holy Alliance.

Carlsbad Decrees. . Congresses of Troppau, Laibach, Verona. . Intervention in Naples, Piedmont, and Spain.

Proposal to restore Latin America to Monarchy.

Opposed by Great Britain in compliance with bourgeois interests.

Monroe Doctrine.

c. Failed to prevent:

Greek revolution and independence (national movement).

Separation of Belgium from the Netherlands (national).

Revival of liberal demands in various

quarters, producing the revolution of 1830 in France and elsewhere.

2. The ascendancy of the bourgeoisie, 1830–1848.
   a. Industrialism on the continent.
   b. The bourgeois (capitalist employer) secures political power to advance his interests.
   Revolution of 1830.
   Reform bill of 1832.
   Legislation against labor organizations and for tariffs favoring trade.
   c. The development of organized labor and socialism.
   Legislation hostile to labor. Chartism. Labor in France, Germany, and Belgium. Spread of socialist doctrines.
   d. The Revolution of 1848.
   Socialist republican state in France, 1848.
   The winning of constitutions in Prussia, Austria, and elsewhere — breach in the walls of reaction.

G. The broadening base of democracy, 1848–1914.
1. The organization of labor.
2. The spread of socialistic views and of class consciousness. Karl Marx.
3. The resistance of the old aristocratic class and the bourgeoisie, who gradually fuse to form the conservative element in all nations. Napoleon III restores the Empire in France. In Austria and Prussia, Bismarck and Francis Joseph II retrieve losses of 1848. Disraeli and Conservatives in England.
4. The progress toward universal suffrage after 1865, strengthening political position of lower classes.
   Vindication of democratic government

through triumph of the North in the United States gave impetus to democracy abroad.

Electoral reform bills in Great Britain, 1867, 1884, 1885.

Franco-Prussian War and the Third French Republic. . Universal suffrage.

Unification of Germany and universal suffrage.

Russian Revolution, 1917.

Woman suffrage.

5. Popular sovereignty and its consequences.
   a. Triumph of republicans and radicals in France over monarchists and clericals.
   b. Liberal ministries in United Kingdom.
   Lloyd George Budget. . Parliament Act. Social legislation.
   c. Growth of Social Democratic party in Germany.
   Bismarck and state socialism.
   d. In recent times the many divergent political parties fall rather instinctively into three groups which have opposing views and policies on almost every question, and which may be called:
   Conservatives (Tories, aristocrats, monarchists, Junkers, clericals, capitalists, imperialists, militarists); peasants and farmers, being conservative, are usually politically allied to this group.
   Liberals (progressives, democrats, labor parties, Socialists, social democrats, Dissenters, anti-imperialists, anti-militarists).
   Radicals, Bolsheviki or revolutionists seeking change of the economic and social order.

6. Effects of the war.
   a. Extensive nationalization and socialization of industry and human rights in all belligerent countries.
   b. Develops into a "war for democracy," and for moral as opposed to materialistic aims.
   c. Culminates in an attempt to secure a righteous and lasting peace through the instrumentality of a league of nations.

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XIII

THE TEACHING OF POLITICAL SCIENCE

Scope of political science

CERTAIN phases of what is known as political science form to no small degree the content of courses in other branches of study. The engineering schools in their effort to set forth the regulation of public utilities with respect to engineering problems have begun to offer courses which deal extensively with politics and government. In political and constitutional history, considerable attention is given to the organization and administration of the various divisions of government. To a greater degree, however, the allied departments of economics and sociology have begun, in the development of their respective fields, to analyze matters which are primarily of a political nature. Especially in what is designated as applied economics and applied sociology there is to be found material a large part of which relates directly to the regulation and administration of governmental affairs. Thus in portions of the courses designated as labor problems, money and banking, public finance, trust problems, public utility regulation, problems in social welfare, and immigration, primary consideration is frequently given to government activities and to the influences and conditions surrounding government control.

While these courses, then, deal in part with subject matter which belongs primarily to the science of politics and while any comprehensive survey of instruction in political science would include an account of the phases of the subject presented in other departments, for the present purpose it has been advisable to limit the consideration of the teaching of political science to the subjects usually offered under that designation.[1] Some attention, however,

[1] The courses usually given in departments of political science are:

1. American government, (*a*) National, (*b*) State and local, (*c*) Municipal.

will be given later to the relation of political science to allied subjects.

A difference of opinion exists as to the meaning of political science, some institutions using the term in a broad sense to embody courses offered in history, economics, politics, public law, and sociology, and others giving the word a very narrow meaning to include a few specialized courses in constitutional and administrative law. There is, nevertheless, a strong tendency to have the term "political science" comprise all of the subjects which deal primarily with the organization and the administration of public affairs.

Courses usually offered in political science

Through an exhaustive survey made by the Committee on Instruction of the American Political Science Associa-

2. General political science.
3. Comparative government.
4. English government.
5. International law.
6. Diplomacy.
7. Jurisprudence or elements of law.
8. World politics.
9. Commercial law.
10. Roman law.
11. Administrative law.
12. Political theories (History of political thought).
13. Party government.
14. Colonial government.
15. Legislative methods and legislative procedure.
16. Current political problems.
17. Municipal corporations.
18. Law of officers and taxation.
19. Seminar.
20. Additional courses, such as the government of foreign countries, the regulation of public utilities, and the political and legal status of women.

Cf. *The Teaching of Government*, page 137. Published by the Macmillan Company, 1916. With the permission of the publishers some extracts from the report of the committee on instruction have been used. The report should be consulted for the presentation of data and for a further consideration of some questions of instruction which cannot be taken up fully within the compass of this chapter.

tion, covering instruction in political science in colleges and universities, the subjects which are usually offered may be indicated in two groups:

LEADING COURSES FOR COLLEGES AND UNIVERSITIES [1]

(Given in order of number of instruction hours, with highest ranked first.)

A. Major Courses.

1. American government — including national, state, and local.
2. General political science — mainly political theory, with some comparative government.
3. Comparative government — devoted chiefly to a study of England, France, Germany, and the United States.
4. International law.
5. Commercial law.
6. Municipal government.
7. Constitutional law.

B. Minor Courses.

1. Jurisprudence, or elements of law.
2. Political theories.
3. Diplomacy.
4. State government.
5. Political parties.
6. Government of England.
7. Legislative methods of procedure.
8. Roman law.
9. Regulation of social and industrial affairs.

While the purposes and objects of instruction in this rather extensive group of subjects vary considerably, it seems desirable to analyze the chief objects in accordance with which political science courses are presented to students of collegiate grade.

[1] Cf. *The Teaching of Government*, page 182.

Aims of instruction in government

The aims of instruction in government are (1) to train for citizenship; (2) to prepare for professions such as law, teaching, business, and journalism; (3) to train experts and prepare specialists for government positions; (4) to provide facilities and lead students into research material and research methods. Each of these aims affects to a certain extent a different class of students and renders the problem as to methods of instruction correspondingly difficult.

1. Training for citizenship

In a certain sense all instruction may be looked upon as giving training for the duties and responsibilities of citizenship, and undoubtedly a great deal of instruction in other subjects aids in the process of citizenship training. Nevertheless, a heavy responsibility rests upon departments of political science to lead students into the extensive literature on government as well as to instruct them with respect to the organizations and methods by which the political and social affairs are being conducted. In short, one of the primary aims of government instruction and one which is kept foremost in the arrangement of courses is elementary training for the average student in the principles, the practices, and the technique of governmental affairs. For such citizenship training, which is usually given in large elementary classes, a special method of instruction and system of procedure are pursued. It is necessary to provide subject matter which is informational in character, as the lack of knowledge of the governments of home and foreign countries is ordinarily appalling, and which will open up by way of discussion and comparison many of the leading problems of modern politics. More necessary and indispensable is a method of study which will aid in pursuing inquiries along the many and varied lines which will devolve upon the citizen performing his multifarious duties and discharging his many responsibilities. As many of the students will take but a single course, the opening up to them of the vast field of government literature is one of

the aims to be constantly kept in mind. Moreover, while all of the above are essential matters in the elementary courses, the most important consideration of all is that the teaching of politics and government will have utterly failed unless there are created a desire and an interest which will lead into many lines of investigation beyond those offered in a single introductory course. The development of this interest and appreciation is the all-important object.

2. Preparation for the professions

Many who enter the introductory courses in government select the subject with the idea of continuing their preparation for professional life in their chosen fields. Among the professions which particularly seek instruction in government are chiefly law, teaching, business, and journalism. For these groups of students, many of whom continue the study of the subject for several years, often going on into the advanced courses in graduate departments, it is recognized that beginning work which is too general and discursive may be less useful than a specialized course which may be rounded out by a series of correlated courses. Consequently, there is a question whether the professional student, interested in the study of government, should begin his work under the same conditions and with the same methods as the student who does not expect to continue the subject. The number of those who are preparing for the professions is often so large as to require separate consideration and to affect seriously the determination of the method and content of the introductory course. This difficulty is obviated where professional courses are provided, giving instruction in government and citizenship, as is now the practice in certain law schools, in some departments of journalism, and in a few engineering schools. For each of the major professions in which government instruction is particularly sought a different type of course is desired. For the law student comparative public law, jurisprudence, and specialized government courses in various fields are usually demanded. For the journalist, general subjects dealing with specific countries

and with the political practices of all governments are regarded of special benefit. For the teaching profession the study of some one line and specialization in a particular field seem to be a necessity. Which is the better, such specialized government courses for professional students, or a general course for all introductory students, is still an undetermined problem. The fact that most of the conditions and problems of citizenship are similar for all these groups and that there is great difficulty in providing separate instruction for each group renders it necessary to provide an elementary course which is adapted to the needs and which will serve the purpose of the citizen seeking a general introduction in one course and the professional student who seeks entrance to advanced courses.

3. Training for public service and preparation of specialists for government positions

Colleges and universities have recently begun to give special instruction for the training of those who desire to enter the government service. A few institutions are offering courses and a considerable number are beginning to adapt instruction which will be of service not only to those who anticipate entrance into some form of public work, but also to those who are engaged in performing public service in some department of government. As a matter of fact, the training of specialists must in large measure be cared for by professional and technical schools, such as the provision for directors of public health by medical schools, the training of sanitary engineers by the engineering schools, the training of accountants, statisticians, and financial experts by the schools of commerce and finance. Nevertheless, departments offering instruction in general political subjects are expected to give some consideration to and to make special arrangements for advanced courses in the way of preparing those who seek to enter the various divisions of the government service, such as the consular and diplomatic affairs, charitable and social work, and the administrative regulation of public utilities, industrial affairs, and the public welfare. Through the introduction of specialized courses in municipal, state, and national ad-

ministration it is possible to prepare more adequately for various branches of public administration.

4. Special courses in research and research methods

Although research methods and graduate courses of instruction in political science developed rather slowly, a substantial beginning has been made by the universities in the offering of advanced courses in which a specialized study is made of some of the problems of government and the methods of administration. Through these courses valuable contributions have been made to the historical and comparative phases of the subject and to some extent to the analytical study of government in operation. The primary aim has been to provide an avenue and an opportunity for those who look forward to teaching or to entering the field of special research work in politics and governmental affairs. The results of the research work have been rendered available to government officials and departments through bureaus of research and other agencies devised to aid in improving the public service. Only a few universities separate the graduate from the undergraduate students, and as a result the instruction cannot be of strictly graduate character and quality. Much of the present research is done with small groups of students in a seminar where personal direction is given to investigations and where the methods of research are developed under direct supervision.

Value of the subject

Any determination of the value of a subject in the school curriculum is necessarily based upon the opinions of individuals whose judgment will vary in large measure according to their respective training, influences, and predilections. The value of the subject which is usually placed first is its usefulness in imparting information. Much instruction in government is descriptive and informational in character and is offered primarily to increase the stock of knowledge and to give information with respect to the present and the future interests of the citizen. While this descriptive material has served a useful purpose, it is doubtful whether, as in the formal civics of the public schools, the method of imparting information has not been

used so extensively as to have a detrimental effect. Too much attention has been given to the memorization of facts and the temporary accumulation of information more or less useful, and correspondingly too little to thinking on the great political and social issues of the day.

When governments are engaging in endless activities which affect the welfare of society in its social and æsthetic, as well as political aspects, government instruction becomes increasingly necessary and valuable as a cultural study. The recent development in European political affairs has impressed upon the citizens of this country as never before the results of a profound ignorance with respect to conditions in foreign countries. While the knowledge of the affairs of the great nations of the world has hitherto appeared advisable, it has now come to be regarded as a necessity. From the standpoint of culture a knowledge of the institutions of one's own country and of other countries is one of the cardinal elements of education and provisions for such instruction ought to be placed among the few primary topics in the preparation of all educational programs. If culture involves an understanding of the social and political conditions of the past and present as well as some appreciation of the problems which confront the individual in his activities of life, then the study of both history and government must be given a foremost rank among the subjects now classified as cultural.

With respect to formal discipline government instruction has been rated lower than that of the more exact subjects, the languages and mathematics. While it is true that from the standpoint of formal discipline and exact methods government instruction has not measured up to that of some other subjects, it must be remembered that the standardization of instruction, and the methods pursued in other subjects, have developed through a long process of years to the present effectiveness in mental discipline. As the study of government becomes more specialized, the material in the field worked into more concrete form for purposes of instruction, the methods better developed with the

formulation of standard plans and principles, the disciplinary value of the subject will be increased. The development now in process is bringing about changes which will greatly enhance not only the usefulness but in a large measure the disciplinary value of the subject.

Place in college curriculum

Instruction in government is usually offered only to students who have acquired sophomore standing. A few institutions now give a course in government in the freshman year, and the practice seems to be meeting with success. Sentiment is growing in favor of this plan. The argument presented for this change is that a large percentage of the freshman class does not continue college work, and consequently many students have no opportunity to become acquainted with the special problems of politics and government. To meet the need of those who spend but one year in college, it is claimed that an introduction should be given to the study of government problems. While there are strong reasons in support of this change, the prevailing sentiment for the present favors the requirement of a year's work in college as a prerequisite. The advocates of this arrangement contend that in view of the fact that most of the high schools are now giving a half of a year or a year to civic instruction on somewhat the same plan as would be necessary in a first-year college course, it seems better from the standpoint of the student as well as of the department to defer the introductory course until better methods of study and greater maturity of mind are acquired.

Sophomore standing is the only prerequisite for the elementary course except in a few institutions where the selection of a course in history in the freshman year is required. A few colleges are offering to freshmen an introductory course in the social sciences, comprising mainly some elementary material from economics, sociology, and political science. While there are some advantages in the effort to give a general introduction to the social sciences, no practicable content or method for such a course has yet been prepared. Moreover, it seems likely now that such

a general introduction will be attempted either in the junior or in the senior high school. For advanced work in the senior high school and for the introductory college course reason and practice both favor a separation of these subjects, with close correlation and constant consideration of the interrelations.

The introductory course

It is customary to introduce students to the study of government through a general course in American government, dealing briefly with national, state, and local institutions. Other subjects, such as comparative government, — including a consideration of some representative foreign countries along with American government,— an introductory course in political science, and international law, are sometimes used as basic courses to introduce students to subsequent work. The general practice in the introductory course seems to be approaching a standard in which either American government is made the basis of study, with comparisons from European practices and methods, or European governments are studied, with attention by way of comparison to the American system of government. The Committee of Seven of the American Political Science Association offered the following suggestions relative to the introductory course, which it seems well to quote in full. The Committee recommended that:

> American government be taken as the basis for the introductory course because it is convinced that there is an imperative need for a more thorough study of American institutions, because the opportunity for this study is not now offered in any but a few of the best secondary schools, and because it is exceedingly important that the attention of an undergraduate be directed early in his course to a vital personal interest in his own government, national, state, and local. Instruction in political science is rarely given until the second or third year of the college work, and thus unless American government is selected for the first course only a small percentage of students receive encouragement and direction in the study of political affairs with which they will constantly be expected to deal in their ordinary relations as citizens. But the committee believes that this study of American government can be distinctly vitalized by the introduction of such comparisons with European practices and forms as will supply the student with a broader basis of philosophical con-

clusions as to constitutional development and administrative practices.

The Committee is of the opinion that despite the very marked increase of courses in American government within the past few years, one of the immediate needs is the further extension and enlargement of these courses. In only a few institutions is enough time given to the subject to permit anything more than the most cursory survey of the various features of the government, and almost invariably state and local government suffer in the cutting process which is necessary. About seventy institutions only give courses in which state and local government are the basis of special study. In order that state and local government shall be given more consideration, and in order that judicial procedure and administrative methods shall receive more than passing notice, it is absolutely necessary that the time allotted to American government be increased. Nothing short of a full year of at least three hours a week gives the necessary time and opportunity to do anything like full justice to the national, state, and local units.[1]

Because of the fact that only a small percentage of the student body elects this course under present conditions, and because the majority of those who do elect it never have an opportunity to continue the study of government, it is thought that the selection of American government for the beginning subject has the tendency to foster provincialism. When but one course is taken this one, it is contended, should deal with foreign governments, to supply a broader basis for the comparison of political institutions. As the study of government is introduced in the grades and thorough and effective instruction is offered in the high school, it will become increasingly practicable to introduce the comparative method in introductory courses.

Sequence of courses

One of the difficulties in the instruction in political science which has received less consideration than it deserves is that of the sequence of courses. In the determination of sequence it is customary to have an introductory course, such as American government, European government, or political theory, and to make this subject a prerequisite for all advanced courses. As the introductory course requires sophomore standing, it renders entrance into advanced courses open only to students of junior rank or above.

[1] *The Teaching of Government*, pages 206–207.

After passing the first course, there are open for election a number of subjects, mainly along specialized lines. This condition is to be found, particularly, in the large universities, where a group of instructors offer specialized work, with either little or no advice to students as to the proper arrangement or sequence of courses. The ordinary classification is into three groups: (1) an elementary course, prerequisite for advanced instruction; (2) courses for graduate and undergraduate students, seldom arranged on a basis of sequence or logical order; — the lack of sequence is due in part to the fact that after taking elementary work the student in government frequently wishes to specialize in the field of federal government, or of state government, or of international law, or possibly of political theory; (3) courses for graduate students, which are intended primarily for investigation and research. Students who specialize in government are generally advised by the head of the department or the professor under whom their work is directed, as to the proper arrangement and correlation of courses. It is, however, questionable whether some plan of sequence more definitely outlined than that now to be found in most catalogs ought not to be prepared in advance for the consideration of those who look forward to specializing in political science. Such an arrangement of sequence has been prepared by the department of political science of the University of Chicago, which divides its work into (1) elementary, (2) intermediate, (3) advanced — the advanced courses being subdivided into (*a*) theory, (*b*) constitutional relations, (*c*) public administration, and (*d*) law. Suggestions are offered as to the principal and secondary sequences for various groups of students.

The sequence of courses could be better arranged provided a freshman course were offered. A freshman course in American government could be given, with some attention by way of comparison to European methods and practices, and followed by an intermediate course dealing with some select foreign governments, again using the com-

parative method and viewpoint. Two courses of this character would offer a greater opportunity to give the instruction now desired from the standpoint of the average student and citizen, and would serve as a better basis for advanced instruction than the single course now customarily offered either in American or comparative government. After taking the elementary courses the student could then be allowed to select from a group of subjects in one of the various lines, according to the special field in which he is interested. In short, the arrangement of the sequence of courses will necessarily be unsatisfactory as long as the elementary course is offered only to those of at least sophomore rank, a practice which unfortunately necessitates in many cases the beginning of the work in the junior or senior year. It will be necessary to introduce the subject earlier in the curriculum, in order to arrange such a sequence as would seem desirable from the standpoint of thorough and effective instruction.

Methods of instruction

Methods of instruction [1] vary according to the size of the institution and the number in the classes. In the preliminary courses the system of informal lectures is combined with recitations, discussions, reports, and quizzes. The students in the advanced courses are obliged to carry on independent work under the supervision of the instructor. For seniors and graduate students the seminar has been found most satisfactory in developing a keen interest in the problems of politics. Unfortunately, where the classes are small and the time is limited, it is customary to rely largely on textbooks and recitations, with a moderate amount of special readings and occasional class reports. But, on the other hand, courses in government have been improved recently by the appearance of good textbooks. American and European governments are now presented in texts which have proved satisfactory and which have aided in the development of standard courses for these elementary subjects. Then, too, interest has

[1] The discussion of methods follows in part the Report of the Committee on Instruction, pages 192–194.

been aroused and better results obtained through the use of texts and manuals dealing with the actual work and the problems of government. The neglected fields of state government and administrative practices are just beginning to receive attention.

One method of government instruction, and a very valuable one, is to encourage the examination of evidence and to consider different viewpoints on public questions, with the purpose of forming judgments based on the facts. For this purpose extensive reading and frequent reports are necessary to check up the work completed. It is possible to keep in constant touch with the amount of work and the methods of study or investigation by means of discussions in small sections for one or two hours each week and by the use of the problem sheet.

In the courses offered in departments of government in such subjects as constitutional law, international law, commercial law, and to some extent in courses in jurisprudence and government regulation of public utilities and social welfare, the case method has been adopted quite extensively. This method has been sufficiently tried and its effectiveness has been demonstrated in the teaching of law, so that nothing need be said in its defense. The introduction of the case method in political science and public law has undoubtedly improved the teaching of certain phases of these subjects. That the use of cases and extracts may be carried to an extreme which is detrimental is becoming apparent, for opinions and data change so rapidly that any collection of cases and materials is out of date before it issues from the press. Moreover, the use of such collections encourages the reliance on secondary sources and secondary material, a tendency which ought to be discouraged. Every encouragement and advantage should be given to have students and investigators in government deal with original rather than secondary sources.

There is, in addition to the use of textbooks, lectures, extensive reference reading, case books, and the writing

of papers, a tendency to introduce the problem method of instruction and to encourage field work, observation, and, so far as practicable, a first-hand study of government functions and activities.

Another line in which the study of government is undergoing considerable modification is the emphasis placed on administration and administrative practices. While special attention heretofore has been given either to the history of politics and political institutions or to political theories and principles, the tendency is now to give import to political practices and the methods pursued in carrying on government divisions and departments. The introduction of courses in the principles of administration, with the consideration of problems in connection with public administration in national, state, and local affairs, is tending to modify the content as well as the methods of the teaching of government. New methods and a new content are changing the emphasis from the formal, theoretical, and historical study of government and turning attention to the practical phases and to the technique of administration. As a result of this change and through the work which is being undertaken by bureaus of reference and research, instruction is brought much closer to public officers and greater service is rendered in a practical way to government administration.

Some unsolved problems

Among the difficulties and unsolved problems in the teaching of political science are, first, the beginning course; second, the relation of courses in government to economics, sociology, history, and law; third, the extent to which field investigation and the problem method can be used to advantage in offering instruction and the development of new standards and of new tests which are applicable to these methods; fourth, the introduction of the scientific method.

1. The introductory course

While the elementary course in government is now usually American government and is, as a rule, offered to sophomores, both the content and the present position of the course in the curriculum are matters on which there is

considerable difference of opinion. Where the subject matter now offered to beginning students is comprised of comparative material selected from a number of modern governments, it is contended that this arrangement is preferable to confining attention to American institutions with which there is at least general but often vague familiarity. If provision is made in the high school, by which the majority of those who enter the university have had a good course in American government, there seems to be a strong presumption that the beginners' course should be devoted to comparative government. It is quite probable that the introductory course will cease to be confined to a distinct and separate study of either foreign governments or of American government and that the most satisfactory course will be the development of one in which main emphasis is given to one or the other of these fields and in which constant and frequent comparisons will be made for purposes of emphasis, discussion, and the consideration of government issues and problems. In some cases it is undoubtedly true that emphasis should be given to foreign governments, and as the high schools improve their instruction in our local institutions, national and state, it will become increasingly necessary in colleges to turn attention to the study of foreign governments in the beginners' course.

There appears to be a desire to introduce government into the freshman year, and it is likely that provision will be made to begin the study of the subject in the first college year, thereby rendering it possible for those who enter college to profit by a year's work and to give an earlier start to those who wish to specialize.

Another difficulty in connection with the introductory course which is still not clearly determined is the time and attention which may be given to lectures, to discussions, to the writing of papers or theses, to the investigation and report on problems, and the extent to which use may be made of some of the practical devices such as field investigation. There is a general belief that in the ele-

mentary course only a slight use may be made of practical methods, but that it is necessary to begin these methods in the elementary years and to render instruction practical and concrete to a larger extent than is now done, by means of problems and the discussion of matters of direct interest to all citizens. No doubt as the problem method and field study are more definitely systematized and the ways of supervision and checking up the work developed, these devices will be used much more extensively. The preparation of problem sheets and of guides to the selection of concrete material gives promise of a more general and effective use of the problem method.

2. Relation of instruction in government to other subjects

The proper relationship and correlation of instruction in government with that of other subjects has not yet been determined satisfactorily. The matter of correlation is slowly being worked out along certain lines; for example, the relationship between courses in history and in government is coming to be much better defined. Such subjects as constitutional history and the development of modern governments are being treated almost entirely in departments of history, and less attention is being given to the historical development of institutions in departments of political science. As long as it is impossible to make certain history courses prerequisites before beginning the study of government, it becomes necessary to give some attention in political science to the historical development of political institutions. By correlation and by proper arrangement of courses, however, the necessity of introducing government courses with historical introductions ought to be considerably reduced.

The relation between work in government and in economics and sociology is a more difficult problem and one which has not as yet been satisfactorily adjusted. Some of the courses given in departments of economics and sociology deal to a considerable extent with the regulation of public affairs. In these courses, including public finance, the regulation of public utilities, the regulation of trusts, labor organizations, and the administration and regu-

lation of social and industrial affairs, a more definite correlation between political science and so-called applied economics and applied sociology must be made. While it is undoubtedly necessary for the economist and the sociologist to deal with government regulation of economic and social affairs, and while it is very desirable that these departments should emphasize the practical and applied phases of their subjects, it is nevertheless true that courses which are, to a large extent, comprised of government instruction should be given under the direction of the department of political science, or, at least, in an arrangement of definite coöperation therewith. There is no reason why in such a subject as the regulation of public utilities a portion of the course might not be given in the department of economics and a portion in the department of government. Or it may be better, perhaps, for a course to be arranged in the regulation of public utilities, continuing throughout the year, in which the professors of economics, government, commerce, finance, and engineering participate in the presentation of various phases of the same subject. At all events, the present separation into different departments of the subject matter of government regulation of such affairs as public utilities, taxation, and social welfare regulation is, to say the least, not producing the best results.

The relation of government courses to instruction in law is likewise a partially unsolved problem. A few years ago, when the curricula of law schools dealt with matters of law and procedure in which only the practitioner was interested, it became necessary to introduce the study of public law in departments of government and political science. Thus we find courses in international law, constitutional law, Roman law, and elements of law and jurisprudence being offered in large part in departments of political science. The recent changes in law school curricula, however, by which many of these subjects are now offered in the law school and in some cases are offered to qualified undergraduate students, render the situation somewhat more difficult to adjust. There is a tendency to introduce these

courses into the law school for law students and to offer a similar course in the department of government for undergraduates and graduates. The problem has been further complicated by the provision in some of the leading law schools of a fourth year, in which the dominant courses relate to public and international law, legal history and foreign law, jurisprudence and legislative problems.[1] As these courses become entirely legal in nature and content and require a background of three years of law, it becomes practically impossible for any but law students to be admitted to them. With the prospect of a permanent arrangement for a fourth year of law devoted primarily to subjects formerly given in departments of political science, it seems to be necessary to provide instruction in constitutional law and international law, at least, for those advanced students in political science who seek this instruction but who do not expect to take the private law instruction required to admit them to a fourth-year law class. The preferable arrangement may prove to be one in which a thorough course is offered which will be open to qualified seniors and graduate students and to law students, thus avoiding the duplication which is now characteristic of instruction in law and the public law phases of government. In this matter, as in the relation of economics and sociology, the most appropriate and effective adjustment for coöperation remains to be formulated.

3. Problem method of instruction

As the criticism of eminent specialists in government and politics has impressed upon instructors the idea that too large a portion of the teaching of the subject is theoretical, treating of what ought to be rather than of what actually occurs, dealing with facts only on a limited scale and with superficial attention to actual conditions, there has developed the necessity of revising the methods of instruction. This revision is being made largely in the introduction of field investigation, observation of govern-

[1] See especially article by Ernst Freund on "Correlation of Work for Higher Degrees in Graduate School and Law School," Vol. XI, *Illinois Law Review*, page 301.

ment activities, and the problem and research methods. The prevailing practice of the teaching of politics, which involves lectures, recitations, and the reading and writing of theses, with a considerable amount of supplementary work, is being revised by means of a research and reference division, by the constant use of field investigation and by the study of governmental problems. The difficulty with all these devices lies in the indefinite and vague way in which so much of this work must be done. For the present, in only a few instances, such as the New York Bureau of Municipal Research, has the technique for field investigation and the research method been effectively developed. One of the chief lines for the improvement of the teaching of government is in the standardization and systematization of the problem method and its more extensive use in the elementary and advanced government instruction.

4. Introduction of the scientific method

In the past and to a great extent at the present time that part of the study of government which has to do with political theory and with a descriptive and historical account of government has comprised the greater portion of what is usually designated as political science. The nature of these studies is such as to render inapplicable the use of the scientific method. If the study of government is to be developed as a science in the true sense, then the above subjects must be supplemented by exhaustive inductive studies and research in the actual operation of government. Such methods are now being employed in the examination of government records and the comparison of administrative practices. And there is being developed also a science of government based on the practices and the technique of public administration.

This science now finds its exemplification in some of the exceptional work of the graduate schools. Unfortunately, the connection between these schools and the government departments has not been such as to secure the best results. Moreover, departments of political science are not now doing their part to place the results of scientific investigations at the disposal of government officials. The

introduction of courses in extension departments and evening classes has in part met this deficiency. But much remains to be done to render through the department of political science effective service in the practical operation of government. With the introduction of the problem method and field investigation in the elementary instruction, so far as seems feasible, with the development of standard methods and the technique of research for advanced instruction, the teaching of government will be rendered not only more valuable to the citizen, but colleges and universities may render aid to government officials and citizens interested in social and political affairs.

A significant development as an aid for research and for rendering more effective public service has come in the establishment of bureaus of government research. The method of investigation and research which has been applied to the problems of government by private organizations has been found applicable to the handling of research material in the universities. Through a bureau of this character recent publications and ephemeral material may be collected for the use of advanced students, digests may be prepared on topics of special interest to legislators and administrators, and publications of particular interest to the citizens may be issued. Such a bureau serves as a government laboratory for the university and can be placed at the service of public officials and others who desire to use a reference department in securing reliable data on governmental affairs. Thus it is coming to be realized that research in government may be encouraged and the resources of higher institutions may be so organized as to render a distinct and much appreciated public service.

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XIV

THE TEACHING OF PHILOSOPHY

THE study of philosophy covers such a wide range of subjects that it is difficult to generalize in attempting to answer the basal questions which call for consideration in a book like this. In the great European universities it includes psychology, logic, ethics, æsthetics, epistemology, metaphysics, the history of philosophy, and sometimes even the philosophy of religion, the philosophy of history, the philosophy of law, and the philosophy of the State. Although special courses may not be offered in every one of these fields in our American colleges, their philosophical territory is sufficiently extensive and the separate provinces sufficiently unlike to baffle any one seeking to describe the educational aims and methods of the domain as a whole. In order, therefore, to do full justice to our task it would be necessary to treat each one of the various philosophical branches separately and to expand the space assigned to us into a fair-sized volume. Since this is not to be thought of, we shall have to confine ourselves to a consideration of the traits common to all the subjects, without forgetting, however, such differences as may call for different educational treatment.

The unified college course in philosophy

The difficulty of which we have spoken becomes less formidable when the teacher of the traditional philosophical subjects regards them not as so many independent and disconnected fields of study, but as parts of a larger whole held together by some central idea. The great systematic thinkers, from Plato down to Herbert Spencer, have aimed at "completely unified knowledge" and have sought to bring order and coherence into what may seem to the casual onlooker as a disunited array of phenomena. Philosophical teaching will be the more fruitful, the more it is inspired by the thought of unity of aim, and the more consciously the teachers of the different disciplines keep

this idea in mind. That is the reason why philosophical instruction given in a small college and by one man is, in some respects, often more satisfactory than in the large university with its numberless specialists, in which the beginning student frequently does not see the forest for the trees. It is not essential that the teacher present a thoroughly worked-out and definitive system of thought, but it is important that he constantly keep in mind the interrelatedness of the various parts of his subject and the notion of unity which binds them together,— at least as an ideal.

And perhaps this notion of the unity of knowledge ought to be made one of the chief aims of philosophical instruction in the college. The ideal of philosophy in the sense of metaphysics is to see things whole, to understand the interrelations not only of the branches taught in the department of philosophy but of all the diverse subjects studied throughout the university. The student obtains glimpses of various pictures presented by different departments and different men, and from different points of view. Each teacher offers him fragments of knowledge, the meaning of which, as parts of an all-inclusive system, the pupil does not comprehend. Indeed, it frequently happens that the different pieces do not fit into one another; and he is mystified and bewildered by the seemingly disparate array of facts and theories crowding his brain which he cannot correlate and generally does not even suspect of being capable of correlation. To be sure, every teacher ought to be philosophical, if not a philosopher, and indicate the place of his specialty in the universe of knowledge; but that is an ideal which has not yet been realized. In the meanwhile, the study of philosophy ought to make plain that knowledge is not a mere heap of broken fragments, that the inorganic, organic, and mental realms are not detached and independent principalities but kingdoms in a larger empire, and that the world in which we live is not a chaos but a cosmos. An introductory course in philosophy, the type of course given in many German uni-

versities under the title "Einleitung in die Philosophie" and attended by students from all sections of the university, will help the young student to find his bearings in the multifarious thought-world unfolded before him and will, at the same time, put him in the way of developing some sort of world-view later on.

Philosophical instruction that succeeds in the task outlined above will have accomplished much. Nevertheless, it cannot attain its goal unless the student is introduced to the study of the human-mental world which constitutes a large portion of the field assigned to the philosophical department: the study of psychology, logic, ethics, and the history of philosophy. These branches deal with things in which the human race has been interested from its early civilized beginnings and with which the young persons entering college have had little or no opportunity of becoming acquainted. And they deal with a world which no man can ignore who seeks to understand himself and his relation to the natural and social environment in which his lot is cast. A knowledge of the processes of mind (psychology), of the laws of thought (logic), of the principles of conduct (ethics), and of the development of man's interpretation of reality (history of philosophy) will supplement the knowledge acquired by the study of physical nature, preventing a one-sided and narrow world-view, and will serve as a preparation for intelligent reflection upon the meaning of reality (philosophy in the sense of metaphysics).

Controlling aims in the teaching of philosophy

All these subjects, therefore, have as one of their aims the training of the powers of thought (judgment and reasoning); and philosophical teaching should never lose sight of this. Thinking is a difficult business,— an art which is practiced, to be sure, in every field of study, but one for which the philosophical branches provide unusual opportunity and material. It has become a habit with many of recent years to decry the study of logic as an antiquated discipline, but it still remains, if properly taught, an excellent means of cultivating clear thinking; there is no reason

why a consciousness of correct ways of thinking and of the methods employed in reaching reliable judgments should not prove useful to every one.

We should say, therefore, that the study of philosophy has a high cultural value: it encourages the student to reflect upon himself and his human and natural surroundings (society and nature) and to come to grips with reality; it frees him from the incubus of transmitted opinions and borrowed beliefs, and makes him earn his spiritual possessions in the sweat of his face,— mindful of Goethe's warning that "he alone deserves freedom and life who is compelled to battle for them day by day"; — it helps him to see things in their right relations, to acquire the proper intellectual and volitional attitude toward his world through an understanding of its meaning and an appreciation of its values; in short, it strengthens him in his struggle to win his soul, to become a person. This is its ideal; and in seeking to realize it, philosophy coöperates with the other studies in the task of developing human beings, in preparing men for complete living, and is therefore practical in a noble sense of the term. It has a high disciplinary value in that it trains the powers of analysis and judgment, at least in the fields in which it operates. And the habit acquired there of examining judgments, hypotheses, and beliefs critically and impartially, of testing them in the light of experience and of reason, cannot fail to prove helpful wherever clear thinking is a requisite.

The teacher should keep all these aims in view in organizing his material and applying his methods. He should not forget that philosophy is above all things a reflection upon life; he should endeavor to train his pupils in the art of interpreting human experience, of grasping its meaning. His chief concern should be to make *thinkers* of them, not to fasten upon them a final philosophic creed,— not to give them a philosophy, but to teach them how to philosophize. If he succeeds in arousing in them a keen intellectual interest and a love of truth, and in developing in them the will and the power to think a problem through

to the bitter end, he will have done more for them than would have been possible by furnishing them with ready-made formulas. There is nothing so hopelessly dead as a young man without the spirit of intellectual adventure, with his mind made up, with the master's ideas so deeply driven into his head that his intellectual career is finished. The Germans call such a person *vernagelt*, a term that fitly describes the case. What should be aimed at is the cultivation of the mind so that it will broaden with enlarging experience, that it will be hospitable to new ideas and yet not be overwhelmed by them, that it will preserve inviolate its intellectual integrity and keep fresh the spirit of inquiry. Such a mind may be safely left to work out its own salvation in the quest for a *Weltanschauung*.

"Young, all lay in dispute; I shall know, being old."

In emphasizing the need of such central aims in instruction we do not wish to be understood as not appreciating the utilitarian value of the philosophical branches and their importance as a preparation for professional activity. Like all knowledge, these subjects have their worth not merely as means of developing human personality but also as means of equipping the student with such knowledge of facts, methods, and theories as will prove useful to him in his other studies and in the daily affairs of life. The teacher, the physician, the lawyer, the clergyman, the artist, the engineer, the business man, will be benefited by an understanding of the workings of the human mind, of the laws of human thinking, and of the principles of human conduct. It is not absolutely necessary, however, in our opinion, that separate classes specially designed for the different professions be formed in the colleges; after all, it is the same human mind that operates in all the fields of human activity, and a knowledge of mental life in general will serve the purposes of every vocation. Doubtless, courses in psychology, logic, and ethics, for example, might be offered having in view the particular needs of prospective

members of the various callings, but such courses would, in order to meet the situation, presuppose an acquaintance with the respective professional fields in question which only students well along in their professional studies could be expected to possess. Courses of this character might profitably be given for the benefit of professional students who have already taken the introductory subjects necessary to their proper understanding.

Introduction of philosophy in the college course

It is not easy to determine the most favorable period in a student's college career at which philosophical subjects should be taught. The more mature the student is, the more successful the instruction is apt to be; but this may be said of many other studies. There is no reason why an intelligent freshman may not begin the study of psychology and logic and perhaps of some other introductory philosophical branches; but as a rule better results may be obtained by admitting only such persons to these classes as have familiarized themselves with university methods.

Problems of philosophy and the development of thought to be emphasized, rather than the historical sequence

We should recommend that every student in the college devote at least three hours a week for four terms to the study of psychology, logic, ethics, and the history of philosophy. In case not all these fundamental courses can be taken, the student will most likely derive the greatest benefit by giving a year to the study of the history of philosophy, or one term to the introduction to philosophy, where he has only that much time at his disposal. It seems easier, however, to arouse a philosophical interest in the average student through a study of the basal philosophical questions from the standpoint of contemporaneous thinking than through the study of the history of philosophy. He is generally lacking in the historic sense, and is apt to be wearied and even confused by the endless procession of systems. This is particularly the case when the teacher fails to emphasize sufficiently the progressive nature of philosophical thinking in its history, when he regards this as a mere succession of ideas rather than as a more or less logical unfolding of problems and solutions — as a

continuous effort on the part of the universal mind, so to speak, to understand itself and the world. A course in the introduction to philosophy acquainting the student with the aims of philosophy and its relation to other fields of study, and placing before him an account of the most important problems of metaphysics and epistemology as well as of the solutions which have been offered by the great thinkers, together with such criticisms and suggestions as may stimulate his thought, will awaken in him a proper appreciation of a deeper study of the great systems and lead him to seek light from the history of philosophy.

Methods of instruction

The place and relative worth of the various methods of instruction in the province of philosophy will, of course, depend, among other things, upon the character of the particular subject taught and the size and quality of the class. In nearly all the introductory philosophical branches in which the classes are large the lecture method will prove a valuable auxiliary. In no case, however, should this method be employed exclusively; and in formal logic it should be used rather sparingly. Ample opportunity should always be given in smaller groups for raising questions and discussing important issues with a view to clearing up obscure points, overcoming difficulties, developing the student's powers of thought, and enabling him to exercise his powers of expression. It is also essential that the student be trained in the difficult art of reading philosophical works. It is wise as a rule to refer him to a good textbook, which should be carefully studied, to passages or chapters in other standard manuals, and in historical study to the writings of the great masters. And frequent opportunity to express himself in the written word must be afforded him; to this end written reports giving the thought of an author in the student's own language, occasional critical essays, and written examinations appealing not only to his memory but to his intelligence should be required during the term. Such exercises keep the student's interest alive, increase his stock of knowledge, develop maturity and independence of thought, and create a sense of grow-

ing intellectual power. The written tests encourage members of the class to review the work gone over and to discuss with one another important phases of it; in the effort to organize their knowledge they obtain a much better grasp of the subject than would have been possible without such an intensive re-appraisal of the material.

Logic to be related to the intellectual life of the student

In the course on formal logic a large part of the time should be spent in examining and criticizing examples of the processes of thought studied (definitions, arguments, methods employed in reaching knowledge) and in applying the principles of correct thinking in written discourses. It is a pity that we have no comprehensive work containing the illustrative material needed for the purpose. As it is, the teacher will do well to select his examples from scientific works, speeches, and the textbooks used in other classes. As every one knows, nothing is so likely to deaden the interest and to make the study of logic seem trivial as the use of the puerile examples found in many of the older treatises. With the proper material this subject can be made one of the most interesting and profitable courses in the curriculum,— in spite of what its modern detractors may say.

Students to be familiarized with sources and original writings of the leading philosophers

In the history of philosophy the lectures and textbook should be supplemented by the reading of the writings of the great philosophers. Wherever it is possible, the learner should be sent to the sources themselves. It will do him good to finger the books and to find the references; and by and by he may be tempted to read beyond the required assignment — a thing greatly to be encouraged, and out of the question so long as he limits himself to some one's selections from the writings of the philosophers.

In the advanced courses the research method may be introduced; special problems may be assigned to the student who has acquired a knowledge of the fundamentals, to be worked out under the guidance of the instructor.

In the lecture intended for beginners the teacher should seek to arouse in his hearers an interest in the subject and the desire to plunge more deeply into it. He should not

Lecture method should arouse dynamic interest and a desire to master the problems of philosophy

bewilder the student with too many details and digressions but present the broad outlines of the field, placing before him the essentials and leaving him to fill in the minutiæ by a study of the books of reference. Each lecture ought to constitute an organic whole, as it were, in which the different parts are held together by a central idea; and its connection with the subject matter of the preceding lectures should be kept before the hearer's mind. All this requires careful and conscientious preparation on the part of the teacher, who must understand the intellectual quality of his class and avoid "shooting over their heads" as well as going to the other extreme of aiming below the level of their mental capacities. Lecturing that is more than mere entertainment is an art which young instructors sometimes look upon as an easy acquisition and which older heads, after long years of experience, often despair of ever mastering. The lecture aims to do what books seldom accomplish — to infuse life and spirit into the subject; and this ideal a living personality may hope to realize where a dead book fails.

How to secure active participation by students through lecture method

In order, however, that the philosophical lecture may not fail of its purpose, the hearer must be more than a mere listener; he must bring with him an alert mind that grasps meanings and can follow thought-sequences. And he cannot keep his attention fixed upon the discourse and understand the relations of its parts unless other senses cooperate with the sense of hearing and unless the motor centers are called into play also. He should carefully cultivate the art of taking notes, an accomplishment in which the average student is sadly lacking and to acquire which he needs the assistance of the instructor, which he seldom receives. An examination of the student's notebook frequently reveals such a woeful lack of discrimination on the writer's part that one is led to doubt the wisdom of following this method at all; wholly unimportant things are set down in faithful detail and essential ones wholly ignored. The hour spent in the lecture room, however, can and should be made a fruitful means of instruction, one that

will awaken processes of thought and leave its mark. But in order to get the best result, the student should be urged to study his notes and the books to which he has been referred while the matters discussed in the lecture are still fresh in his mind; he will be able to clear up points he did not fully grasp, see connections that have escaped him, understand the force of arguments which he missed; and he will assume a more independent and critical attitude toward what he has heard than was possible on the spur of the moment, when he was driven on and could not stop and reflect. At home, in the quiet of his study, he can organize the material, see the parts of the discourse in their relations to each other, and re-create the whole as it lived and moved in the mind of the teacher. In doing this work he is called on to exercise his thinking and takes an important step forward. It is for this reason that I am somewhat skeptical of the value of the syllabus prepared by the teacher for the use of classes in philosophy,— it does for the student what he should do for himself. Whatever value the syllabus may have in other fields of study, its use in the philosophical branches ought to be discouraged. The great weakness of the lecture method lies in its tendency to relieve the hearer of the necessity of doing his own thinking, to leave him passive, to feed him with predigested food; and this defect is augmented by providing him with "helps" which rob him of the benefit and pleasure of putting the pieces of the puzzle-picture together himself.

However, even at its best, the lecture method, unless supplemented in the ways already indicated, runs the danger of making the student an intellectual sponge, a mere absorber of knowledge, or a kind of receptacle for professors to shoot ideas into. As was said before, the student must cultivate the art of reading books and of expressing his thoughts by means of the spoken and written word. At the early stages and in some fields of philosophical study, however, the reading of many books may confuse the beginner and leave his mind in a state of bewilderment. It is indispensable that he acquire the working concepts and

the terminology of the subject, and to this end it is generally wise to limit his reading until he has gained sufficient skill in handling his tools, as it were. In the elementary courses many members of the class will be unable to do more than follow the lectures and study the textbook; the more gifted ones, however, should be encouraged to extend the range of their reading under the guidance of the instructor.

Organization of undergraduate courses in philosophy

An answer to the question concerning the desired sequence of courses in philosophy will depend upon many considerations,— upon one's conception of philosophy and of the various subjects generally embraced under it, upon one's notion of the aims of philosophical instruction, upon one's estimate of the difficulties encountered by the student in the study of the different branches of it, and so on. There is wide divergence of opinion among thinkers on all these points. Philosophy is variously conceived as metaphysics, as theory of knowledge, as the science of mind (*Geisteswissenschaft*), as the science of values (*Wertheorie*), or as all of these together. Logic is conceived by some thinkers as dependent upon psychology, by others as the presupposition of *all* the sciences, including psychology. Ethics is regarded both as a branch of psychology, or as dependent upon psychology, and as an independent study having nothing whatever to do with psychology. Psychology itself is treated both as a natural science, its connection with philosophy being explained as a historical survival, and as the fundamental study upon which all the other subjects of the philosophical department must rest. Where there is such a lack of agreement, it will not be easy to map out a sequential course of study that will satisfy everybody. Even when philosophy is defined in the old historic sense as an attempt to reach a theory of the world and of life, men may differ as to the exact order in which the basal studies should be pursued. By many the history of philosophy is considered the best introduction to the entire field, while others would place it at the end of the series of fundamentals (psychology,

logic, ethics), holding that a student who has studied these will be best equipped for a study that includes the history of their development. As a matter of fact, given students of mature mind and the necessary general preparation, either order may be justified. The average underclassman is, however, too immature to plunge at once into the study of the history of philosophy, and the present writer would recommend that it be preceded by courses in general psychology, logic and ethics. The average sophomore will have little difficulty in following courses in psychology and logic; and it is immaterial which of these he takes up first. The course in the theory of ethics should come in the junior or senior year and after the student has gained some knowledge of psychology (preferably from a book like Stout's *Manual of Psychology*). And it would be an advantage if the course in ethics could be preceded by a study of the development of moral ideas, of the kind, let us say, presented in Hobhouse's *Morals in Evolution.* For reasons already stated, the entire course in philosophy should be inaugurated by the Introduction to Philosophy. Advanced courses in metaphysics and the theory of knowledge should come at the end and follow the history of philosophy. The ideal sequence would, therefore, be in the view of the present writer: Introduction to Philosophy, Psychology or Logic, the Development of Moral Ideas, Theory of Ethics, History of Philosophy, Metaphysics, and Theory of Knowledge. It must be admitted, however, that a rigorous insistence upon this scheme in the American college, in which freedom of election is the rule, would impair the usefulness of the department of philosophy. Few students will be willing to take all these subjects, and there is no reason why an intelligent junior or senior should not be admitted to a course in ethics or the history of philosophy without having first studied the other branches. A person possessing sufficient maturity of mind to pursue these studies will be greatly benefited by them even when he comes to them without previous preparation; and it would be a pity to deprive him of the opportunity to become acquainted with

a field in which some of the ablest thinkers have exercised their powers. At all events, he should not leave college without having had a course in the history of philosophy, which will open up a new world to him and may perhaps stimulate him to read the best books in the other branches later on.

It would not be possible, of course, to prescribe all the fundamental philosophical courses, even if it were desirable,— few faculties would go so far,— but it would be wise to require every candidate for the bachelor's degree to give at least six hours of his time (three hours a term, on the two-term basis) to one or two of the elementary courses, preferably in the sophomore year. Ethics and the history of philosophy could then be chosen as electives and be followed by the more advanced and specialized courses.

Moot questions: controversy between philosopher and psychologist

We have already touched upon some of the debatable questions in the sphere of philosophical education. The dispute concerning the place of psychology in the scheme of philosophical instruction has its cause in differences of view concerning the aims, nature, and methods of that subject. Philosophers ask for an introductory course in psychology which shall serve as a propaedeutic to the philosophical studies, while teachers of education wish to have it treated in a way to throw light upon educational methods and theory. "Some biologists treat mental phenomena as mere correlates of physiological processes. . . . Others, including a number of psychologists also, regard psychological phenomena as fully explicable in terms of behavior, and as constituting therefore a phase of biological science." The Committee of the American Psychological Association on the Academic Status of Psychology recommends "that the Association adopt the principle that the undergraduate psychological curriculum in every college or university, great or small, should be planned from the standpoint of psychology and in accordance with psychological ideals, rather than to fit the needs and meet the demands of some

other branch of learning." [1] This declaration of principle might lead to peace between the philosophers and the psychologists if there were agreement concerning the "psychological ideals" in accordance with which the subject is to be studied. The desideratum of the philosophers is a psychology which will give the student an understanding of the various phases of mental life; but they do not believe that this can be reached by an exclusive use of the natural-scientific method. The objection of some psychologists, that the philosophers wish to inject metaphysics into the study of mental processes, is met by the rejoinder that the natural-scientific psychology is itself based upon an unconscious metaphysics, and a false one at that. What the philosophers desire is psychological courses which will do full justice to the facts of the mental life and not falsify them to meet the demands of a scientific theory or method — courses of the kind given in European universities by men whose reputation as psychologists is beyond suspicion.

Divergent views as to nature of introductory course in philosophy

We have likewise alluded, in this chapter, to the controversy over the need and nature of an introductory course in philosophy. Of those who favor such a philosophical propaedeutic some recommend the History of Philosophy, others an Introduction to Philosophy of the type described in the preceding pages. Some teachers regard as the ideal course a study of the evolving attitudes of the individual toward the world, after the manner of Hegel's Phenomenology of the Spirit; some the Philosophy of History; some *Kulturgeschichte*, that is, the study of "the evolution of science, morality, art, religion, and political life,— in short, the history of institutions"; some the study of the great literatures; and some would seek the approach to the subject through the religious interest.[2] It is plain that the History of Philosophy will receive help from all these sources; and a wise teacher will make frequent use of them. Nor can the course in the Introduction to Philoso-

[1] The sentences quoted are taken from the Report of this committee, which was published in December, 1914.

[2] See the articles of J. W. Hudson and others in the Bibliography.

phy afford to ignore them; it will do well to lay particular stress upon the philosophical attitudes, the embryonic philosophies which are to be found in the great literatures, in the great religions, in science, and in the common sense of mankind. Wherever the human mind is at work, there philosophical conceptions,— world-views, crude or developed,— play their part; and they form the background of the lives of peoples as well as of individuals. In the systems of the great thinkers they are formulated and made more or less consistent; but everywhere they are the result of the mind's yearning to understand the meaning of life in its manifold expressions. When the student comes to see that philosophy is simply an attempt to do what mankind has always been doing and will always continue to do, in a rough way, that it is "only an unusually obstinate attempt to think clearly and consistently,"— to continue the process of thinking to the bitter end,— his attitude toward it will be one of intelligent interest and respect. But not one of these subjects taken by itself will serve the purpose of an introductory course.

The "case method" in the teaching of philosophy

Another moot question is concerned with the use of the "case method," employed in law instruction, in ethics. The case method seeks to know what the moral law is by studying the moral judgments of society; or, more definitely, to quote the words of Professor Coxe,[1] one of its champions: "to discover, if possible, a law running through the judgments *which society has made through its duly appointed officials.*" "Historical cases, properly attested, alone give us the means of objective judgment." There can be no doubt that this method will prove serviceable, if judiciously applied; but its exclusive use either as a method of study or as a method of instruction,— even in an introductory course in ethics,— is not to be recommended.[2] The student will not gain an adequate conception of morality from a study of the varying and often contradictory "historical cases," much less from a study of the

[1] See Bibliography.

[2] See Professor Overstreet's Discussion mentioned in the Bibliography.

judgments which society has made "through its duly appointed officials." The legal "case" literature of our country does indeed furnish valuable and interesting material for ethical study, but it would require a riper mind than that of a beginner to discover and to evaluate the moral principles which lie embodied in it.

Testing the results of instruction

The problem of testing the effectiveness of one's teaching presents few difficulties in classes which are small and in which individual instruction is possible. Wherever teacher and student come in close personal contact and opportunity is afforded for full and frequent discussions as well as for written exercises, it is a comparatively easy matter to judge the mental caliber of the members of the class and to determine the extent of their progress. In the case of the large classes, however, which crowd into the lecture halls of the modern university, the task is not so simple. Here every effort should be made to divide such concourses of students into numerous sections, small enough to enable the instructor to become acquainted with those under his charge and to watch their development. The professor who gives the lectures should take one or more of these sections himself in order that he may understand the minds to which he is addressing himself, and govern himself accordingly. The tests should consist of discussions, essays, and written and oral examinations; by means of these it is not impossible to determine whether the aims of the subject have been realized in the instruction or not. But the tasks set should be of such a character as to test the student's power of thought, his ability to understand what he has read and heard with all its implications, his ability to assume a critical attitude toward what he has assimilated, and his ability to try his intellectual wings in independent flights. A person who devotes himself faithfully to his work during the entire term, who puts his mind upon it, takes an active part in the discussions, and is encouraged to express himself frequently by means of the written word, will surely give some indication of the progress he has made, even in a written examination — it

being a fair assumption that one who knows will somehow succeed in revealing his knowledge. Care must be taken, of course, that the test is not a mere appeal to the memory; it is only when the examination makes demands upon the student's intelligence that it can be considered a fair measure of the value of philosophical instruction. It must not be forgotten, however, that the examination may reveal not only the weakness of the learner but the weakness of the teacher. It is possible for a student, even in philosophy, to make a fine showing in a written examination by repeating the words of the master which he does not understand, without having derived any real benefit from the course. The teacher may set an examination which will hide the deficiencies of the instruction, and the temptation to do this in large classes which he knows have not been properly taught is great.

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XV

THE TEACHING OF ETHICS

Interest in the study of ethics determined by the aim of instruction

NOWHERE does academic tediousness work a more dire mischief than in the teaching of ethics. It is bad to have students forever shun the best books because of poor instruction in literature; the damage is worse when it is the subject of moral obligation which they associate with only the duller hours of their college life. Not that the aim of a course in ethics is to afford a number of entertaining periods. The object rather is to help our students realize that here is a subject which seeks to interpret for them the most important problems of their own lives present and to come. Where this end is kept in view, the question of interesting them is settled. A sincere interpretation of life always takes the interest when once it is grasped that this is what is really being interpreted.

Viewpoint in the past

The procedure in the past (and still quite common) was to introduce the subject by way of its history. A book like Sidgwick's *History of Ethics* was studied, with supplements in the shape of the students' own reading of the classics, or lectures, with quotations, by the teacher. That this method was frequently of much service is undeniable. Teachers there are with rare gifts of inspiration who can put freshness into any course which ordinary teachers leave hopelessly arid. But this should not blind us to the fact that certain modes of procedure are in general more likely to be fruitful than others.

The business of right living the aim of ethics teaching

These methods depend upon the aim; and the aim, we venture to hold, should be eminently practical. The content of ethics is not primarily a matter of whether Kant's judgments are sounder than Mill's or Spencer's. Its subject is human life and the business of right living: how should people — real people, that is, not textbook illustrations — live with one another? This is the essential concern of our subject matter, and in it our student is inti-

mately and practically involved. Charged with the fact, he may deny the impeachment. He refuses to worry over the merits of hedonism versus rigorism, the distinction between hypothetical and categorical imperatives, or the claim of ethics to be called a science. Ethics, that is, as an intellectual discipline through the survey of historic disputations is indeed remote from the concerns that touch his life. But all the time there is no subject of greater interest when approached from the side of its bearing on practical problems. Consider the earnestness with which the student will discuss with his friends such questions as these: What sense is there in a labor strike? Is a conscientious objector justified in refusing military service? Why should any one oppose easy divorce laws? May a lawyer defend a rogue whom he knows to be guilty? Can one change the nature with which he was born? Is violence justified in the name of social reform? If what is right in one age or place is wrong in another, is it fair to object when moral laws are broken? If a practice like prostitution is common, what makes it wrong?

These do not sound like the questions likely to receive a welcome hearing in the classroom; but it is precisely upon the interest in such topics as these that the course in ethics should build; for its subject is right living, a matter in which the student may indeed be assumed to feel a genuine concern. If the questions that he wants answered are not all as broad in their significance as the foregoing, there are others of a more immediate personal kind which arise in his life as a student, as a friend, as a son and brother, problems in which standards of fair play and "decency" are involved, and upon which it may be taken for granted that he has done some thinking, howsoever crude. These interests are invaluable. Out of them the finer product is to be created in the shape of better standards, higher ideals, and habits of moral thoughtfulness, leading in turn to still better standards and still worthier conduct. The course in ethics should be practical

in the sense that both its starting point and its final object are found in the student's management of his life.

Illustrations of the problems of right living

Consider, for example, how his interest in problems of friendship may be used as the point of departure for an extremely important survey over general questions of right relationship. Just because friendship is so vital a concern of adolescent years, he can be led to read what Aristotle, Kant, Emerson, have to say upon this subject and be introduced as well to that larger life of ideal relationships from which these writers regard the dealings of friends. The topic of right attitudes toward a friend broadens out readily into such considerations as treating persons aright for their own sake or regarding them as ends *per se*, a dead abstraction when approached as it is by Kant, but a living reality when the students get Aristotle's point about magnanimous treatment of friends. They can then proceed by way of contrast to note, for example, how this magnanimity was limited to friends in the upper levels of Athenian society, and went hand in hand with approval of slave labor and other exploitations which a modern conscience forbids. To give sharper edge to the conception of man as deserving right treatment for his own sake, the class might go on to examine other notable violations of personality in past and present; e. g., slavery (read for instance Sparr's *History of the African Slave Trade*) or the more recent cruelties toward the natives in the rubber regions of the Congo and the Amazon. Reference may also be made (without undue emphasis) to the white-slave traffic of today and the fact be noted that a right sense of chivalry will keep a man from partnership in the degradation which creates both the demand for white slavery and ultimately its supply. We mention this to show how a common practical interest can be employed to introduce the students to so fundamental an ethical conception as the idea of inviolable human worth. It may, no doubt, be highly unconventional for them to begin with a discussion of friendship and after a few periods find themselves absorbed in these other questions; but if care is exercised to sum up and to emphasize

the big conceptions underlying the topic, we may be sure that their grasp of the subject will be no less firm than under the older method. Their acquaintance with a study requiring hard, abstract thinking will surely not be hurt, to say the least, by an introduction which is concrete and practical.

Or take another matter of real concern to the student at this period of his life. He is certain to be giving some thought to the matter of his future vocation; and here again is a topic which, properly handled, broadens out into the most far-reaching inquiries. It is to be regretted that as yet the vocational-guidance movement has been occupied in the main with external features — comparing jobs, making objective tests of efficiency, and so on. The central ethical conceptions are usually slighted. That one's vocation is a prime influence in the shaping of personality in oneself, in one's fellow workers, in the public served (or disserved) by one's work, in the world of nations in so far as war and peace are connected with commerce and other interchange of vocational products — all this is matter for the teacher who wishes the ethics course to work over into better living.[1] Nor again, as will be noted later in the chapter, need the claims of the subject as a scholarly discipline suffer from such treatment. Questions of the nature of moral standards, of the distinction between expedient and right, etc., can be taken up more profitably when, instead of dealing with the academic questions forming the stock in trade of most textbooks, the course examines a few vocations, let us say, business, teaching, art, law, medicine,— in the light of such standards as these: A history of the calling; e.g., what has it contributed to the elevation of mankind, to the development of the arts and sciences, and to specific kinds of human betterment? What is the best service it can accomplish today? What traits does it require in those who pursue it? What traits

[1] See Adler: *The Present World-Crisis and Its Meaning*, chapter on "An Ethical Program of Social Reform"; also *An Ethical Philosophy of Life*, Chapters 3, 4, 5, 6, 7.

is it likely to encourage in them for better and for worse? Report on great leaders in the calling, with special reference to what their work made of them. What are the darker sides of the picture? What efforts are being made today to raise the moral code in this vocation? Sum up the ideal rewards.

We do not mean, of course, that the only problems are those which center around the demands of today for a more just economic and social order. On the contrary, we believe that the movement for social justice is greatly in need of precisely that appreciation of the claims of moral personality which it is the main business of ethical study to promote. But we shall never get our students to profit from their work in social ethics, or in ethical theory, or in any branch of the subject whatever, unless we keep fresh and close the contact with their own experiences and ambitions.

Indeed, we venture to assert that unless this connection is kept unbroken, the subject is not ethics at all but an abstraction which ought to take some other name. Ethics deals with human volitions; but the latter term is meaningless to the student save as he interprets it by his own experiences in the preference of better ways to lower. He knows the difficulties that arise in his own group-associations,— his home or his class or his club, for example, — the conflicts of ambitions, the readiness to shirk one's share of common responsibility, the discordant prides and appetites of one sort and another which lead to overt injustices. All these should be used to throw light upon the living moral problems of group-life in the vocations, in the civic world, in the international order.

Temperamentally, to be sure, the teacher may be inclined to handle his subject in what he prefers to regard as academic detachment. But where the subject is ethics and not dead print, complete aloofness is out of the question. There would be no textbooks in ethics if the men whose convictions are there recorded had not grappled earnestly with problems of vital moment to their day and

generation. The crucial questions raised by a changing Athenian democracy were no matters of air-born speculation to Socrates and Plato and Aristotle. Nor is it an accident that the philosopher who so sought to vindicate the worth of man as an end *per se* should have sent from his apparently isolated study in Königsberg his glad acclaim of the French Revolution. The abounding interest of the English Utilitarians in the economics, the politics, the social reform, of the nineteenth century needs no comment. There are texts for study today because the men who wrote them were keenly concerned about a nobler mode of life for mankind. To invite the student to share their reflections without expecting worthier conduct is to ignore the essential purpose by which those reflections were prompted.

Governing aim in ethics teaching

Hence our first recommendation — that the *content of the ethics courses be determined by the principal aim of so interpreting the experiences and interests of the student as to stimulate worthier behavior through a better understanding of the general problem of right human relationships.*

Our second recommendation as to aims is suggested by certain extremes in the practice of today. Reference to problems of immediate concern does not mean that ultimate considerations are to be shelved. Indeed, it must rather be stressed that such discussions miss their best object, *if they fail to lead to searching reflection upon ultimate standards.* The temptation to forego such inquiry today is strong. In their desire to be practical and up-to-date, many teachers are altogether too ready to rest the case for moral obligation upon a kind of easy-going hedonism, the fallacy of provisionalism, as Professor Felix Adler calls it. Tangible "goods" like happiness or "social values" are held up as standards, as if these values were ends in themselves and the problem of an ultimate human worth were irrelevant.

It may very well be a modest attitude to say that we can no longer busy ourselves with the nature of ulti-

mate ends and that we can best employ our energies in trying to define the various goods which contribute now and here to human betterment. Let the effort be made, by all means. But when the last of empirical goods have been examined and appraised (assuming for the moment that we can indeed appraise without possessing ultimate norms) the cardinal question still waits for answer: To what are all these goods instrumental? What kind of life is best? What is it that permits man, with all his faults, his sordid appetites, his meannesses and gross dishonors, to hold his head erect as one yet worthy of the tribute implied in the fact that we have duties toward him?

An answer satisfying to all may never be reached; but to evade these questions is to abdicate the teacher's function. Many young people are led by the biologic teachings of the day to regard man as the utterly helpless product of his environment. Or they are so impressed with the obvious and immediate needs of whole masses for better food, better homes, greater opportunities for culture, that they do not stop to ask whether these goods are worth while in themselves, or if not, what is the deeper purpose to which they should minister. A conception of personality is needed, sufficiently exalted to permit the various immediate utilities to find their due place as tributes to the ideal excellence latent in man; and on the other hand there is need for a view of the spiritual life free from the misuse to which that term is put by the various cults evoked by reaction against modern mechanism. Painstaking inquiry into the grounds upon which the assurance of human dignity can justify itself, has never been more urgently required.[1]

[1] From this point of view the ethical justification for the war on the slum becomes: (*a*) to make possible for the slum-dweller the better performance of his various duties as parent, worker, citizen; (*b*) to drive home to all concerned the meaning of interdependence; (*c*) to clarify for all of us the ideals to which better living conditions should minister. There is every need today to further the conviction that the highest service we can perform for another is not to make him happier, but to help him make himself a better person through the better performance of his duties.

Ideals and tendencies in ethics teaching

Let us beware of surrendering to the common but often pernicious demand of our swift-moving America that in order to receive consideration a new idea should prove itself capable of yielding immediate dividends. There seems to be a certain hesitancy today among some in our educated classes about speaking of "ideals." Ideals connote a long look ahead. They imply a sense that there is something perfect even though the steps toward embodying or approximating it will be many and arduous, perhaps discouragingly hard. They betoken the likelihood of appearing before men as the victims of ultimately unworkable dreams. In refreshing contrast is the seeming practicability of encouraging present tendencies. Your tendency is no far-off projection of mere thought; it is something solid and "real," here and now, respected at the bank, in the newspaper office, and other meeting places of those whose heads are hard. Tendencies turn elections; ideals carry no such palpable witness of their power. "Hence let us study tendencies."

This characterization is perhaps extreme, but the danger to which it refers is all too frequent. A strike, for instance, sets most of us to discussing ways by which this particular disturbance can be ended quickly. It is only the few who are willing to hold in mind both terms of the problem, namely the procedure for tomorrow morning and the positive ideal toward which all our vocational life should set its face even if the distant tomorrow is still so far ahead. So of our conceptions of political life. A given election may indeed involve an immediate moral issue; but even the issue of next month can be faced properly only when it is related to an ideal of public life which may have to wait long years for appreciation by the majority. Nothing is more necessary in a democracy than a leadership trained in the long forward look, trained in distinguishing morally right and morally wrong from expedient, and best from merely better, trained in the courage to champion a distant ideal in the face of clamor to accept some inferior but belligerently present substitute.

In short, the student should be offered every encouragement to thinking out the ultimate obligations of his own life and of his various groups and to reaching the conviction that there is such a reality as a permanent human worth, a fundamentally right way for men and women to seek, a rightness whose authority is undiminished by the blunders of the human mind in trying to define it. An ever more earnest attempt to find that way, and to find it by practice illumined by all the knowledge that can be brought to bear, should be the leading object. Not a series of definitions and quotations, nor yet a little information about the social movements of our time, but a truer understanding of life as the result of interpreting it in terms of the obligation to create right human adjustments — such an aim saves college ethics alike from dryness and from superficial attempts to sprinkle interest over a subject of inherent and intense practical importance.

It is not essential that an introductory course in ethics should enter into the philosophy of religion. This may be left to other agencies, like the church, or to later courses, with every confidence that the outcome will be sound if mind and soul and will (to use the old formula) are first enlisted in behalf of noble conduct. Whatever thinking the student may do along these lines will be the better if its nurture is drawn first from moral thinking and moral practice.[1]

Course in ethics prescribed, and early in college course

From the foregoing it follows that the ethics course should be taken by all the students. The earlier it can be given the better, inasmuch as its demands upon their conduct apply to all the years of their life, and because the whole career at college is more likely to benefit from beginning early such reflections as this study particularly invites.

Sequence determined by development of the student

The sequence of courses will perhaps be best determined by remembering the need of following the natural growth of the student. Experiences come first and then

[1] Note the emphasis placed by modern philosophy upon ethical value as the point of approach to the problem of Godhead.

the interpretations. Hence the insistence upon the practical content of the introductory courses. Theory and history should follow, not precede. Nobody is interested in the history or the theory of a thing unless he is interested in the thing itself. Furthermore, we must bear in mind the needs of those students who are not likely to care enough for the more theoretical aspects to continue the subject. If the introductory course is to be all that they take, obviously the more practical we can make it the better.

In teaching ethics follow the maxim from the concrete to the abstract

As to method, a variety of profitable ways abounds if only the contact with life is kept close and the principles studied are tested by their outcome in the life which the student knows best. In general, the best procedure is to work back from concrete instances to the principles underlying the problem, formulate the principles and test them in other fields. Our illustrative strike, for instance, can be used to throw light upon the actual and the ideal principles involved in human relationship in some such manner as the following:

Method of procedure illustrated

What do the employers want? What do they mean by liberty? What were the circumstances under which Mill formulated his principle of "liberty within the limits of non-infringement?" What have been the consequences in America of reliance upon this formula? Why does it break down in practice? Compare it with the theory of the balance of power in international relations. What is likely to be the effect of the possession of power upon the possessor himself?

Restate the ideal of liberty in terms of duty, not of privilege. What are the obstacles to the fulfillment of such an ideal in industry? In homes? What are the personal obstacles to clear understanding of the meaning of right?

What do the workers want? Examine each of their demands — shorter hours, more pay, recognition of the union, etc. What should the granting of these demands contribute to their lives? Give instances to show whether "better off" means better persons or not.

Compare the working man's use of the word "liberty"

with that of the employer. Why do workers often become oppressors when they themselves become employers? What is the difference between demanding a redress of your grievance and making a moral demand? What makes the cry of fraternity as uttered by the workers repugnant to those who otherwise would accept fraternity as an ideal?

How would you formulate the ideal for the vocational life of the factory worker? Apply it to other vocations — journalism, law, teaching. Sum up the ideal rewards of work.

Make tentative definitions of liberty, rights, duty, justice.

Each of the questions mentioned above — and many more will occur in the course of the discussion — furnishes occasion for extended considerations that call upon the student for scholarly gathering of facts, for close thinking, and — not least — for reflection upon his own experiences and volitions. Other problems will suggest themselves. It is obvious how the interest of the student in prison reform, for example, can be employed in like manner as a motive to searching reflection upon questions of moral responsibility. The principle that punishment should be a means of awaking in the offender the consciousness of a self which can and should hold itself to account despite the magnitude of its temptations is of special usefulness, in the years when a broadening altruism (and we might add, a tendency to self-pity) is likely to lead to loose notions of personal obligation.

Place of the textbook in ethics teaching

The use of a textbook is a minor matter. To prevent the courses from running off into mere talk — and even ethics classes are not averse to "spontaneous" recitation on their own part or to monologues by the teacher — a textbook may be required, with, let us say, monthly reports or examinations. So much depends, however, upon the enthusiasm of the instructor that here particularly recommendations can be only of the most general kind. Some of the most effective work in this subject is being done by teachers who forget the textbook for weeks at a time in order to push

home a valuable inquiry suggested by an unforeseen problem raised in the course of the discussion. Others use no textbooks at all. Some outline the year's work in a series of cases or problems with questions to be answered in writing after consulting selected passages in the classics or in current literature or in both.[1] This method has the advantage of laying out the whole year's work beforehand and of guaranteeing that the student comes to the classroom with something more than a facility in unpremeditated utterance. It is generally found to be of greater interest because it follows the lines of his own ordinary thinking — first the problem and then the attempt to find the principles that will help to solve it.

Moral concepts deepened by participation in social or philanthropic endeavors

More important than any of these details of technique is the need of helping the student to clarify his thinking by engaging in some practical moral endeavor. The broadening and deepening of the altruistic interests is a familiar feature of adolescent life. The instructor in ethics, in the very interest of his own subject, is the one who should take the lead in encouraging these expressions, not only because of the general obligation of the college to make the most of aptitudes which, neglected in youth, may never again be so vigorous, but also because of the truth in Aristotle's dictum that insight is shaped by conduct. Hence the work in ethics should be linked up wherever possible with student self-government and other participation in the management of the college, and with philanthropies like work in settlements or in social reform groups or cosmopolitan societies. For the students of finer grain it is eminently worth the trouble to form clubs to intensify the spirit of the members by activities more pointedly directed to the refining of human relationships. They might engage in activities in which the task of elevating the personality is specially marked, that is, in problems which have to do with mutual

[1] Professor Sharp of Wisconsin has found this method so serviceable that he has interested many teachers in his state and elsewhere in using it with high school students for purposes of moral instruction. See "A Course in Moral Instruction for High Schools," by F. C. Sharp; *Bulletin, University of Wisconsin.*

interpretation — e.g., black folk and white, foreign and native stocks in America, delinquents and the community, immigrant parents and unsympathetic children. They might organize clubs for one or more of these purposes, for discussing intimately the problems of personal life, for public meetings on the ethics of the vocations and on the more distinctly ethical phases of political and international progress. Such organizations can be made to do vastly more good for their members then the average debating society, with its usual premium on mere forensic skill, or the fraternity, with its encouragement of snobbishness. The wholesome thing about the spirit of fraternity should be set to work upon some such creative activities as we have mentioned. Not only does the comradeship strengthen faith in right doing, but these practical endeavors offer a notable help to the deepening, extending, and clarifying of that interest in moral progress without which there can be none of the intelligent leadership for which our democracy looks to its colleges.

Peculiar difficulty of applying usual test to courses in ethics

To test how far the subject has been of value to the student is unusually difficult. His interest in the discussions is by no means an unfailing index. There are those who may be both eager and skilled in the intellectual combat incidental to the course but whose lives remain untouched for the better. The worthier outcome is hard to trace. It is quite possible for the teacher to take credit for the instilling of an ideal whose generation was due to some agency wholly unknown, perhaps even to the student himself. On the other hand, the best results may take years for overt appearance. In the nature of the case, their more intimate expressions can never be recorded.

Moreover, students vary in the force of character which they bring with them to the study. A lad whose home training has been deficient may take more time than the best teacher can give in order to reach the degree of excellence to which others among his classmates ascend more quickly. Or a lad whom the course has moved with a desire to take up some philanthropic endeavor may hesitate to pursue

it through lack of the necessary gift or failure in self-confidence. The forces which enter into the making of character are so complex, including as they do not only acquisitions of new moral standards, but temperamental qualities, early training, potent example, physical stamina, dozens of accidental circumstances, that it is unfair to use the tests applicable, let us say, to a course in engineering.

Hence we must be beware of testing the value of the work by immediate results. Something may be gathered by having the students write confidentially what they think the course has done for them and where it could be improved. This they can do both at the end of the course and years later when time has brought perspective. But tests are of minor importance. The ethical shortcomings of our time, the constant need of our students for ever finer standards, convey challenge enough. Even though the obvious results fall short of our hopes, we can make the most of our resources with every assurance that they are amply needed. Are young men more likely to be the better for setting time aside to obtain with the help of an earnest student of life a clearer insight into the principles of the best living? If they are, the courses are justified, even though some who take them can show little immediate profit.

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XVI

THE TEACHING OF PSYCHOLOGY

Place of psychology in the curriculum

HISTORICALLY, as an offshoot, and rather a recent offshoot, from philosophy, psychology has been under the care of the department of philosophy in colleges and universities, foreign as well as American, and has been taught by professors concerned in part with the courses in philosophy. Though this state of affairs still obtains to a considerable extent, the tendency is undoubtedly towards allowing psychology an independent position in the organization and curriculum of the college. In recent appointments, indeed, the affiliation of psychology with education has frequently been emphasized instead of its affiliation with philosophy, for the professional applications of psychology lie more in the field of education than elsewhere. As a required study, our science is more likely to find a place in the college for teachers than in the college of arts. But, on the other hand, the applications to medicine, business, and industry are increasing so rapidly in importance as to make it logical to maintain an independent position for the science. Only in an independent position can the psychologist be free to cultivate the central body of his subject, the "pure" as distinguished from the applied science; and, with the multiplication of practical applications, it is more than ever important to center psychological teaching in the person of some one who is simply and distinctively a psychologist.

The introductory course to be general, not vocationally applied psychology

For a similar reason, psychologists are wont to insist that the introductory course in their subject, no matter for what class of students, with general or with professional aims, should be definitely a course in *psychology* as distinguished from educational or medical or business psychology. Illustrative material may very well be chosen with an eye to the special interests of a class of students, but the gen-

eral principles should be the same for all classes, and should not be too superficially treated in the rush for practical applications. Some years ago, a Committee of the American Psychological Association was appointed to make a survey of the teaching of psychology in universities, colleges, and normal schools, and the Report of this Committee (1), still the most important contribution to the pedagogy of the subject, emphasizes the concurrent view of psychologists to the effect just stated, that the study of psychology should begin with a course in the central body of doctrine. The psychological point of view must be acquired before intelligent application can be made, whether to practical pursuits or to other branches of study such as philosophy and the social sciences, to which psychology stands in the relation of an ancillary science.

During the war, the applications of psychology in the testing and selection of men and training them for specified military and naval work, in rating officers, in morale and intelligence work, and in several other lines, became so important that it was decided to give psychology a place as an "allied subject" in the curriculum of the Students' Army Training Corps; and the report of the committee of psychologists that prepared the outline of a course for this purpose deserves attention as a contribution to the pedagogy of the subject. They proposed a course on "Human Action," to be free from questions of a speculative or theoretical nature and concentrated on matters relevant to military practice and the military uses of psychology. The aim was to enlist the student's practical concern at the very outset, and to give him the psychological point of view as applied to his problems as a member of the Army and a prospective officer. In method, the course was to depend little on lectures, or even on extensive readings, and much on the student's own solution of practical psychological problems. Evidently the psychologists who prepared this plan were driven by the emergency to abandon "academic" prepossessions in favor of a course in pure psychology as the necessary prerequisite to any study of applications;

and it is quite possible that courses in psychology for different groups of students could be prepared that should follow this general plan and be intensely practical from the start. It would still remain true that the thorough psychologist should be the one to plan and conduct such courses.

The psychological point of view must be emphasized in the introductory course

The psychological point of view means attentiveness to certain matters that are neglected in the usual objective attitude toward things. It is identified by many with introspection, but there is at present considerable dissent from this doctrine, the dissenters holding that an objective type of observation of human behavior is distinctively psychological and probably more significant and fruitful than the introspective attitude. However this may be, both introspection and behavior study require attention to matters that are commonly disregarded. Every one is of course interested in what people do, or at least in the outcome of their activities; but psychology is interested in the activities themselves, in how the outcome is reached rather than in the outcome itself. Ordinarily, we are interested in the fact that an inventor has solved a problem, but regard it as rather irrelevant if he proceeds to tell us the mental process by which he reached the solution. We are interested in the fact that a child has learned to speak, but devote little thought to the question as to how he has learned. It is to bring such psychological questions to light and arouse intelligent interest in them, with some knowledge of the answers that have been found, that the psychologist is chiefly concerned when initiating beginners into his science. This primary aim is accomplished in the case of those students who testify, as some do, that the course in psychology has "opened their eyes" and made them see life in a different light than hitherto.

Values of the study of psychology — cultural rather than disciplinary

Whether this primary value of psychology is to be counted among the disciplinary or among the cultural values may be a matter of doubt. Psychologists themselves have seldom made special claims in behalf of their science as a means of formal discipline, many of them, in

fact, taking a very negative position with regard to the whole conception of such discipline. What psychology can give of general value is a point of view, and a habit of attentiveness to the mental factor. The need of some systematic attention to these matters often comes to light in the queer efforts at a psychology made by intelligent but uninstructed persons in the presence of practical problems involving the mental factor.

The practical value

Besides this "cultural" value, and besides the special uses of psychology as a preparation for teaching and certain other professions, there is a very real and practical value to be expected from an understanding of the mental mechanism. Since every one works with this mechanism, every one can make practical use of the science of it. Most persons get on passably well, perhaps, without any expert knowledge of the machinery which they are running; yet the machine is not entirely "fool proof," by any means, but sometimes comes to grief from what is in essence a lack of psychological wisdom either in the person himself or in his close companions. Mental hygiene, in short, depends on psychology. The college student, looking forward to a life of mental activity, is specially in a position to utilize information regarding the most economical working of the mental machine; and, as a matter of experience, some students are considerably helped in their methods of mental work by what they learn in the psychology class. Among the results of recent investigation are many bearing on economy and efficiency of mental work. This value of psychology, it will be seen, is practical without being professional — except in so far as all educated men can be said to adopt the profession of mental engineer. Much more emphasis than has been customary might well be laid on this side of the subject in elementary courses.

Content of the introductory course in psychology

The content of the first course in psychology is just now undergoing a certain amount of revision. Traditionally the aim has been, not so much, as in most other subjects, to initiate the student into a range of facts lying outside his previous experience, as to bring definitely to his attention

facts lying within the experience of all, and to cause him to classify these so as to refer any given mental process to the class or classes where it belongs. This calls for definition, the making of distinctions, the analysis of complex facts, the use of a technical vocabulary, and in general for much more precision of statement than the student has been used to employ in speaking of such matters. Some laws of mental action, verifiable within ordinary experience, are also brought to light in such a course, and some account of the neural mechanisms of mental life is usually included; but its chief accomplishment is in leading the student to attend to mental processes and gain a point of view that may remain his future possession.

With the great expansion of psychological knowledge in recent decades, due to research by experimental and other empirical methods, it has become possible to give a course more informational in character and going quite beyond the range of the student's previous experience; and this new material is finding its way into elementary texts and courses. Many of the results of research are not at all beyond the comprehension of the beginner; indeed, they are often more tangible than the distinctions and analyses that give the stamp to the traditional course. These empirical results also have the advantage, in many cases, of throwing light on the practical problems of mental health and efficiency; and some inclusion of such material is desirable if only to fit the needs of the considerable number of students who cannot become interested in a course of the traditional sort. Practice in this matter is at present quite variable, some teachers basing the introductory course as far as possible on the results of experiment, and others adhering closely to the older plan.

Methods of teaching psychology — Practical exercises

There is certainly some advantage in keeping the first course untechnical. The student can then be set to observing for himself, instead of depending on books. Many of the facts of psychology are so accessible, at least in a rough form, as to make the subject a good one for appealing to the spirit of independence in the student. Some

teachers are, in fact, accustomed to introduce each part of the subject by exercises, introspective or other, designed to bring the salient facts home to the student in a direct way, before he has become inoculated with the doctrine of the authorities. "The essential point is that the student be led to observe his own experience, to record his observation accurately — in a word, to psychologize; and to make the observation before, not after, discovering from book or from lecture what answers are expected to these questions. Individual experiments should so far as possible be performed in like manner before the class discussion of typical results. In all cases the results of these introspections should be recorded in writing; representative records should be read and commented on in class; and the discussion based on them should form the starting point for textbook study and for lecture." The plan thus highly recommended by Professor Calkins [1] she found not to be widely used at the time of her inquiry; a commoner practice was the assignment of reading for the student's first introduction to a given topic. This alternative plan is a line of less resistance; and it is also true that exercises in original observation by beginners in psychology are likely to be instructive mostly as evidence of the ineptness of the beginner in psychological observation. Moreover, when the content of the course is informational and based on the results of research, preliminary exercises by the student are of rather limited value, though they still could serve a useful purpose in bringing forcibly to his attention the problems to be studied.

The use of "exercises," somewhat analogous to the examples of algebra or the "originals" of geometry, is quite widespread in introductory courses in psychology, and several much-used textbooks offer sets of exercises with each chapter. Several types are in vogue: (1) some call for introspections, as, for example, "Think of your breakfast table as you sat down to it this morning — do you see it clearly as a scene before your mind's eye?" (2) some

[1] In Report, pages 50–51.

call for a review and generalization of facts presumably already known, as "Find instances of the dependence of character upon habit;" (3) many consist of simple experiments demanding no special apparatus and serving to give a direct acquaintance with matters treated in the text, such as after-images or fluctuations of attention; and (4) many call for the application of the principles announced in the text to special cases, the object being to "give the student some very definite thing to do" (Thorndike), in doing which he will secure a firm hold of the principles involved. In general, teachers of psychology aim to "keep the student doing things, instead of merely listening, reading, or seeing them done" (Seashore, 1, page 83). In a few colleges, laboratory work of a simple character forms part of the introductory course, and in one or two the laboratory part is developed to a degree comparable with what is common in chemistry or biology. As a rule, however, considerations of time and equipment have prevented the introduction of real laboratory work into the first course in psychology.

Classroom methods — The lecture

Of classroom methods, perhaps all that are employed in other subjects find application also in psychology, some teachers preferring one and some another. The lecture method is employed with great success by some of the leaders, who devote much attention to the preparation of discourse and demonstrations. One professor (anonymous) is quoted[1] as follows:

"I must here interject my ideas on the lecture system. The lecture has a twofold advantage over the recitation. (1) It is economical, since one man handles a large number of students; the method of recitation is extravagant. This fact alone will mean the retention of the lecture system, wherever it can possibly be employed with success. (2) It is educationally the better method, for the average student and the average teacher. For the reconstruction of a lecture from notes means an essay in original work, in

[1] By Sanford, 1, page 66.

original thinking; while the recitation lapses all too readily into textbook rote and verbal repetition.

"It is, nevertheless, true that sophomore students are on the whole inadequate to a lecture course. They cannot take notes; they cannot tear the heart out of a lecture. (They are also, I may add, inadequate to the reading of textbooks or general literature, in much the same way.) Hence one has to supplement the lecture by syllabi, by lists of questions (indexes, so to speak, to the lectures), and by personal interviews. . . .

"The sum and substance of my recommendations is that you provide a competently trained instructor, and let him teach psychology as he best can. What the student needs is the effect of an individuality, a personality; and the lecture system provides admirably for such effect."

The recitation

Though the lecture system is used with great success by a number of professors, the general practice inclines more to the plan of oral recitations on assigned readings in one or more texts, and large classes are often handled in several divisions in order to make the recitation method successful. Not infrequently a combination of lectures by the professor and recitations conducted by his assistants is the plan adopted, the lecturer to add impressiveness to the course, and the recitations to hold the student up to his work. Written exercises, such as those already mentioned, are often combined with the oral recitation; and in some cases themes are to be written by the students. Probably the seminar method, in which the subject is chiefly presented in themes prepared by the students, is never attempted in the introductory course.

Class discussion

On the other hand, a number of successful teachers reject both the lecture and the recitation methods, and rely for the most part upon class discussions, with outside readings in the textbooks, and frequent written recitations as a check on the student's work. A champion of the discussion method writes as follows: [1]

[1] Calkins, 1, pages 47–48.

"A teacher has not the right to spend any considerable part of the time of a class in finding out by oral questions . . . whether or not the student has done the work assigned to him. The good student does not need the questions and is bored by the stumbling replies which he hears; and even the poor student does not get what he needs, which is either instruction *a deux*, or else a corrected written recitation. . . . Not in this futile way should the instructor squander the short hours spent with his students. The purpose of these hours is twofold: first, to give to the students such necessary information as they cannot gain, or cannot so expediently gain, in some other way; second, and most important, to incite them to 'psychologize' for themselves. The first of these purposes is best gained by the lecture, the second by guided discussion. 'Guided discussion' does not mean a reversal of the recitation process — an hour in which students ask questions in any order, and of any degree of relevancy and seriousness, which the instructor answers. On the contrary, the instructor initiates and leads the discussion; he chooses its subject, maps out its field, pulls it back when it threatens to transgress its bonds, and, from time to time, summarizes its results. This he does, however, with the least possible show of his hand. He puts his question and leaves it to the student interested to answer him; he restates the bungling answer and the confused question; he leaves one student to answer the difficulties of another. . . . The advantage of the discussion over the lecture is, thus, that it fosters in the student the active attitude of the thinker in place of the passive attitude of the listener. . . . Obviously it is simplest to teach large classes by lecturing to them. Yet a spirited and relevant discussion may be conducted in a class of a hundred or so. Of course no more than eight or twelve, or, at most, twenty of these will take even a small part on a given day; perhaps a half or two thirds will never take part; and some will remain uninterested. But there will be many intelligent listeners as well as active participants; and these gain more, I be-

lieve, by the give and take of a good discussion than by constant lectures however effective."

Class experiments

Brief mention should be made of a form of class exercise peculiar to psychology, the "class experiment." This is in some respects like a demonstration, but differs from that in calling for a more active participation on the part of the student. Any psychological experiment is performed *on* a human (or animal) subject, and many experiments can be performed on a group of subjects together, each of them being called on to perform a certain task or to make a certain observation. Each of the class having made his individual record, the instructor may gather them together into an average or summary statement, and the individual variations as well as the general tendency may thus be brought to light. Very satisfactory and even scientific experiments can thus be performed, with genuine results instructive to the class.

Checking the work of the students

Of methods of holding the student to his work, mention has already been made of the much-used written recitation. The usual plan is to have frequent, very brief written examinations. Sometimes the practice is to correct and return all the papers; sometimes to place them all on file and correct samples chosen at random for determining the student's "term mark." A plan that has some psychological merit is to follow the examination immediately by a statement of the correct answers, with brief discussion of difficulties that may arise, and to ask each student to estimate the value of his own paper in the standard marking system. The papers are then collected and examined, and returned with the instructor's estimate.

Since an examination is, in effect, a form of psychological test, it is natural that psychologists should have attempted to introduce some of the technique of psychological testing into the work of examining students, in the interest of economy of the student's time as well as that of the examiner. The teacher prepares blanks which the student can quickly fill out if he knows the subject, not otherwise. To discover how far the student has attained

a psychological point of view, written work or examination questions often demand some independence in the application to new cases of what has been learned. Far-reaching tests of the later value to the student of a course in psychology have not as yet been attempted.

Place of psychology in the college course

No attempt has yet been made to obtain the consensus of opinion among psychologists as to whether the introductory course should be required of all arts students, and probably opinions would differ, without anything definitive to be said on either side. In quite a number of colleges psychology forms part of a required general course in philosophy. Where a separation has occurred between philosophy and psychology, the latter is seldom absolutely required. As a general rule, however, the introductory course, even if not required, is taken by a large share of the arts students. The traditional position for the course in psychology is late in the college curriculum, originally in the senior but more recently in the junior year. In many of the larger colleges it is now open to sophomores or even to freshmen. One motive for pushing the introductory course back into the earlier years is naturally to provide for more advanced courses in the subject; and another is the desire to make psychology prerequisite for courses in philosophy, education, or sociology. Still another motive tending in the same direction is the desire to make the practical benefits of psychological study available for the student in the further conduct of his work as a student in whatever field. If considerable attention is devoted in the introductory course to questions of mental hygiene and efficiency, the advantage of bringing these matters early to the attention of the student outweighs the objection which is often raised by teachers of psychology, as of other subjects, to admitting the younger students, on the ground of immaturity. The teachers who get the younger students may have to put up with immaturity in order that the benefit of their teaching may be carried over by the students into later parts of the curriculum.

When the introductory course in psychology forms part

Length of the introductory course

of a course in philosophy, it is usually restricted to one semester, with three hours of class work per week. When psychology is an independent subject in the curriculum, a two-semester course is usually provided, since it is the feeling of psychologists that this amount of time is needed in order to make the student really at home in the subject, and to realize for him the values that are looked for from psychology. Often there is a break between the two semesters of such a course, the second being devoted to advanced or social or applied psychology. Sometimes, on the other hand, the two-semester course is treated as a unit, the various topics being distributed over the year; this latter procedure is probably the one that finds most favor with psychologists. Still, good results can be obtained with the semester course supplemented by other courses.

Content of advanced courses in psychology

The most frequent advanced course is one in experimental psychology. This is taken by only a small fraction of those who have taken the introductory course, partly because the laboratory work attached to the experimental course demands considerable time from the student, partly because students are not encouraged to go into the laboratory unless they have a pretty serious interest in the subject. For a student who has it in him to become somewhat of an " insider " in psychology, no course is the equal of the laboratory course, supplemented by judicious readings in the original sources or in advanced treatises. Next in frequency to the experimental course stands that in applied psychology, since the recent applications of psychology to business, industry, vocational guidance, law, and medicine appeal to a considerable number of college students. Other courses which appear not infrequently in college curricula are those in social, abnormal, and animal psychology. No precise order is necessary in the taking of these courses, and it is not customary to make any beyond the introductory course prerequisite for the others.

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XVII

THE TEACHING OF EDUCATION

A. Teaching the History of Education in College

Kinds of educational values

THERE are three main kinds of educational value; viz., practical, cultural, and disciplinary. These three types of educational value probably originated in the order in which they are here mentioned. In early educational periods, all values are practical, or utilitarian. With the growth of social classes, some values become cultural; viz., those pursued by the upper classes. The disciplinary values are recognized when studies cease to have the practical and cultural values.

Meaning of educational values

By the "educational value" of a subject we mean, of course, the service which the pursuit of that subject renders. Any one subject will naturally have all three values, but no two subjects will have the same values mixed in the same proportion. The practical value of a subject depends on the use in life to which it can be put, especially its use in making a living. The cultural value of a subject depends largely on the enjoyment it contributes to life. While culture does not make a living, it makes it worth while that a living should be made. The disciplinary value of a subject depends on the amount of mental training that subject affords. Such mental training is available in further pursuit of the same, or a similar, subject. It is the fashion of educational thinking in our day to put greatest stress on the practical values, less on the cultural, and least on the disciplinary. There is no denying the reality of each type of value.

Value of the history of education

Now, what is the value of the history of education? There are no experimental studies as yet, nor scientific measurements, upon which to base an answer. The poor best we can do is to express an opinion. This opinion is

based on the views of others and on the writer's experience in teaching the history of education ten years in a liberal college (Dartmouth) and ten years in a professional graduate school (New York University). On this basis I should say that the aim of the history of education, at least as recorded in existing texts, is first cultural, then practical, and last disciplinary. Texts yet to be written for the use of teachers in training may shift the places of the cultural and the practical. This new type of text will give the history, not of educational epochs in chronological succession, but of modern educational problems in their origin and development.[1]

Its cultural value

As cultural, the history of education is the record of the efforts of society to project its own ideals into the future through shaping the young and plastic generation. There comes into this purview the successive social organizations, their ideals, and the methods utilized in embodying these ideals in young lives. Interpretations of the nature of social progress, the contribution of education to such progress, and the goal of human progress, naturally arise for discussion, and the history of education well taught as the effort of man to improve himself is both informing and inspiring. This is the cultural value of the history of education. The sense of the meaning and value of human life is enhanced. As President Faunce says,[2] "A college of arts and sciences which has no place for the study of student life past and present, no serious consideration of the great schools which have largely created civilization, is a curiously one-sided and illiberal institution."

Its practical value

As practical, the history of education, even when taught

[1] "A New Method in the History of Education," *School Review Monographs*, No. 3. H. H. Horne.

[2] Quoted in *School and Society*, Vol. 5, page 23, from President Faunce's annual report. Recent articles on the cultural value of courses in education are:

J. M. Mecklin, "The Problem of the Training of the Secondary Teacher," *School and Society*, Vol. 4, pages 64–67.

H. E. Townsend, "The Cultural Value of Courses in Education," *School and Society*, Vol. 4, pages 175–176.

from the customary general texts, throws some light on such everyday school matters as educational organization, the best methods of teaching, the right principles of education for women, how to manage classes, and the art of administering education. History cannot give the final answer to such questions, but it makes a contribution to the final answer in reporting the results of racial experience and in assisting students to understand present problems in the light of their past. The history of education has a practical value, but it is not alone the source of guidance.

Its disciplinary value

As disciplinary, the history of education shows the value of all historical study. The appeal is mainly to the memory and the judgment. The teaching is inadequate, if the appeal is only to the memory. The judgment must also be requisitioned in comparing, estimating, generalizing, and applying. Memory is indispensable in retaining the knowledge of the historical facts, and judgment is utilized in seeing the meaning of these facts. With all studies in general, history shares in training perceptive, associative, and effortful activities. Training in history is commonly supposed also to make one conservative, in contrast with training in science, which is supposed to make one progressive. But this result is not necessary, being dependent upon one's attitude toward the past. If past events are viewed as a lapse from an ideal, the study of history makes one conservative and skeptical about progress. If, on the other hand, the past is viewed as progress toward an ideal, the study of history makes one progressive, and expectant of the best that is yet to be. But, even so, familiarity with the past breeds criticism of quick expedients whereby humanity is at last to arrive. On the whole, the disciplinary value of the history of education is attained as an incident of its cultural and practical values. We are no longer trying to discipline the mind by memorizing lists of names and dates, though they be such euphonious names as those of the native American Indian tribes, but we are striving to understand man's past and present efforts at conscious self-improvement.

The various aims of students

College students will elect a course in the history of education with many different motives. They may like the teacher, they may like history in any form, they may like the hours at which the class is scheduled, some person who had the course recommended it, or they have an idea they may teach for a while after graduating. A few know they are going into teaching as a vocation in life, and appreciate in a measure the increasing exactitudes of professional training. Thus, from the student standpoint, the aims are eclectic. The results with them will be that as human beings they have a wider view of life; as citizens, perhaps as members of school boards, they are more intelligent in school matters; and as teachers they make a start in their progressive equipment. The general course in the history of education is pursued by a group of students with varying but undifferentiated motives.

A student's reaction

Once I asked a group of college students to write a frank reaction on a sixty-hour course they had just completed in the general history of education. One wrote as follows: "The history of education makes me feel that a number of what we call innovations today are a renaissance of something as 'old as the hills.' We hear a lot about pupil self-government, and we find it back in the seventeenth century. The trade school also is not a modern tendency.

"I also feel that maybe we are not giving our boys and girls a liberal education; maybe we are too utilitarian (I was very much inclined that way myself before I took this course).

"That when we wish to try something new, let's go back and see if it has not been tried before, study the circumstances, the mistakes made, the results attained, and see whether we can't profit by the experience given us by the past.

"I was also very much surprised to learn the close connection that there is between civilization and education.

"I feel that we are laying too much stress on the thinking side of training rather than on the volitional side: not

doing in the sense of utility alone, but as a means of expression."

It is easy to see the parts of the course that particularly gripped him. Another wrote as follows:

Another reaction

"The history of education makes me feel as follows about teaching:

(1) It shows the knowledge of method to be obtained from the experiences of others.

(2) It makes me feel the importance of the teacher.

(3) It shows a great field and encourages us to try to improve our own methods.

(4) It shows us the great responsibility of the profession in connection with the nation, for the school teacher to a marked degree determines the destiny of a nation.

(5) It shows the importance of free-thinking. (Illustration omitted.)

(6) It shows us the great importance of individuality along the line of teaching, for, as soon as we begin to adopt the methods of others exactly without examining them carefully, progress stops, and we are like the teachers of the Middle Ages.

(7) It shows that every teacher should have a heartfelt interest in his pupil.

(8) It makes us feel that discipline is unnecessary, if we utilize the right methods.

(9) It tells us and makes us feel above everything else that a good education is worth as much as riches and that, since we are all brothers, we ought to try to teach everybody."

An analysis of these two answers would show a combination of the cultural and practical values and, by implication at least, since they were able to say these things, a disciplinary value.

History of education should be an elective course

Should the history of education be a required or an elective course in the college curriculum? In a school of education offering a bachelor's degree, it might well be required, for both cultural and professional reasons, but in the usual department of education in a college it will

be offered as an elective course. Its cultural and disciplinary values are not such as to make its pursuit a requisite for a liberal education, and its practical value for prospective teachers, as it has been commonly taught, is not such as to warrant its prescription. Besides, the prospective teacher is animated by the vocational motive and will elect the history of education anyway, unless there are more practical courses to be had. Students in all the college courses should have the privilege of electing the history of education in view of their future citizenship.

A forty-five-hour course

A three-hour-per-week elective course for a half year, about forty-five classroom hours, will meet the needs of the average undergraduate in this subject. This amount of time is adequate for a bird's eye view of the general field, affording a unit of accomplishment in itself preparing the way for more specialized study later, though it is only about half the time requisite for presenting the details of the subject.

First term senior year

In my judgment the study of the history of education would best fall between principles and methods. The study of the principles of education should come first, as it is closely related to preceding work in the natural and mental sciences, especially biology, physiology, sociology, and psychology; it also gives a point of view from which to continue the study of education, some standard of judgment. The study of educational methods, such as general method in teaching, special method for different subjects, the technique of instruction, class management, organization and administration of schools, should come last in the course, because it will be soonest used. These practical matters should be fresh in the mind of any young college graduate beginning to teach. The history of education is a good transition in study from the theory of the first principles to the practice of school matters, affording a panorama of facts to be judged by principles and racial experiments in educational practice. This means that the choice time for the course in the history of education is the first semester of the senior year in college. There is something to

be said for making this course the introductory one in the study of education, connecting with preceding courses in history and being objective in character. There is also something to be said for giving only a practical course dealing with the history of educational problems to college undergraduates and reserving the general history of education as a complex social study for the graduate school. There is no unanimity of opinion or practice concerning the history of education.[1]

Texts and contents

What should be the content of the one-semester general course? Three modern available texts are Monroe, *A Brief Course in the History of Education* (The Macmillan Company); Graves, *A Student's History of Education* (The Macmillan Company); and Duggan, *A Student's Textbook in the History of Education* (D. Appleton & Co.). Of these Monroe's book is the first (1907), and it has greatly influenced every later text in the field. There is a general agreement in these three texts as to the content of such a course; viz., a general survey of education in the successive periods of history, including primitive, oriental, Greek, Roman, Early Christian and medieval, renaissance, reformation, realism, Locke and the disciplinary tendency, Rousseau, the psychologists, and the scientific, sociological, and eclectic tendencies. All are written from the standpoint of the conflict between the interests of society and the individual. The pages of the three books number respectively 409, 453, and 397. Graves pays most attention to the development of American education. Duggan omits the treatment of primitive and oriental education (except Jewish), "which did not contribute *directly* to Western culture and education." All are illustrated. All have good summaries, which Graves and Duggan, following S. C. Parker, who derived the suggestion from Herbart, place at the beginning of the chapter. All have bibliographical references, and Duggan adds lists of questions also. Perhaps in order of ease for students the books

[1] Cf. Thomas M. Balliet, "Normal School Curricula," *School and Society*, Vol. IV, page 340.

would be Duggan, Graves, and Monroe, though teachers would not all agree in this. Users of Monroe have a valuable aid in his epoch-making *Textbook in the History of Education* (The Macmillan Company), 772 pages, 1905, and users of Graves likewise have his three volumes as supplementary material (The Macmillan Company).

The same general ground is covered by P. J. McCormick, *History of Education* (The Catholic Educational Press), 1915, 401 pages, with especial attention given to the Middle Ages and the religious organizations of the seventeenth century. This work contains references and summaries also.

Duggan is right in omitting the treatment of primitive and oriental education on the principle of strict historical continuity, but for purposes of comparison the chapters on primitive and oriental education in the other texts serve a useful purpose.

Educational classics

A more intensive elective course in the history of education intended especially for those expecting to teach might well be offered in a college with sufficient instructors. These courses might be in educational classics, the history of modern elementary education, or the history of the high school. Texts are now available in these fields. Monroe's *Source Book for the History of Education* (The Macmillan Company), 1901, is a most useful book in studying the ancient educational classics, in which, however, the Anacharsis of Lucian does not appear, though it can be found in the Report of the United States Commissioner of Education, 1897–1898, Vol. I, pages 571–589. The renaissance classics may be studied in the works of Woodward and Laurie. The realists may be studied in the various editions of Comenius, Locke, Spencer, and Huxley. Likewise the modern naturalistic movement may be followed in the writings of Rousseau, Pestalozzi, Herbart, and Froebel. These four courses are available in educational classics: the ancient, the renaissance or humanistic, the realistic and the naturalistic.

The History of Modern Elementary Education (Ginn and

Co.) by S. C. Parker and *The High School* (The Macmillan Company) by F. W. Smith may be profitably used as texts in the courses on these topics. Parker's has but little on the organization of the elementary school, is weak on the philosophical side of the theorists treated, has nothing on Montessori, draws no lessons from history, is very brief on the present tendencies, and is somewhat heavy, prosaic, and unimaginative in style; but it is painstaking, covers all the main points well and has uncovered some valuable new material, and on the whole is the best history in English on its problem. Dr. Smith's book is really a history of education written around the origin and tendencies of the high school as central. It is a scholarly work, based on access to original Latin and other sources, though diffuse.

History of elementary and high schools

An elective course in the history of American education is highly desirable. Chancellor E. E. Brown's scholarly book on *The Making of Our Middle Schools,* or E. G. Dexter's encyclopedic book on *History of Education in the United States,* may profitably serve as texts. This course should show the European influences on American schools, the development of the American system, and the rôle of education in a democratic society. There is great opportunity for research in this field.

American education

There is room for yet another course for college undergraduates expecting to teach,— a history of educational problems. The idea is to trace the intimate history of a dozen or more of the present most urgent educational questions, with a view to understanding them better and solving them more wisely, thus enabling the study of the history of education to function more in the practice of teachers. Such a text has not yet been written. The point of view is expressed by Professor Joseph K. Hart as follows: "The large problem of education is the making of new educational history. The real reason for studying the history of education is that one may learn how to become a maker of history. For this purpose, history must awaken the mind of the student to the problems, forces, and condi-

History of educational problems

tions of the present; and its outlook must be toward the future." [1]

Methods of teaching

What should be the method of teaching the history of education in college? One of the texts will be used as a basis for assignments and study. Not less than two hours of preparation on each assignment will be expected. The general account in the text will be supplemented by the reading of source and parallel material, concerning which very definite directions will have to be given by the teacher. Each student will keep a notebook as one of the requirements of the course, which is examined by the instructor at the end. A profitable way to make a notebook is for each student to select a different modern problem and trace its origin and growth as he goes through the general history of education and its source material. In this way each student becomes a crude historian of a problem. The examination will test judgment and reason as well as memory. In the classroom the instructor will at times question the class, will at times be questioned by the class, will lecture on supplementary material, will use some half-dozen stereopticon lectures in close conjunction with the text, will have debates between chosen students, seeking variety in method without loss of unity in result. Some questions for debate might be, the superiority of the Athenian to the modern school product, the necessity of Latin and Greek for a liberal education, religious instruction in the public schools, formal discipline, whether the aim of education is cultural or vocational, whether private philanthropy is a benefit to public education, etc. It is very important in teaching so remote a subject as the history of education that the teacher have imagination, be constantly pointing modern parallels, communicate the sense that the past has made a difference in the present, and be himself kindled and quickened by man's aspirations for self-improvement. Unless our subject first inspires us, it cannot inspire our pupils. Whoever teaches the history of education because he has to

[1] "Can a College Department of Education Become Scientific?" *The Scientific Monthly*, Vol. 3, No. 4, page 381.

instead of because he wants to must expect thin results.

Testing results

In addition to the formal indication of the results of the course in the examination paper, teachers can test their results by asking for frank unsigned statements as to what the course has meant to each student, by securing suggestions from the class for the future conduct of the course, by noting whether education as a means of social evolution has been appreciated, by observing whether the attitude of individual students toward education as a life-work or as a human enterprise deserving adequate support from all intelligent citizens has developed. As future citizens, has the motive to improve schools been awakened? Particularly do more men want to teach, despite small pay and slight male companionship? The history of education does not really grip the class until its members want to rise up and do something by educational means to help set the world right.

The limits of this paper exclude the treatment of the subject in the professional training of teachers in normal schools, high schools, and graduate schools, as well as in extension courses for teachers or in their private reading.

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B. Teaching Educational Theory in College and University Departments of Education

Introductory

COURSES in education in a college or university department may be roughly classified into (*a*) the theoretical phases of education, (*b*) the historical phases, and (*c*) the applied phases. Under the historical phases may properly be included courses in the general history of education as well as those in the history of education in special countries. The applied courses may include general and special method, organization, administration, observation, and practice. Educational theory is discussed below.

A couple of decades ago the terms "philosophy of education," "science of education," and "general pedagogy," or just "pedagogy," were most generally employed. At that time most of the work in education was given in the departments of philosophy or psychology. Gradually departments of education came to have an independent status. Among the earliest were those at Michigan, under Dr. Joseph Payne, and the one at Iowa, under Dr. Stephen Fellows. Previous to the vigorous development of departments of education, the departments of psychology and philosophy gave no special attention to the educational bearings of psychology. But as soon as departments of education began to introduce courses in educational psychology and child study, the occupants of the departments of psychology rubbed their eyes, became aware of unutilized opportunities, and then began to assert claims.

Place of educational theory in the curriculum

Ordinarily the courses in educational theory are given in the junior year of college. In a few places, elementary or introductory courses are open to freshmen. There is a distinct advantage in giving courses to freshmen, if they can be made sufficiently concrete and grow out of their previous experiences. The college of education in the University of Washington, for example, is so organized that the student shall begin to think of the profession of teach-

ing immediately upon entering the University. While the main work in education courses does not come until the junior and senior years, the student receives guidance and counsel from the outset in selecting his courses and is helped to get in touch with the professional atmosphere that should surround a teacher's college. The foundation work in zoology and psychology is given as far as possible with the teaching profession in mind. It is planned to give some work of a general nature in education during the first two years, that will serve as vocational guidance and will assist the student to arrange his work most advantageously and to accomplish it most economically. By the more prolonged individual acquaintance between students and faculty of the college of education, it is hoped that the students will receive greater professional help and the faculty will be better able to judge of the teaching abilities of the students. The work in education and allied courses has been so extended that adequate professional preparation may be secured. The courses in zoölogy, psychology, and sociology are all directly contributory to a knowledge of, and to an interpretation of, the courses in education.

The great majority of undergraduate students taking education are preparing to teach, and more and more they plan to teach in the high schools. However, not a few students of medicine, law, engineering, and other technical subjects take courses in education as a means of general information. It would be exceedingly desirable if all citizens would take general courses in education, and would come to understand the meaning of educational processes and past and present practices in educational procedure. If all parents and members of school boards could have a few modern courses in educational theory and organization, the work of school teachers would be very much simplified.

So far as is known, no college or university makes education an absolute requirement such as is made with respect to foreign languages, science, mathematics, or philosophy. In a large majority of states, some work in education is re-

quired for teacher's certification. The number of states making such requirements is rapidly increasing. Before long it will be impossible for persons to engage in teaching without either attending a normal school or taking professional courses in education in college.

The scope of college courses in educational theory

The theory of education as considered in this chapter will include all those courses which have for their purpose the consideration of the fundamental meaning of education and the underlying laws or principles governing the education process. Educational theory is given in different institutions under a great variety of titles. The following are the most frequently offered: Principles of education, philosophy of education, theory of education, educational psychology, genetic psychology, experimental education, child study, adolescence, moral education, educational sociology, social aspects of education. Educational theory may be divided into courses which are elementary in character, and those which are advanced. The purpose of the former is to present to beginning students the fundamentals of reasonably well-tested principles and laws, and to indicate to them something of the various phases of education.

The purpose of advanced courses, especially in experimental education, is to reach out into new fields and by study and experiment to test and develop new theories. The experimental phases of education seek to blaze new trails and to discover new methods of reaching more economically and efficiently the goals which education seeks. Both of these phases should be given in a college course in the theory of education. Enough of the experimental work should be given in the elementary course to enable students to distinguish between mere opinion and well-established theory, to understand how the theories have been derived, to know how to subject them to crucial tests, and to give them some knowledge of methods of experimentation.

Education as a science is constantly confronted by the questions, "What are the ends and aims of education?" and "What are the means of accomplishing these ends?"

These mean that there must be a study of the ends of education as necessitated by the demands of society and the needs of the individual himself. In determining the ends of education, adult society, of which the individual is to be a part, must be surveyed, as must also the social group of which the child is now an integral part. In addition to these the laws of growth and development must be studied, to understand what will contribute effectively to the child's normal unfoldment.

The interpretation of the ends and means of education will determine the field of the theory of education. This interpretation has been so splendidly stated by Dewey that I venture to quote him at length. He says (*My Pedagogic Creed*): "I believe that this educational process has two sides — one psychological and one sociological: and that neither can be subordinated to the other or neglected without evil results following. Of these two sides, the psychological is the basis. The child's own instincts and powers furnish the material and give the starting point for all education. Save as the efforts of the educator connect with some activity which the child is carrying on of his own initiative independent of the educator, education becomes reduced to a pressure from without. It may, indeed, give certain external results, but cannot truly be called educative. Without insight into the psychological structure and activities of the individual, the educative processes will, therefore, be haphazard and arbitrary. If it chances to coincide with the child's activity, it will get a leverage; if it does not, it will result in friction, or disintegration, or arrest of the child nature.

"I believe that knowledge of social conditions, of the present state of civilization, is necessary in order properly to interpret the child's powers. The child has his own instincts and tendencies, but we do not know what these mean until we can translate them into their social equivalents. We must be able to carry them back into a social past and see them as the inheritance of previous race activities. We must be able to project them into the future

to see what their outcome and end will be. In the illustration just used, it is the ability to see in the child's babblings the promise and potency of the future social intercourse and conversation which enables one to deal in the proper way with that instinct.

"I believe that the psychological and social sides are organically related, and that education cannot be regarded as a compromise between the two, or a superimposition of one upon the other. We are told that the psychological definition of education is barren and formal — that it gives us only the idea of a development of all the mental powers without giving us an idea of the use to which these powers are put. On the other hand, it is urged that the social definition of education, as getting adjusted to civilization, makes a forced and external process, and results in subordinating the freedom of the individual to a preconceived social and political status.

"I believe each of these objections is true when urged against one side isolated from the other. In order to know what a power really is we must know what its end, use, or function is; and this we cannot know, save as we conceive of the individual as active in social relationships. But, on the other hand, the only possible adjustment which we can give to the child under existing conditions is that which arises through putting him in complete possession of all of his powers. With the advent of democracy and modern industrial conditions, it is impossible to foretell definitely just what civilization will be twenty years from now. Hence it is impossible to prepare the child for any precise set of conditions. To prepare him for the future life means to give him command of himself; it means so to train him that he will have the full and ready use of all his capacities, that his eye and ear and hand may be tools ready to command, that his judgment may be capable of grasping the conditions under which it has to work, and the executive forces be trained to act economically and efficiently. It is impossible to reach this sort of adjustment save as constant regard is had to the individual's own

powers, tastes, and interests; say, that is, as education is continually converted into psychological terms.

"In sum, I believe that the individual who is to be educated is a social individual, and that society is an organic union of individuals. If we eliminate the social factor from the child, we are left only with an abstraction; if we eliminate the individual factor from society, we are left only with an inert and lifeless mass. Education, therefore, must begin with a psychological insight into the child's capacities, interests, and habits. It must be controlled at every point by reference to these same considerations. These powers, interests, and habits must be continually interpreted — we must know what they mean. They must be translated into terms of their social equivalents — into terms of what they are capable of in the way of social service."

Therefore, the fundamental course in educational theory must include (1) the biological principles of education, (2) the psychological principles of education, and (3) the social principles of education. This does not mean that the sequence must be as enumerated here. In some places that is the sequence followed, in some other places the social principles are studied first. As a matter of fact, all three phases must be studied together to a considerable extent. Probably a purely logical arrangement would place the social phases first, but it is almost futile to attempt to present them effectively until something of the biological and psychological laws are first established. Again, the student in beginning the formal study of education is already in possession of a vast body of facts concerning society and the relation of education to it, so that reference can be advantageously made in connection with the study of biological and psychological laws of education. Then the social principles and applications can be more thoroughly and scientifically considered in the light of the other phases.

In administering a college course in the theory of education the great desideratum is to try to formulate a body

of knowledge which will give the undergraduate students an idea of the meaning of education and its problems and processes. In so far as possible it is desirable to present material which in a certain sense will be practical. Inasmuch as the majority of undergraduates who study education in a college department intend to go into the practical work of teaching, it is important to fortify them, as well as possible in the brief time which they devote to the subject, concerning the best means of securing definite results in education. The majority are not so much interested in the abstract science or the philosophy of education as they are in its practical problems. All courses in education should seek to deal with fundamental principles and not dole out dogmatic statements of practical means and devices, but at the same time no principles should be considered with which the student cannot see some relation to the educative processes. They are not primarily concerned with the place of education among the sciences or with ontological and teleological meanings of education or of its laws.

Academic recognition of the introductory course

The course in elementary educational theory should be on a par with a course in principles of physics, one in principles of biology, principles of psychology, principles of political science, etc. A course in the principles of any of these subjects attempts to set forth the main problems with which the science deals. Elementary courses attempt to select those principles which have frequent application in everyday life. The course in the principles of physics deals with the elementary notions of matter, motion, and force, and everyday illustrations and problems are sought. It would seem that in a similar manner the college course in the foundations of education should seek elementary principles which will enable the student to accomplish the purpose of education; namely, to produce modifications in individuals and in society in harmony with the ideals and ends of education. Education is a process of adjusting individuals to their environment, natural and accidental, and the environment which is created through ideals held by society and by individuals themselves. All education has

to do with the development of the individual in accordance with his potentialities and the ideals of education which are set up. It is a practical science, an applied science, in the same way that engineering is an applied science. Engineering does not deal with ultimate theories of matter, force, and motion, except as they are important in considering practical ends to be secured through the application of forces. An elementary course in educational theory should seek to include the foundations rather than to encompass all knowledge about education. It is rather an introduction than an encyclopedia.

Although a complete and logical treatise on the theory of education might include a consideration of the course of study and the methods of instruction, the making of a course of study, the problem of the arrangement of the course of study, the various studies as instruments of experience, the organization and administration of education, etc., it is questionable from a practical point of view whether they should be given consideration in the undergraduate course. Mere passing notice would at any rate seem sufficient. Each topic of the scope of the foregoing is sufficient to form a course in itself, and the introductory course should do no more than define their relation to the general problem. In the principles of psychology the fields of abnormal psychology, comparative psychology, child psychology, adolescent psychology, etc., are defined and drawn upon for illustration, yet no separate chapters are devoted to them. In departments of political economy there are usually elemental courses designed as an introduction to the leading principles of economic science, but there are special courses in currency and banking, public finance, taxation, transportation, distribution of wealth, etc.

Similarly in the college course in the theory of education, the work should be concentrated upon fundamentals designed to introduce the student to the many special problems. For example, the course of study and the organization and administration of education should be regarded as accessory rather than as fundamental. The laws under-

lying processes of development and modification are what should occupy the attention of the student in this elemental survey. A study of the special means and agencies of education and forms of social organization should be given in other courses by special names. Secondary education, the kindergarten, administration and supervision, methods in special subjects, etc., each deserve attention as a distinct and separate course.

As shown by two surveys made by the writer, one in 1909 and the last in 1916, the theory of education is most frequently given under the terms "Principles of Education," "Educational Psychology," "Social Phases of Education," "Educational Sociology," and "Child Study." Therefore, a brief special discussion of each of these fields may be desirable.

Principles of education

Under various names courses in principles of education are given in most departments of education. The term "Principles of Education" does not appear in all, being replaced by "Principles of Teaching," "Philosophy of Education," "Fundamentals of Teaching," "Introduction to Education," "Science of Education," "Principles of Method," "Theory of Education," etc. In some institutions the terms "Educational Psychology" and "Child Study" stand for essentially the same thing as the foregoing. In most institutions it is recognized that the teacher must understand (*a*) the meaning and aim of education, (*b*) the nature of the child considered biologically, psychologically, socially, and morally, (*c*) the foundations of society and the industries, (*d*) how to adapt and utilize educational means so as to develop the potentialities of the child's nature and cause him to achieve the aims of education.

Biological principles

In this section there should be an attempt first to enlarge the notion of education, aiming to have it regarded as practically coincident with life and experience. Of course there is the ideal side to which individuals will strive, but the student should be impressed with the fact that every experience leaves its ineffaceable effect upon all organisms. In order to convey this idea we may begin with a discussion

of the effects of experience upon simple animal and plant life and the general modifications produced in the adjustment of such life to surroundings. Some familiar, non-technical facts in the evolution of plant and animal life may be considered in their relation to the question of adaptation and adjustment. Due notice should be taken of the facts of adjustment as manifested in such illustrations as the change of the eyes of cave animals, gradual modifications of plant and animal life, the change of animals from sea life to land life, some of the retrogressions, etc. A general study of the gradual evolution of sense organs and the nervous system should be made, because these illustrate in an excellent way the gradual modifications produced by experience in the race. After this general survey, the subject of innate tendencies may be considered through the discussion of such chapters as Drummond's "The ascent of the body," "The scaffolding left in the body," "The arrest of the body," "The dawn of mind," "The evolution of language," etc. These discussions naturally lead to a consideration of the lengthening period of human infancy, and the importance of infancy in education. This in turn leads to a brief consideration of the periods of childhood, adolescence, and maturity, largely from a biological point of view. These should be followed by a discussion of such topics as instinct, heredity, from fundamental to accessory, the brain as an organ of mind, some of the facts of psycho-physical correlation, and the reciprocal influence of mind and body upon each other. Before leaving this general field, thorough and designedly practical discussions of the importance of physical development and culture for education in general and for mental development, fatigue, habit, physical and mental hygiene, and play should be considered.

Educational psychology

The next section should include what some authors term educational psychology, and others call the psychological aspects of education. In this section the first topic naturally considered is that of memory. It grows out of the biological discussion of instinct, heredity, etc. Included

in the subject of memory is that of association. Following this come imagination, imitation, training of the senses, apperception, formal discipline, feeling, volition, motor training, induction, etc. Periods of mental development and the specific topics of childhood and adolescence should receive definite consideration, though more exhaustive treatment should be reserved for a distinct course in child study. The genetic point of view should be emphasized throughout.

While the number of students registered for educational psychology is not large, the numbers that are in reality pursuing this branch are increasing. Fortunately, the "psychology for teachers" and "applied psychology" of a score of years ago are giving way to a kind of educational psychology that is much more vital. Men like Judd and Thorndike are formulating a psychology of the different branches of study and of the teaching processes involved that will enable the teacher to see the connection between the psychological laws and the processes to be learned. This sort of work has been made possible by the work of Hall and his followers in studying the child and the adolescent from the standpoint of growth periods and the types of activity suited to each period. Educational psychology is therefore represented richly in principles of education, genetic psychology, mental development, child study, and adolescence, as well as in the courses labeled "Educational Psychology."

Social aspects of education

Twelve years ago courses on social phases of education were probably not offered anywhere, as they are not listed in my tabulation at that time. Today they appear in some form or other in almost every department of education. In Columbia the work is given as "Educational Sociology." The departments of sociology also emphasize various phases of educational problems. Courses on vocational education, industrial education, and vocational guidance all emphasize the same idea. The introduction of these courses means that the merely disciplinary aim of education is fast giving way to that of adjustment and utility. Educational means are (1) to enable the child to live happily and to develop

normally, and (2) to furnish a kind of training which will enable him to serve society to the utmost advantage. In the courses on educational sociology, there should be an attempt to help the student feel that the highest aim of education is not individualistic, but social. The purpose is to fit the individual for coöperation, developing agencies of life that shall be mutually advantageous, for democratic society seeks the highest welfare of all its members through the coöperation and contribution of each of its members. It teaches us not only the rights and privileges of society but also its duties and obligations.

The best individual development also comes only through the social interaction of minds, and consequently various phases of social psychology must receive consideration. Various forms of coöperative effort which enlist the interest of children at various stages of development should be studied. Inasmuch as educators should link school and home, typical illustrations of the manifold means of relating the school and society should be studied, so that the teacher will not be without knowledge of their possibilities.

The child the center

Throughout the country there is evidence that the curricula in education departments have for their central object a scientific knowledge of the child and the better adaptation of educational means to the development of the potentialities possessed by the child. This idea is evidenced by the fact that the foundation courses are psychology, principles of education, child study, educational psychology. The fact that the history of education is still so largely given as a relatively beginning course shows that the new idea has not gained complete acceptance. Many specialized courses in child study are offered, among them being such courses as the "Psychology of Childhood," "Childhood and Adolescence," "Psychopathic, Retarded, and Mentally Deficient Children," "Genetic Psychology," "The Anthropological Study of Children," "The Physical Nature of the Child." At the University of Pittsburgh a school of childhood has been established which will combine in theory and practice the best ideals in the kinder-

garten, the modern primary school, and the Montessori system. Clark University has had for some years its Children's Institute, which attempts to assemble the best literature on childhood and the best materials of instruction in childhood. Many of the courses in educational tests and measurements center around the study of the child.

Methods of teaching the subject

Naturally, methods of teaching the subject vary exceedingly in the different institutions. Each instructor to a large extent follows his own individual inclinations. Probably the great majority pursue the lecture method to a considerable extent. The lectures are generally accompanied by readings either from some textbook or from collateral readings.

The writer has personally pursued the combination method. For years before his own book on *Principles of Education* was completed the subject was presented in lecture form, and accompanied by library readings. Even now, with a textbook at hand, each new topic is outlined in an informal development lecture. Definite assignments are made from the text, and from collateral readings, which include additional texts, periodical literature, and selected chapters from various educational books. After students have had an opportunity to read copiously and to think out special problems, an attempt is made to discuss the entire topic orally. That is possible and very fruitful in classes of the right size,— not over thirty. In large classes numbering from sixty to one hundred or more, the oral discussion is not profitable unless the instructor is very skilled in conducting the discussion. The questions should never be for the purpose of merely securing answers perfectly obvious to all in the class. The questions should seek to unfold new phases of the subject. Difficult points should be considered, new contributions should be made by the students and the instructor, and all should feel that it is really an enlargement, a broadening, and a deepening of ideas gained through the lectures and the assigned readings. Very frequently individual students should be assigned special topics for report. A good deal of care must be

exercised in this connection, for unless the material is a real contribution and is presented effectively, the rest of the students become wearied. If possible, the instructor should know exactly what points are to be brought out, and the approximate amount of time to be occupied.

Throughout, an attempt is made to make the work as concrete as possible, and to show its relation to matters pertaining to the schoolroom, the home, and the everyday conduct of the students themselves. Each topic is treated with considerable thoroughness and detail. No endeavor is made to secure an absolutely systematic and ultra-logical system. The charge of being logically unsystematic and incomplete would not be resented. There is no desire for a system. As in the elementary stages of any subject, the first requisite is a body of fundamental facts. There is time enough later to evolve an all-inclusive and all-exclusive system. I am not aware that even the "doctors" have yet fully settled this question. The psychological order is the one sought. What is intelligible, full of living interest, and of largest probable importance in the life and work of the student teacher are the criteria applied in the selection of materials. The student verdict is given much weight in deciding.

A rather successful plan of providing an adequate number of duplicates of books much used has been developed by the writer at the State University of Iowa and at the University of Washington. In all courses in which no single suitable text is found the students are asked to contribute a small sum, from twenty-five to fifty cents, for the purpose of purchasing duplicates. These books are placed on the reserve shelf, and this makes it possible for large classes to be accommodated with a relatively small number of books. Ordinarily there should be one book for every four or five students, if all are expected to read the same assignment. If options are allowed, the proportion of books may be reduced. The books become the property of the institution, and a fine library of duplicate sets rapidly accumulates. In about five years about fifteen hundred vol-

umes have been secured in this way at the University of Washington. Valuable pamphlet material and reprints of important articles also are collected and kept in filing boxes.

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PART FOUR

The Languages and Literatures

XVIII

THE TEACHING OF ENGLISH LITERATURE

Scope of study of English literature in college

IT should be understood at the outset that this paper is concerned with the study of literature, not in the university or graduate school, but in the college, by the undergraduate candidate for the bachelor's degree; and, furthermore, that the object of study is not the history, biography, bibliography, or criticism of literature, but the literature itself. Perhaps also the term "literature" may need definition. As commonly — and correctly — used, the word "literature" denotes all writing which has sufficient emotional interest, whether primary or incidental, to give it permanence. As thus defined, literature would include, for example, history and much philosophical writing, and would exclude only writing of purely scientific or technical character. But in the following pages the word will be used in a narrower sense, as indicating those books that are read for their own sake, not solely or primarily for their intellectual content. This definition is elastic enough to comprise not only poetry, drama, and fiction, but the essay, oratory, and much political and satirical prose. It should be further understood that for the purpose of this paper, English literature may be considered to begin about the middle of the fourteenth century. Earlier and Anglo-Saxon writings are by no means without great literary value, and it may at once be granted that no college teacher of English literature is thoroughly equipped for his work who is ignorant of them; but they can be read appreciatively only after considerable study of the language, the method and motives of which are linguistic rather than literary.

Aims governing the teaching of English literature

Perhaps it may be asked just here whether English literature, as thus defined, need be studied in college at all. Until quite recently that question seems generally to have been answered in the negative. Fifty years ago, few if any of our American colleges gave any study to texts of English

classics. There were, indeed, in most colleges professors of rhetoric and *belles-lettres*, whose lectures upon the history and criticism of our literature were often of great value as an inspiration to literary study; but it was only in the decade from 1865 to 1875 that in most of our colleges the literature itself, with hesitating caution, began to be read and studied in the classroom.

Can literary appreciation be developed?

Nor was this hesitation without some reasons, at least plausible. The chief object of college training, it was said, is to discipline and strengthen the intellect, to give the student that grasp and power of thought which he may apply to all the work of later life. The college should not be expected to pay much attention to the cultivation of the imagination and the emotions. These faculties, to which literature makes appeal, are not, it was said, under the control of the will, and you cannot cultivate or strengthen them by sheer resolve or strenuous exertion. The first condition of any real appreciation of literature, so ran the argument, is spontaneous enjoyment of it; and you cannot command a right feeling for literature or for anything else. But a normal development of the imagination and the emotions does usually accompany the vigorous development of the intellect, so that the advancing student will be found to turn spontaneously to art and literature. And his appreciation of all the highest and deepest meanings in literature will be quickened because he brings to his reading a mind trained to accurate and vigorous thinking. Moreover, all substantial advantages from the study of modern vernacular literature can be better obtained from the Greek and Latin classics. They afford the same richness of thought and charm of form as our modern writing; but they demand for their appreciation that careful attention and study which modern literature too often discourages. The survivors of a former generation sometimes ask us today, with a touch of sarcasm, "Do you think the average New England college student of fifty to seventy-five years ago, when the Emersons and Longfellows and Lowells were young men, the days of the old *North Ameri-*

can Review and the new *Atlantic Monthly*, had any less appreciation and enjoyment of whatever is good in literature, or any less power to produce it, than the young fellows who are coming out of college today after more than a quarter century of literary instruction?" And they occasionally suggest that, at all events, it is difficult to find any evidences of the result of such instruction in the quality of the literature produced or demanded today.

Conflict of utilitarian and cultural standards

On the other hand, the study of English literature often fares little better with the advocates of the modern practical tendency in education. They have but scanty allowance for a study assumed to be of so little use in the actual work of life. An acquaintance with well-known English books, especially if they be modern books, is, they admit, a desirable accomplishment if it can be gained without too much cost, but not to be allowed the place of more valuable knowledge. A typical modern father, writing not long ago to a modern educator, after giving with equal positiveness the subjects that his boy must have and must not have included in his course of study, added by way of concession, "The boy might, if he has time, take English literature."

Cultural and utilitarian standards harmonized

Now in answer to this second class of objectors, it may be frankly admitted that the study of English literature is primarily, if not entirely, cultural. A boy may not make a better engineer or practical chemist for having studied in college the plays of Shakespeare or the prose of Ruskin. And to the older objectors, who urge that literary study can ever give that severe intellectual discipline afforded by the older, narrower college course, we reply that it is not merely the intellectual powers that need culture and discipline. The ideal college training will surely not neglect the imagination and emotions, the faculties which so largely determine the conduct of life. And at no period in the educational process is the need of wide moral training so urgent as in those years when the young man is forming independent judgments and his tastes are taking their final set. The study of English literature finds its warrant

for a place in the college curriculum principally because, better than any other subject, it is fitted to cultivate both the emotional and the intellectual sides of our nature. For in all genuine literature those two elements, the intellectual and the emotional, are united; you cannot get either one fully without getting the other. In some forms of literature, as in poetry, the emotional appeal is the main purpose of the writing; but even here no really profound or sublime emotion is possible without a solid basis of thought.

Appreciation the ultimate aim in the teaching of literature

This, then, let us understand, is the primary object of all college teaching in this department. It affords the student opportunity and incitement to read, during his four years, a considerable number of our best classics, representative of different periods and different forms of literature, and to read them with such intelligence and appreciation as to receive from them that discipline of thought and feeling which literature better than anything else is fitted to impart. If the student would or could do this reading by himself, without formal requirement or assistance, there might be little need of undergraduate teaching of literature; but every one who knows much of American college conditions knows that the average undergraduate has neither time, inclination, nor ability for such voluntary reading.

Appreciative study of literary masterpieces involves vigorous mental exercise

Just here lies a difficulty peculiar to the college teacher in this department. All studies that appeal primarily to the intellect and call only for careful attention and vigorous thinking can be prescribed, and mastery of them rigidly enforced. Indeed, the ambitious student is often stimulated to more vigorous effort by the very difficulty of his subject. But the appreciative reading of any work of literature cannot thus be prescribed. Of course the instructor may do much to help the student to such appreciation — that, indeed, is his chief duty; but he will not try to expound or enjoin emotional effects. Recognizing these limitations upon his work, he often finds it difficult to avoid one or the other of two dangers that beset all efforts to teach a vernacular literature: the student must not think

his reading an idle pastime, nor, on the other hand, must he think it a repellent task. In the first case, he is likely never to read anything well; in the second case, the things best worth reading he will probably never read at all. Of the two dangers, the first is the more serious. The student ought early to learn that no really good reading is "light reading." And it may be remarked that this lesson was never more needed than today. There was never a time when people of all classes read more and thought less. We have what might almost be called a plague of reading, and an astonishing amount of what is called "reading matter" rolling out of our presses every year; while, significantly, we are producing very few books of permanent literary value. If the college study of literature is to encourage this indolent receptive temper, and relax the intellectual fiber of the student, then we might better drop it from the curriculum. The student must somehow learn that the book that is worth while will tax his thought, his imagination, his sympathies. He cannot be content merely to leave the door of his mind lazily open to it. Every teacher knows the difficulty in any attempt to inspire or direct such a pupil. And the simpler the subject assigned him, the greater the difficulty. Give him, for example, a group of the best lyrics in the language, in which the thought is simple and the sentiment homely or familiar. He will glance over them in half an hour, and then wonder what more you want of him. And you may not find it so easy to tell him. For he does not perceive nice shades of feeling, he has little sense of poetic form, he has not read the poems aloud to get the charm of their melody, and he will not let them linger in his mind long enough to feel that the simplest sentiments are often the most profound and moving. He simply tries to conjecture what sort of questions he is likely to meet on examination. Doubtless from this type of pupil better results can be obtained by the reading of prose not too familiar, that suggests more questions for reflection and discussion.

Suggestions for teaching of English literature — Emotional appreciation to have an intellectual basis

It is perhaps impossible to lay down a detailed method for the teaching of English literature. Much depends upon the nature of the literature read, the temperament of the teacher, the aptitude of the pupil. Every teacher will, in great measure, discover his own methods. At all events, no attempts will be made here to give more than a few suggestions. In the first place, the teacher will remember that every work of literature — except purely "imagist" poetry, which it is hardly worth while to teach — is based upon some thought or truth; in most varieties of prose literature this forms the main purpose of the writing. The first object of the student's reading, therefore, must be to understand thoroughly the intellectual element in what he reads; and here the instructor can often be of direct assistance. And after such careful reading, the higher emotional values of what he has read will often disclose themselves spontaneously, so that the reader will need little further help.

Abundant oral reading by teacher an aid to appreciation

Just here it is worth while to note the great value of reading aloud, both by the teacher as a means of instruction, and by the pupil as a test of appreciation. All good writing gains vastly when read thus. Mentally, at all events, we must image its sound if we are to get its full value. As to poetry, that goes without saying; for the essential, defining element in poetry is music. You may have truth, beauty, imagination, emotion, but without music you have not yet got poetry. But it is hardly less true that prose should be read aloud. "The best test of good writing," said Hazlitt — and no man in his generation wrote better prose than he —"is, does it read well aloud." The sympathetic oral reading of a passage from any prose master, a reading that naturally indicates points of emphasis, shades of thought, nuances of feeling, is often better than any formal explanation, for it reproduces the living voice of the writer. The wise teacher will avoid the mannerisms of the professed elocutionist or dramatic reader, but he will not neglect the value of truthful oral interpretation for many passages of beautiful, or subtle, or power-

ful writing. And the student will often give a better proof of intelligent appreciation by reading aloud, "with good accent and discretion," than by any more elaborate form of examination.

Knowledge of author's life and art and of ideals of the times necessary for comprehension and appreciation

Some varieties of literature can best be approached indirectly, through a study of the life of the author, or of the age in which he lived. As any great work of pure literature must come out of the author's deepest life, it is evident that any knowledge of that life gained from other sources may be an important aid in the appreciation of his work. It is true that in the case of a writer of supreme and almost impartial dramatic genius, such knowledge may be of comparatively little value; though few of us will admit that it is merely an idle curiosity that would be gratified by a fuller knowledge even of the man William Shakespeare. But all the more subjective forms of literature, such as the lyric and the essay, can hardly be studied intelligently without some biographical introduction. Still more obvious is the need in many instances of some accurate knowledge of the period in which a given work is produced. For all such writing as grows directly out of political or social conditions, as oratory, or political satire, or various forms of the essay, this is clearly necessary. It would be folly to attempt to read the speeches of Edmund Burke or the political writings of Swift without historical introduction and comment. But the historical setting is hardly less important in many other forms of literature. For the whole cast of an author's mind, the habitual tone of his feeling on most important matters, is often largely decided by his environment. It is only a very inadequate appreciation, for example, of the work not only of Carlyle and Ruskin but of Tennyson, Browning, and Matthew Arnold, that is possible without some correct knowledge of the varying attitude of these men toward important movements in English thought, social, economic, religious, between 1830 and 1880. It must always be an important part of the duty of the college teacher of literature to provide such biographical and historical information.

Knowledge of an author's style to be result of appreciative study of his works and not gathered from texts on literary criticism

All careful study of literature must involve some attention to manner or style — not so much, however, for its own sake, as a means for the fuller appreciation of what is read. In strictness, style has only one virtue, clearness; only one vice, obscurity. A perfect style is a transparent medium through which we plainly see the thought and feeling of the writer. Such a style may, indeed, often have striking peculiarities, but these are really the marks of the writer's personality, which his style reveals without exaggerating. All rhetorical study ought, therefore, to accompany or follow, not to precede, the careful reading for appreciation. No good book ought ever to be considered a mere *corpus vile* for rhetorical praxis.

Careful attention to critical analysis

Of much greater value is that distinctively critical analysis which endeavors to discover the different elements, intellectual, imaginative, emotional, that enter into any work of literature, and to determine their relative amount and importance. Such analysis may well form the subject of classroom discussion, and advanced students should often be required to put the conclusions they have drawn from such discussion into the form of a finished critical essay. All exercises of this kind presuppose, of course, that the work criticized has been read with interest and intelligence; but no form of literary study is more stimulating or tends more directly to the formation of original and accurate critical judgments. It affords the best test of real literary appreciation.

Content of college course in literature

Obviously it is impossible with this method of study to cover the entire field of English literature in the four college years. It is wiser to read a few great books well than to read many smaller ones hurriedly. It becomes, therefore, an important question on what principle these books should be selected and grouped in courses. In the opinion of the present writer, it is well to begin with a brief outline sketch of the history of the literature given either in a textbook or by lectures, and illustrated by a few representative works, read carefully but without much detailed or intensive study. Such an

introductory course may have little cultural value; but it furnishes that knowledge of the chronological succession of English writers, and the varieties of literature dominant in each period, that is necessary for further intelligent study. This knowledge should, indeed, be given in the preparatory schools, but unfortunately it usually is not. When given in college, the course should, if possible, be assigned to the freshman year. In the later years, the works selected for study will best be grouped either by period or by subject. Both plans have their advantages, but in most instances the first will be found the better. The study of a group of contemporary writers always gains in interest as we see how they all, with striking individual differences in temper and subject, yet reflect the social and moral life of their age. Sometimes the two plans may be united; a particular form of literature may be studied as the best representative of a period, as the political pamphlet for the age of Queen Anne or the extended essay for the first quarter of the nineteenth century. And in some rare instances a single writer is at once the highest representative of the age in which he lived and the supreme master of the form in which he wrote — as Shakespeare for the drama and Milton for the epic.

Gradation of courses and adaptation of methods to growing capacities of students

These courses should all — in the judgment of the present writer — be elective, but should be arranged in some natural sequence, those assigned to a lower year being preparatory to those of a higher. This sequence need not always be historical; the simpler course may well precede those which for any reason are more difficult. Methods of instruction will also naturally change, becoming less narrowly didactic with the advancement of the student. In the senior year the teacher will usually prefer to meet his classes in small sections, on the seminar plan, for informal discussion and the criticism of papers written by his pupils on questions suggested by their reading. Of such questions, students who for four years have been reading the masterpieces of English literature will surely find no lack.

The number of courses that can be offered in the department will depend in some cases upon the relative size of the faculty and the student body. For in no other subject is it more important, especially in the later years, that the classes or sections should be small enough to allow some intimate personal touch between professor and student. It may be safely said that no college department of English literature is well officered or equipped that does not furnish at least four or five year-long courses of instruction. And certainly no student can maintain for four years such an acquaintance with the best specimens of a great literature without gaining something of that broad intelligence, heightened imagination, and just appreciation of whatever is best in nature and in human life, which combine in what we call culture.

Undergraduate vs. graduate teaching of English literature

Throughout this paper it has been assumed that what has been termed appreciation — that is, the ability to understand and enjoy the best things in literature — is the one central purpose to which all efforts must be subservient, in the teaching of English literature. But it should be remembered, as stated at the outset, that this paper has to do with the college undergraduate only, the candidate for the bachelor's degree. In the university, and to some extent in the graduate courses of the college leading to the master's degree, the subjects and methods of teaching may well be very different. Studies in comparative literature, studies of literary origins, the investigation of perplexed or controverted questions in the life or work of an author, the study and elucidation of the work of an unknown or little-known writer — all these and many other similar matters may very properly be the subjects of specialized graduate study. But they will rarely be found of most profit to undergraduate classes.

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XIX

THE TEACHING OF ENGLISH COMPOSITION [1]

Language an index of mental development

"DEEDS, not words," is a platitude — a flat statement which reduces the facts of the case to an average, and calls that truth. It is absurd to imply, as does this old truism, that we may never judge a man by his words. Words are often the most convenient indices of education, of cultivation, and of intellectual power. And what is more, a man's speech, a man's writing, when properly interpreted, may sometimes measure the potentialities of the mind more thoroughly, more accurately, than the deeds which environment, opportunity, or luck permit. It is hard enough to take the intellectual measure even of the makers of history by their acts, so rapidly does the apparent value of their accomplishments vary with changing conceptions of what is and what is not worth doing. It is infinitely more difficult to judge in advance of youths just going out into the world by what they do. Their words, which reveal what they are thinking and how they are thinking, give almost the only vision of their minds; and "by their words ye shall know them" becomes not a perversion, but an adaptation of the old text. Would you judge of a boy just graduated entirely by the acts he had performed in college? If you did, you would make some profound and illuminating mistakes.

This explains, I think, why parents, and teachers, and college presidents, and even undergraduates, are exercised over the study of writing English — which is, after all, just the study of the proper putting together of words. They may believe, all of them, that their concern is merely for the results of the power to write well — the ability to compose a good letter, to speak forcibly on occasion, to offer the amount of literacy required for most "jobs."

[1] Reprinted in revised form from *College Sons and College Fathers*, Harper and Brothers.

But I wonder if the quite surprising keenness of their interest is not due to another cause. I wonder if they do not feel — perhaps unconsciously — that words indicate the man, that the power to write well shows intellect, and measures, if not its profundity, at least the stage of its development. We fasten on the defects of the letters written by undergraduates, on their faltering speeches, on their confused examination papers, as something significant, ominous, worthy even of comment in the press. And we are, I believe, perfectly right. Speech and writing, if you get them in fair samples, indicate the extent and the value of a college education far better than a degree.

Disappointing results from teaching of composition

It is this conviction which, pressing upon the schools and colleges, has caused such a flood of courses and textbooks, such an expenditure of time, energy, and money in the teaching of composition, so many ardent hopes of accomplishment, so much bitter disappointment at relative failure. I do not know how many are directly or indirectly teaching the writing of English in America — perhaps some tens of thousands; the imagination falters at the thought of how many are trying to learn it. Thus the parent, conscious of this enormous endeavor and the convictions which inspire it, is somewhat appalled to hear the critics without the colleges maintaining that we are not teaching good writing, and the critics within protesting that good writing cannot be taught.

Fixing responsibility for alleged failure of composition teaching

It is with the teachers, the administrators, the theorists on education, but most of all the teachers, that the responsibility for the alleged failure of this great project — to endow the college graduate with adequate powers of expression — must be sought. But these guardians of expression are divided into many groups, of which four are chief.

There is first the great party of the Know-Nothings, who plan and teach with no opinion whatsoever as to the ends of their teaching. Under the conditions of human nature and current financial rewards for the work, this party is inevitably large; but it counts for nothing except inertia.

There is next the respectable and efficient cohort of the Do-Nothings, who believe that good writing and speaking are natural emanations from culture, as health from exercise or clouds from the sea. They would cultivate the mind of the undergraduate, and let expression take care of itself. They do not believe in teaching English composition. Next are the Formalists, who hold up a dictionary in one hand, the rules of rhetoric in the other, and say, "Learn these, and good writing and good speaking shall be added unto you." The Formalists have weakened in late years. There have been desertions to the Do-Nothings, for the work of grinding rules into unwilling minds is hard, and it is far easier to adopt a policy of *laissez-faire*. But there have been far more desertions into a party which I shall call, for want of a better name, the Optimists. The Optimists believe that in teaching to write and speak the American college is accepting its most significant if not its greatest duty. They believe that we must understand what causes good writing, in order to teach it; and that for the average undergraduate writing must be taught.

Divergent views on teaching of composition

The best way to approach this grand battleground of educational policies is by the very practical fashion of pretending (if pretense is necessary) that you have a son (or a daughter) ready for college. What does he need, what must he have in a writing way, in a speaking way, when he has passed through all the education you see fit to give him? What should he possess of such ability in order to satisfy the world and himself? Facts, ideas and imagination, to put it roughly, make up the substance of expression. Facts he must be able to present clearly and faithfully; ideas he must be able to present clearly and comprehensively; his imagination he will need to express when his nature demands it. And for all these needs he must be able to use knowingly the words which study and experience will feed to him. He must be able to combine these words effectively in order to express the thoughts of which he is capable. And these thoughts he must work out along lines of logical, reasonable developments, so that

what he says or writes will have an end and attain it. In addition, if he is imaginative — and who is not? — he should know the color and fire of words, the power of rhythm and harmony over the emotions, the qualities of speech whose secret will enable him to mold language to his personality and perhaps achieve a style. This he should know; the other powers he must have, or stop short of his full efficiency.

Alas, we all know that the undergraduate, in the mass, fails often to attain even to the power of logical, accurate statement, whether of facts or ideas. It is true that most of the charges against him are to a greater or less degree irrelevant. Weighty indictments of his powers of expression are based upon bad spelling: a sign, it is true, of slovenliness, an indication of a lack of thoroughness which goes deeper than the misplacing of letters, but not in itself a proof of inability to express. Great writers have often misspelled; and the letters which some of our capable business men write when the stenographer fails to come back after lunch are by no means impeccable. Other accusations refer to a childish vagueness of expression — due to the fact that the American undergraduate is often a child intellectually rather than to any defects in composition *per se*. But it is a waste of time to deny that he writes, if not badly, at least not so clearly, so correctly, so intelligently, as we expect. The question is, why?

It would be a comfort to place the blame upon the schools; and indeed they must take some blame, not only because they deserve it, but also to enlighten those critics of the college who never consider the kind of grain which comes into our hoppers. The readers of college entrance papers could tell a mournful story of how the candidates for our freshman classes write. Here, for an instance, is a paragraph intended to prove that the writer had a command of simple English, correct in sentence structure, spelling, capitalization, and punctuation. The subject is "The Value of Organized Athletics in Schools"— not an abstruse one, or too academic:

If fellows are out in the open and take athletics say at a certain time every-day; These fellows are in good health and allert in their lessons. while those who take no exercise are logy and soft. Organized athletics in a school bring the former, while if a school has no athletics every-thing goes more or less slipshod, and the fellows are more liable to get into trouble, because they are nervious from having nothing to do.

This is a little below the average of the papers rejected for entrance to college. It is not a fair sample of what the schools can do, but it is a very fair sample of what they often do not do. It was not written by a foreigner, nor, I judge, by a son of illiterate parents, since it came from an expensive Eastern preparatory school. The reader, marking with some heat a failure for the essay from which this paragraph is extracted, would not complain of the writer's paucity of ideas. His ideas are not below the average of his age. He would keep his wrath for the broken, distorted sentences, the silly spelling, the lack (which would appear in the whole composition) of even a rudimentary construction to carry the thought. Spelling, the fundamentals of punctuation, and the compacting of a sentence must be taught in the schools, for it is too late to cure diseases of these members in college. They can be abated; but again and again they will break out. It is the school's business to teach them; and the weary reader sees in this unhappy specimen but a dark and definite manifestation of a widespread slovenliness in secondary education, a lack of thoroughness which appears not only in the failures, but also, though in less measure, among the better writers, whose work is too good in other respects not to be reluctantly passed.

Again, it would be easy to place much of the blame for the slipshod writings of the undergraduate upon the standards set by his elders outside the colleges. Editors can tell of the endless editing which contributions, even from writers supposed to be professional, will sometimes require. And when such a sentence as the following slips through, and begins an article in a well-known, highly re-

spectable magazine, we can only say, "If gold rust, what will iron do?"

> Yes the Rot — and with a very big R — in sport: for that, thanks to an overdone and too belauded a Professionalism by a large section of the pandering press, is what it has got to.

Again, any business man could produce from his files a collection of letters full of phrasing so vague and inconsequential that only his business instincts and knowledge of the situation enable him to interpret it. Any lawyer could give numberless instances where an inability to write clear and simple English has caused litigation without end. Indeed, the bar is largely supported by errors in English composition! And as for conversation conducted — I will not say with pedantical correctness, for that is not an ideal, but with accuracy and transparency of thought — listen to the talk about you!

However, it is the business of the colleges to improve all that; and though it is not easy to develop in youth virtues which are more admired than practiced by maturity, let us assume that they should succeed in turning out writers of satisfactory ability, even with these handicaps, and look deeper for the cause of their relative failure.

Democratizing education and immigration the cause of poor quality of expression

The chief cause of the prevalent inadequacy of expression among our undergraduates is patent, and its effects are by no means limited to America, as complaints from France and from England prove. The mob — the many-headed, the many-mouthed, figured in the past by poets as dumb, or, at best, an incoherent thing of brutish noises signifying speech — is acquiring education and learning how to express it. Hundreds of thousands whose ancestors never read, and seldom talked except of the simpler needs of life, are doing the talking and the writing which their large share in the transaction of the world's business demands. Indeed, democracy requires not only that the illiterate shall learn to read and write in the narrower sense of the words, but also that the relatively literate must seek with their growing intellectuality a more perfect power

of expression. And it is precisely from the classes only relatively literate — those for whom in the past there has been no opportunity, and no need, to become highly educated — that the bulk of our college students today are coming, the bulk of the students in the endowed institutions of the East as well as in the newer State universities of the West. The typical undergraduate is no longer the son of a lawyer or a clergyman, with an intellectual background behind him.

There is plenty of grumbling among college faculties, and in certain newspapers, over this state of affairs. In reality, of course, it is the opportunity of the American colleges. Let the motives be what they may, the simple fact that so many American parents wish to give their children more education than they themselves were blessed with is a condition so favorable for those who believe that in the long run only intelligence can keep our civilization on the path of real progress, that one expects to hear congratulations instead of wails from the college campuses.

Nevertheless, we pay for our opportunity, and we must expect to pay. The thousands of intellectual immigrants, ill-supplied with means of progress, indefinite of aim, unaware of their opportunities, who land every September at the college gates, constitute a weighty burden, a terrible responsibility. And the burden rests upon no one with more crushing weight than upon the unfortunate teacher of composition. That these entering immigrants cannot write well is a symptom of their mental rawness. It is to be expected. But thanks to the methods of slipshod, ambitious America, the schools have passed them on still shaky in the first steps of accurate writing — spelling, punctuation, sentence structure, and the use of words. Thanks to the failure of America to demand thoroughness in anything but athletics and business, they are blind to the need of thoroughness in expression. And thanks to the inescapable difficulty of accurate writing, they resist the attempt to make them thorough, with the youthful mind's instinctive rebellion against work. Nevertheless, whatever the cost, they

must learn if they are to become educated in any practical and efficient sense; the immigrants especially must learn, since they come from environments where accurate expression has not been practiced — often has not been needed — and go to a future where it will be required of them. Not even the Do-Nothing school denies the necessity that the undergraduate should learn to write well. But how?

Solutions proposed by four types of instructors

The Know-Nothing school proposes no ultimate solution and knows none, unless faithfully teaching what they are told to teach, and accepting the sweat and burden of the day, with few of its rewards, be not in its blind way a better solution than to dodge the responsibility altogether.

The Formalists labor over precept and principle — disciplining, commanding, threatening — feeling more grief over one letter lost, or one comma mishandled, than joy over the most spirited of incorrect effusions. They turn out sulky youths who nevertheless have learned something.

The Do-Nothings propose a solution which is engaging, logical — and insufficient. They are the philosophers and the æsthetes among teachers, who see, what the Formalists miss, that he who thinks well will in the long run write as he should. Their special horror is of the compulsory theme, extracted from unwilling and idealess minds. Their remedy for all ills of speech and pen is: teach, not writing and speaking, but thinking; give, not rules and principles, but materials for thought. And above all, do not force college students to study composition. The Do-Nothing school has almost enough truth on its side to be right. It has more truth, in fact, than its principles permit it to make use of.

The umpire in this contest — who is the parent with a son ready for college — should note, however, two pervading fallacies in this *laissez-faire* theory of writing English. The first belongs to the party of the right among the Do-Nothings — the older teachers who come from the generation which sent only picked men to college; the second, to the party of the left — the younger men who are dis-

tressed by the toil, the waste, the stupidity which accompany so much work in composition.

The older men attack the attempt to teach the making of literature. Their hatred of the cheap, the banal, and the false in literature that has been machine-made by men who have learned to express finely what is not worth expressing at all, leads them to distrust the teaching of English composition. They condemn, however, a method of teaching that long since withered under their scorn. The aim of the college course in composition today is not the making of literature, but writing; not the production of imaginative masterpieces, but the orderly arrangement of thought in words. Through no foresight of our own, but thanks to the pressure of our immigrants upon us, we have ceased teaching "eloquence" and "rhetoric," and have taken upon ourselves the humbler task of helping the thinking mind to find words and a form of expression as quickly and as easily as possible. The old teacher of rhetoric aspired to make Burkes, Popes, or De Quinceys. We are content if our students become the masters rather than the servants of their prose.

The party of the left presents a more frontal attack upon the teaching of the writing of English. Show the undergraduate how to think, they say; fill his mind with knowledge, and his pen will find the way. Ah, but there is the fallacy! Why not help him to find the way — as in Latin, or surveying, or English literature? The way in composition can be taught, as in these other subjects. Writing, like skating, or sailing a boat, has its special methods, its special technique, even as it has its special medium, words, and the larger unities of expression. The laws which govern it are simple. They are always in intimate connection with the thought behind, and worthless without it; but they can be taught. Ask any effective teacher of composition to show you what he has done time and again for the freshman whose sprawling thought he has helped to form into coherent and unified expression. And do not be deceived by analogies drawn from our colleges of the

mid-nineteenth century, where composition was not taught, and men wrote well; or from the English universities, where the same conditions are said (with dissenting voices) to exist. In the first place, they had no immigrant problem in the mid-century, nor have they in Oxford and Cambridge. In the second, the rigorous translation back and forward between the classics and the mother tongue, now obsolete in America, but still a requisite for an English university training, provides a drill in accuracy of language whose efficiency is not to be despised.

The student must express his intellectual gains even as he absorbs them, or the crystallization of knowledge into personal thought will be checked at the beginning. The boy must be able to say what he knows, or write what he knows, or he does not know it. And it is as important to help him express as to help him absorb. The teachers in other departments must aid in this task or we fail; but where the whole duty of making expression keep pace with thought and with life is given to them, they will be forced either to overload, or to neglect all but the little arcs that bound their subjects. And since they are specialists in other fields, and so may neglect that technique of writing which in itself is a special study, their task, when they accept it, is hard, and their labor, when it is forced upon them, too often ineffective. Composition must be taught where college education proceeds — that is the truth of the matter; and if not taught directly, then indirectly, with pain and with waste.

The school of the Optimists approaches this question of writing English with self-criticism and with a full realization of the difficulties, and of the tentative nature of the methods now in use, but with confidence as to the possibility of ultimate success. In order to be an Optimist in composition you must have some stirrings of democracy in your veins. You must be interested in the need of the average man to shape his writing into a useful tool that will serve his purposes, whether in the ministry or the soap business. This is the utilitarian end of writing English. And you

must be interested in developing his powers of self-expression, even when convinced that no great soul is longing for utterance, but only a commonplace human mind — like your own — that will be eased by powers of writing and of speech. It is here that composition is of service to the imagination, and incidentally to culture; and I should speak more largely of this service if there were space in this chapter to bring forward all the aspects of college composition. It is the personal end of writing English. If the average man turns out to be a superman with mighty purposes ahead, or if he has a great soul seeking utterance, he will have far less need of your assistance; but you can aid him, nevertheless, and your aid will count as never before, and will be your greatest personal reward, though no greater service to the community than the countless hours spent upon the minds of the multitude.

In order to be an Optimist it is still more important to understand that writing English well depends first upon intellectual grasp, and second upon technical skill, and always upon both. As for the first, your boy, if you are the parent of an undergraduate, is undergoing a curious experience in college. Against his head a dozen teachers are discharging round after round of information. Sometimes they miss; sometimes the shots glance off; sometimes the charge sinks in. And his brain is undergoing less obvious assaults. He is like the core of soft iron in an electro-magnet upon which invisible influences are constantly beating. His teachers are harassing his mind with methods of thinking: the historical method; the experimental method of science; the interpretative method of literature. Unfortunately, the charges of information too often lodge higgledy-piggledy, like bird-shot in a signboard; and the waves of influence make an impression which is too often incoherent and confused. If the historians really taught the youth to think historically from the beginning, and the scientists really taught him to think scientifically from the beginning, and he could apply his new methods of thought to the expression of his own emotions, experiences, life, then the teacher

of composition might confine himself to the second of his duties, and teach only that technique which makes writing to uncoil itself as easily and as vividly as a necklace of matched and harmonious stones. In the University of Utopia we shall leave the organization of thought to the other departments, and have plenty left to do; but we are not yet in Utopia.

At present, the teacher of composition stands like a sentry at the gates of knowledge, challenging all who come out speaking random words and thoughts; asking, "Have you thought it out?" "Have you thought it out clearly?" "Can you put your conclusions into adequate words?" And if the answers are unsatisfactory, he must proceed to teach that orderly, logical development of thought from cause to effect which underlies all provinces of knowledge, and reaches well into the unmapped territories of the imagination. But even in Utopia composition must remain the testing ground of education, though we shall hope for more satisfactory answers to our challenges. And even in Utopia, where the undergraduate perfects his thinking while acquiring his facts, it will be the duty of the teacher of writing to help him to apply his intellectual powers to his experiences, his emotions, his imagination, in short, to self-expression. And there will still remain the technique of writing.

How teach college students the art of self-expression?

Theoretically, when the undergraduate has assembled his thoughts he is ready and competent to write them, but practically he is neither entirely ready nor usually entirely competent. It is one thing to assemble an automobile; it is another thing to run it. The technique of writing is not nearly as interesting as the subject and the thought of writing; just as the method of riding a horse is not nearly as interesting as the ride itself. And yet when you consider it as a means to an end, as a subtle, elastic, and infinitely useful craft, the method of writing is not uninteresting even to those who have to learn and not to teach it. The technique of composition has to do with words. We are most of us inapt with words; even when ideas begin to come

plentifully they too often remain vague, shapeless, ineffective, for want of words to name them. And words can be taught — not merely the words themselves, but their power, their suggestiveness, their rightness or wrongness for the meaning sought. The technique of writing has to do with sentences. Good thinking makes good sentences, but the sentence must be flexible if it is to ease the thought. We can learn its elasticity, we can practice the flow of clauses, until the wooden declaration which leaves half unexpressed gives place to a fluent and accurate transcript of the mind, form fitting substance as the vase the water within it. This technique has to do with paragraphs. The critic knows how few even among our professional writers master their paragraphs. It is not a dead, fixed form that is to be sought. It is rather a flexible development, which grows beneath the reader's eye until the thought is opened with vigor and with truth. It is interesting to search in the paragraph of an ineffective editorial, an article, or theme, for the sentence that embodies the thought; to find it dropped like a turkey's egg where the first opportunity offers, or hidden by the rank growth of comment and reflection about it. Such research is illuminating for those who do not believe in the teaching of composition; and if it begins at home, so much the better. And finally, the technique of writing has to do with the whole, whether sonnet, or business letter, or report to a board of directors. How to lead one thought into another; how to exclude the irrelevant; how to weigh upon that which is important; how to hold together the whole structure so that the subject, all the subject, and nothing but the subject shall be laid before the reader: this requires good thinking, but good thinking without technical skill is like a strong arm in tennis without facility in the strokes.

The program I have outlined is simpler in theory than in practice. In practice, it is easier to discover the disorder than the thought which it confuses; in practice, technical skill must be forced upon undergraduates unaccustomed to thoroughness, in a country that in no department

of life, except perhaps business, has hitherto been compelled to value technique. Even the optimist grows pessimistic sometimes in teaching composition.

And yet in the teaching of English the results are perhaps more evident than elsewhere in the whole range of college work. It is wonderful to see what can be accomplished by an enthusiast in the sport of transmuting brains into words. When the teacher seeks for his material in the active interests of the student — whether athletics or engineering or literature or catching trout — when he stirs up the finer interests, drawing off, as it were, the cream into words, the results are convincing. Writing is one of the most fascinating, most engaging of pursuits for the man with a craving to grasp the reality about him and name it in words. And even for the undergraduate, whose imagination is just developing, and whose brain protests against logical thought, it can be made as interesting as it is useful.

The teaching of English composition in this country is a vast industry in which thousands of workmen are employed and in which a million or so of young minds are invested. I do not wish to take it too seriously. There are many accomplishments more important for the welfare of the race. And yet, if it be true that maturity of intellect is never attained without that clearness and accuracy of thinking which can be made to show itself in good writing, then the failure of the undergraduate to write well is serious, and the struggle to make him write better worthy of the attention of those who have children to be educated. I do not think that success in this struggle will come through the policy of *laissez-faire*. All undergraduates profit by organized help in their writing; many require it. I do not think that success will come by a pedantical insistence upon correctness in form without regard to the sense. Squeezing unwilling words from indifferent minds may be discipline; it certainly is not teaching. I think that success will come only to the teacher who is a middleman between thought and expression, valuing both. When we succeed in making the

bulk of the undergraduates really think; when we can inspire them with a modicum of that passion for truth in words which is the moving force of the good writer; when the schools help us and the outside world demands and supports efficiency in diction; then we shall carry through the program of the Optimists.

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XX

THE TEACHING OF THE CLASSICS

Significance of recent criticisms of the teaching of the classics

METHODS of teaching are determined to a large extent by appreciation of the objects to be attained. If teachers make clear to themselves just what they wish to accomplish, they will more easily develop the means. The storm of objection now rising against the study of the Classics indicates clearly that there is a general dissatisfaction with the result of this study. There is a striking unanimity on this subject among persons of widely different talent and experience, of whom some are still students, while others are looking back upon their training in school and college after years of mature life. Their adverse criticism is all the more significant because often expressed with obvious regret. Some, who have had unusual opportunities for observation, state their opinion in no uncertain language. For example, Mr. Abraham Flexner, in his pamphlet "A Modern School," on page 18 says: "Neither Latin nor Greek would be contained in the curriculum of the Modern School — not, of course, because their literatures are less wonderful than they are reputed to be, but because their present position in the curriculum rests upon tradition and assumption. A positive case can be made out for neither." The president of Columbia University, in his Annual Report for 1915–1916, page 15, speaking of the "teachers of the ancient classics," says: "They have heretofore been all too successful in concealing from their pupils the real significance and importance of Greek and Latin studies." Such criticisms, however, do not prove that the study of the Classics cannot accomplish all that its advocates claim for it, but only that it is not now accomplishing satisfactory results.

Undoubtedly there are various causes for a depreciation of classical studies at the present time. Other subjects,

such as mathematics, are suffering from a similar disparagement. In recent years interest has centered more and more in studies designed to develop powers of observation, give knowledge of certain facts, or provide equipment for some particular vocation, to the neglect of those which discipline the mind or impart a general culture. It is certainly important, therefore, to consider the relative values of these various studies. To do so it is desirable to examine the aims of classical teaching and the methods by which these aims may be realized; for it is at least possible that the widespread dissatisfaction with this teaching is due not so much to the subject itself as to defects and insufficiency in the methods employed.

The present aims of classical teaching

Not all teachers of the Classics agree in all respects as to the aims of their teaching. Certain aims, however, are common to all the classical departments in American colleges. These are:

1. To train students, through the acquisition and use of the ancient languages, in memory, accuracy, analysis and logic, clearness and fluency of expression, and style.

2. To enable certain students to read with profit and enjoyment the masterpieces of Greek and Latin literature.

3. To impart to certain students a knowledge, as complete as possible, of the classical civilization as a whole. To a complete knowledge of this civilization belongs all that the ancients possessed or did, all that they thought or wrote, whether or not any particular part of it had an influence upon later times or is, in itself, interesting or valuable now. All parts alike are phenomena of the life of these ancient peoples and so of the life of the human race.

4. To impart a knowledge and understanding of the thoughts and ideas, the forms of expression, the institutions, and the experiences of the ancients, in so far as these are either actually valuable in themselves to the modern world or have influenced the development of modern civilization.

Besides these aims which are common to all, there are

certain others less generally pursued by classical teachers in this country. Among these are:

5. To make students familiar with "the Greek (and Latin) in English," i.e. with the etymology and history of words in our own language which had their origin in or through Greek or Latin.[1]

6. To trace the influences of the classic literature upon modern literature and thought.[2]

7. To train those who expect to teach the Classics in pedagogical methods, and to familiarize them with modern pedagogical appliances.[3]

8. To teach the language of the New Testament and of the Church Fathers.[4]

The classical departments of some colleges also give courses in Modern Greek[5]: such courses, however, belong properly to the field of Modern Languages.

Now it is by no means certain that all of these aims properly concern all classes of students. On the contrary, every one would doubtless agree that those described under Nos. 7 and 8 do not concern the average student of the Classics. It is also a debatable question whether it should be the aim of classical teaching to give all classical students some knowledge of the classic civilization as a whole; whether, for example, Aristophanes and Plautus, however important these authors may be for a complete understanding of the ancient life and literature, are worth while for all classical students alike. It is far more important, how-

[1] For example, at the University of Kansas.

[2] Leland Stanford, Michigan, Princeton.

[3] California, North Dakota, Harvard, Idaho, Illinois, Kansas, Leland Stanford, Michigan, Oberlin, Otterbein, Pennsylvania, Vermont, Wisconsin, Yale, etc. Some of these courses are offered only to graduate students, and some are given by the Departments of Pedagogics.

[4] In New Testament or Patristic Greek at Austin, Bucknell, California, Cornell, Harvard, Illinois, Lafayette, Michigan, Millsaps, Trinity, Wesleyan. In Patristic Latin, Bucknell and elsewhere.

[5] Brown, Cornell, Leland Stanford.

N. B. These lists are by no means complete.

ever, to determine whether, in that which seems to many persons the chief business of a classical department, all who study the masterpieces of the ancient literatures should be taught to study them in the original language.

Teaching from the originals only

No one doubts that classical departments should provide courses on the ancient literature in the original, or that the æsthetic qualities of a literature can be *fully* appreciated only in the original language. Some people, however, maintain that every literary production is primarily a work of art, and consequently that its æsthetic qualities are its most essential qualities: that to teach the classical literature through the medium of translations would be aiming at an imperfect appreciation of its most essential qualities, and would also divert students from the study of its original form. Yet in most colleges courses on painting and sculpture are given through the medium of photographs, casts and copies, and no one questions the value and effectiveness of such courses, or doubts that they tend to increase the desire of the students to know the originals themselves. Similarly courses on Greek literature in translations are given at many American colleges, for example at Bucknell, California, Colorado, Harvard,[1] Idaho, Illinois, Kansas, Lafayette, Leland Stanford, Michigan, Missouri, New York University, North Dakota, Pennsylvania, Syracuse, Tennessee, Vermont, Washington University, Wesleyan, and Wisconsin: courses in Latin literature in translations at California, Colorado, Kansas, Leland Stanford, Pennsylvania, Tennessee, and Washington University. Besides these there are courses at some colleges on Greek or Roman Life and Thought,[2] or Life and Letters,[3] or Civilization,[4] most of which do not involve the use of the

[1] History of Greek Tragedy. Lectures with reading and study of the plays of Æschylus, Sophocles, and Euripides. Requires no knowledge of the Greek language.

[2] E. g., Columbia, Lafayette.

[3] California, Washington University.

[4] Colorado, Idaho, Syracuse, Vermont, Washington University, Wesleyan, Wisconsin.

ancient languages on the part of the students. For example, at Brown courses which require no knowledge of the ancient languages are given in both Greek and Roman "Civilization as Illustrated by the Literature, History and Monuments of Art."[1] Harvard also offers courses entitled "A Survey of Greek Civilization" and "A Survey of Roman Civilization, Illustrated from the Monuments and Literature," in which a knowledge of the ancient languages is not required.

In deciding the question here at issue it is essential to distinguish between the different kinds of literature. The value of certain literary productions undoubtedly consists chiefly in the æsthetic qualities of their form; that is, the excellence and influence of these productions depends upon the particular language actually used by the author. Such works of literature lose very much in translation, and it may be asserted with some reason that they lose their most essential qualities. It may well be doubted, therefore, whether any one can derive great pleasure or benefit from the study of the poems of Sappho or the odes of Horace, for example, unless these are studied in the original. The value of other literary productions, on the other hand, lies partly in their form and partly in their content, or in their content alone. It is quite a different question, therefore, whether one may derive a satisfactory pleasure and benefit from a translation of the *Agamemnon* of Æschylus or Thucydides' *History of the Peloponnesian War*, of Lucretius or Tacitus, to say nothing of such books as Aristotle's *Constitution of Athens.*

Teaching only from classical texts

There is another and still more important question connected with the theory of classical teaching, namely whether all classical courses should be based upon or begin with the study of some classical text. Some are of the opinion that it is the business of classical teachers to teach the Greek and Latin languages, and the literatures in these

[1] It should be noted that at Brown the titles of the classical departments are "The Department of Greek Literature and History" and "The Department of Roman Literature and History."

languages, and that anything which cannot be taught best through the study of some portion of the classical literature in the original should be taught by some other department of the college. Consequently in some institutions courses on ancient literature in English translations are given by the English Department,[1] courses on Greek and Roman History, Archaeology, and Philosophy by the Departments of History, Archaeology, and Philosophy, respectively, courses on the Methods and Equipment of Teaching the Classics by the Department of Pedagogy.

Others, less extreme in their views, hold (*a*) that any study of the Greek or Roman civilization apart from the original ancient literature would be vague, discoursive, and unprofitable, and in particular that a discussion of a literature or of literary forms without an immediate, personal acquaintance with this literature or these literary forms in the original would not be useful, and (*b*) that such courses would have little permanent value for the students because it would not be possible to compel the students to make much effort for themselves.

Quite the opposite opinion on this most important question is held by those who believe (*a*) that the study of the Classics should not be confined to those who are now able, or may in the future be expected, to read the ancient literature in the original, (*b*) that there are some things even about the ancient literature and civilization which can be taught more effectively without the loss of time and the division of attention involved in reading the ancient authors in the original, and (*c*) that in courses such as those dealing with ancient history ancient books on these subjects, either in the original or in translations, cannot properly be used as textbooks for the reason that, quite apart from their errors and misconceptions, these books do not contain, except incidentally, those phases of the ancient life which are the most interesting and valuable to the modern world. Such persons consider that the attempt to convey an appreciation of the ancient literature through those lim-

[1] At Cornell and Oberlin, for example.

ited portions of it which can be read by the students in the original is necessarily ineffective. They hold that to appreciate any literature one must study it as literature,— i.e., as English literature should be studied by English students, French literature by French students,— and that literary study of this sort properly begins where translation and exegesis leave off. And finally, they maintain that the effort to give students a lively knowledge of ancient life or ancient history through the ancient texts is precisely like the effort to illustrate ancient life by ancient works of art; e.g., to give a student an idea of an ancient soldier by showing him an ancient picture of a soldier. Such illustrations convey instead the impression that ancient life was both unattractive and unreal, that the study of it is childish and unpractical.[1]

Courses in the ancient languages

Many classical courses are designed primarily to teach the classical languages themselves, or to give mental training through the study and use of these languages. Until recently most American colleges required for admission an elementary knowledge of these languages involving commonly at least three years of preparatory training in Greek and from three to five years of preparatory Latin. Now, however, many colleges provide courses for beginners in Greek, some also for beginners in Latin. For example, courses for beginners in Greek are given at Bryn Mawr, University of California, Chicago, Colorado, Columbia, University of North Dakota, Dartmouth, Harvard, Idaho, Illinois, Johns Hopkins, Kansas, Lafayette, Leland Stanford, Michigan, New York University, Northwestern, University of Pennsylvania, University of Tennessee, Vanderbilt, Vermont, Washington University, Wesleyan, Williams, Wisconsin, Yale, and elsewhere. Courses for beginners in Latin are given, for example, at the Universities of Idaho, Pennsylvania, and Wisconsin. Ordinarily these courses resemble in general plan and method the corresponding courses in secondary schools; but inasmuch as the students are more mature, the progress is much more rapid.

[1] See especially Clarence P. Bill, "The Business of a College Greek Department," *Classical Journal*, IX (1913-14), pp. 111–121.

The "Natural Method"

In some institutions the attempt is made in teaching ancient Greek and Latin to employ methods used by the teachers of modern languages. Some classical teachers have even adopted to some extent the so-called "natural" or "direct" method of language teaching[1]: commonly such attempts have not been very successful, and where some degree of success has been attained the success seems due to the personality and enthusiasm of the individual teacher. Others have contented themselves with devoting a part of certain courses to exercises designed to show the students that the classical languages were at one time in daily use among living people and were the media of ordinary conversation.[2] Students in such courses commonly memorize certain colloquial phrases and take part in simple conversations in which these phrases can be used. Such methods, skillfully employed, undoubtedly relieve the tedium of the familiar drill in grammar and "prose composition," and may help materially in imparting both a knowledge of the ancient languages and a facility in reading the ancient authors.

An interesting experiment is now being tried at the University of California in a course in Greek for beginners, given by Professor James T. Allen. The description of the course in the university catalogue is as follows: "An Introduction to the Greek Language based upon graded selections from the works of Menander, Euclid, Aristophanes, Plato, Herodotus, and the New Testament. The method of presentation emphasizes the living phrase, and has as its chief object the acquiring of reading power. Mastery of essential forms; memorizing of quotations; practice in reading at sight." This course has had considerable success.

[1] See the article by Mr. Theodosius S. Tyng in *Classical Weekly*, VIII (1915), Nos. 24 and 25. Also M. J. Russell: "The Direct Method of Teaching Latin," in the *Classical Journal*, XII (1916), pages 209–211, and other articles on this subject in the *Classical Journal* and the *Classical Weekly* in recent years.

[2] For example, "Latin Conversation," at Columbia; "Oral Latin," at Leland Stanford; "Sight Reading and Latin Speaking," at New York University.

More than three hundred students have been enrolled thus far in a period of six or seven years, and some of these have testified that it was one of the most valuable courses they have had in any subject. One of the chief advantages has been that the students, while learning forms and vocabulary, are reading some real Greek, and that of first-rate quality.[1]

Use of modern literature in ancient Greek or Latin

Various attempts have been made, especially in recent years, to provide for classical students modern stories in ancient Latin, in the belief that modern students will acquire a practical knowledge of the language more readily from such textbooks than from any parts of the ancient literature.[2] The story of Robinson Crusoe was translated into Latin by G. F. Goffeaux, and this version has been edited and republished by Dr. Arcadius Avellanus, Philadelphia, 1900 (173 pages). An abridgement of the original edition was edited by P. A. Barnett, under the title *The Story of Robinson Crusoe in Latin, adapted from Defoe by Goffeaux*, Longmans, Green and Co., 1907. Among original compositions in ancient Latin for students may be mentioned (1) Ritchie's *Fabulae Faciles*, A First Latin Reader, edited by John Copeland Kirtland, Jr., of Phillips Exeter Academy, Longmans, Green & Co., 1903 (134 pages). (2) *The Fables of Orbilius* by A. D. Godley,

[1] See Professor Allen's article, "The First Year of Greek," in the *Classical Journal*, X (1915), pages 262–266.

[2] As early as the seventeenth century books were produced which may be regarded as the forerunners of this sort of modern composition in the ancient language. One of these was published in 1604 under the title: "Iocorum atque seriorum tum novorum tum selectorum atque memorabilium libri duo, recensente Othone Melandro." Another is the "Terentius Christianus seu Comoediae Sacrae — Terentiano stylo a Corn. Schonaeo Goudono conscriptae, editio nova Amstelodami 1646": this includes dramas such as Naaman (princeps Syrus), Tobaeus (senex), Saulus, Iuditha, Susanna, Ananias, etc. Still another is the "Poesis Dramatica Nicolai Amancini S. J.," in two parts, published in 1674 and 1675. A century later there appeared a story which, judging from its title, was designed primarily for students: "Joachimi Henrici Campe Robinson Secundus Tironum causa latine vertit Philippus Julius Lieberkühn," Zullich, 1785.

London, Edward Arnold, two small pamphlets, illustrated, containing short and witty stories for beginners. (3) *Ora Maritima,* A Latin Story for Beginners, by E. A. Sonnenschein, seventh edition, 1908, London, Kegan, Paul and Co.; New York, The Macmillan Company (157 pages). This is the account of the experiences of some boys during a summer in Kent. (4) *Pro Patria,* A Latin Story for Beginners by Professor E. A. Sonnenschein, London, Swan, Sonnenschein and Co.; New York, The Macmillan Company, 1910 (188 pages). (5) *Rex Aurei Rivi, auctore Johanne Ruskin, Latine interpretatus est Arcadius Avellanus, Neoeboraci, 1914* (Published by E. P. Prentice). (6) F. G. Moore: *Porta Latina,* Fables of La Fontaine in a Latin Version, Ginn and Co., 1915.

A series of translations of modern fiction is now being produced under the title of The Mount Hope Classics, published by Mr. E. P. Prentice, 37 Wall Street, New York City. The translator is Dr. Arcadius Avellanus. The first of these appeared in 1914 under the title *Pericla Navarci Magonis,* this being a translation of *The Adventures of Captain Mago,* or *With a Phoenician Expedition,* B. C. *1000,* by Léon Cahun, Scribner's, 1889. The second volume, *Mons Spes et Fabulae Aliae,* a collection of short stories, was published in 1918. The third, *Mysterium Arcae Boule,* published in 1916, is the well-known Mystery of the Boule Cabinet by Mr. Burton Egbert Stevenson. The fourth, *Fabulae Divales,* published in 1918, is a collection of fairy stories for young readers to which is added a version of Ovid's *Amor et Psyche.*

Over these books a lively controversy has arisen between Dr. Avellanus and Mr. Charles H. Forbes, of Phillips Academy, Andover.[1] Undoubtedly the translator's style and vocabulary are far from being strictly in accord with the present canons of classical Latin. He employs a multitude of words and idioms unfamiliar to those whose reading has

[1] See the *Classical Journal,* XI (1914), pages 25–32; *Classical Weekly,* IX (1915–16), pages 149–151; X (1916), pages 38 f.; *Classical Weekly,* X (1916), pages 37 f.

been confined to the masterpieces of the ancient literature which are most commonly studied. On the other hand, the ancient language is made in these books a medium of modern thought. The stories presented hold the attention, the vividness of the narrative captivates the reader and carries him through the obscurities of diction and of style to a wholly unexpected realization that Latin is a real language after all.

It is a serious question whether students can ever acquire a mastery of a language, or even a sufficient knowledge of it really to appreciate its literature, unless they learn to use this language to express their own thoughts. But it is evident that it is impossible adequately to express modern ideas in the language of Cæsar and Cicero. Those who would exclude the Latin of comparatively recent authors such as Erasmus from the canon of the Latin which may be taught, as well as those who confine their teaching to the translation and parsing of certain texts, are raising the question whether the Latin language should be taught at all in modern times.

Naturally less effort has been made to provide for students modern literature in ancient Greek. At least one such book, however, is available, *The Greek War of Independence, 1821–27, told in classical Greek for the use of beginners* (with notes and exercises) by C. D. Chambers: published by Swan, Sonnenschein and Co.

Courses in "Prose Composition"

In nearly all American colleges courses in Greek and Latin composition are given, either as a means of mental training or in order to give a more complete mastery of these languages and a greater facility in reading the literature. In some places, for example at the University of California, a series of courses is given in both Greek and Latin composition culminating in original compositions, translations of selections from modern literature, and conversation in the ancient languages. Courses in Latin conversation [1] are given in other places also, and courses in the pronunciation of ancient Greek and Latin.[2]

[1] See note 2, page 411.

[2] Columbia.

All such courses belong to the general field of the study of the classical languages as distinguished from the study of the literature, history, or any other phase of the classical civilization. This branch of language study, of course, includes such purely linguistic courses as those in Comparative Philology, Comparative Grammar, the Morphology of the Ancient Languages, Syntax, Dialects, etc.

Courses in literature

The bulk of classical teaching in American colleges is devoted to the literature. The great majority of all college courses in Latin and Greek have the same general characteristics.[1] A certain limited portion of text is assigned for preparation. This text is then translated by the students in class, and the translation corrected. Grammatical and exegetical questions and the content of the passage are discussed. Most of the time at each meeting of the class is consumed in such exercises. Generally lectures or informal talks are given by the instructor upon the life and personality of each author whose work is read, upon the life and thought of his times, upon the literary activity as a whole, and upon the value of those selections from his works which are the subject of the course. Sometimes the students are required to read more of the original literature than can be translated in class. Generally some collateral reading in English is assigned. Often the instructor reads to the class, usually from the original, other portions of the ancient literature.

The number and extent of such courses in the different institutions vary according to the strength of the faculty, the plan of the curriculum, and the number and demands of the students in each. In the main, however, the list of selections from the ancient literature presented in such courses in all the colleges is much the same. Many of these courses deal with one particular author and his works, such as Sophocles, Plato, Plautus, or Horace. Others deal with some particular kind of literature, such as Greek

[1] This is true of the courses in secondary schools and graduate courses in universities also; but in the secondary and graduate schools the proportion of translation courses to the others is smaller.

tragedy or oratory, Latin comedy, etc., or with a group of authors of different types combined for the sake of variety.[1]

Methods commonly pursued

The methods as well as the aims of such courses are well exemplified in the following passages contained in the *Circular of Information* for 1915–1916 of the University of Chicago, page 211: "Ability to read Greek with accuracy and ease, and intelligent enjoyment of the masterpieces of Greek literature are the indispensable prerequisites of all higher Greek scholarship. All other interests that may attach to the study are subordinate to these, and their pursuit is positively harmful if it prematurely distracts the student's attention from his main purpose."

It is not immediately apparent what distinction is made here, if there is any, between the "prerequisites" and the "main purpose" of classical scholarship. What the chief aim of classical teaching is according to this view, however, is made clear by the two paragraphs which follow, as well as by the descriptions of the individual courses offered by the Chicago faculty.

"In the work of the Junior Colleges the Department will keep this principle steadily in view, and will endeavor to teach a practical knowledge of Greek vocabulary and idiom, and to impart literary and historic culture by means of rapid *viva voce* translation and interpretation of the simpler masterpieces of the literature. . . . In the Senior Colleges the chief stress will be laid on reading and exegesis, but the range of authors presented to the student's choice will be enlarged."

Value of such courses

The advantage of such courses is that they make the students who take them familiar with at least some limited portions of the best of the ancient literature in its original form, and most people are agreed that this is the only way in which students can be taught to appreciate that part of this literature, the value of which lies chiefly or wholly in its form. But people are not agreed upon two most serious

[1] For example, at Harvard one course includes Plato, Lysias, Lyric Poetry, and Euripides, with lectures on the history of Greek literature; another Livy, Terence, Horace and other Latin Poets.

questions which arise in this connection. The first is whether all students are capable of appreciating at all literature of this sort, especially when it is conveyed in an ancient and difficult language. The other question is how much of the classical literature really depends for its values chiefly upon its form. To say that the Psalms and the Gospels have no value or little value for the world apart from the original form and language in which they were written would, of course, be absurd. Is it any less absurd to say that the study of the Homeric poems, the Attic tragedies, the works of Thucydides and Plato would have little value for students unless this literature were studied in the original language? These questions cannot properly be ignored any longer by teachers of the Classics.

Defects of these courses

The defects of such courses are manifest to most persons. Students who pursue these courses through most of the years of secondary school and college fail to acquire either such a knowledge of the Greek and Latin languages as would enable them to read with pleasure and profit a Greek or Latin book, or such a knowledge of the Greek and Roman literature and civilization as would enable them to appreciate the value of classical studies. Many of them graduate from college without even knowing that there is anything really worthy of their attention in the classical literatures. The fact stares the teachers of the Classics grimly in the face that they are not accomplishing the aims which they profess.

One explanation of this fact suggests itself. In the classical courses commonly given in American colleges the attention paid to the content of the literature, to the author and his times — the lectures and readings by the instructor, the discussion of archaeological, historical, literary, and philosophical matters introduced into the course,— distract attention from the study of the language itself, and check this study before a real mastery of the language has been secured. On the other hand, the time and still more the attention devoted in these courses to the mere process of translation detracts from the appreciation of the literature

and obstructs the study of the life and thought. In attempting to accomplish both purposes in these courses the teachers fail to accomplish either, and the result is chiefly a certain mental training, the practical value of which depends largely upon the mental capacity and skill of each individual teacher, and is not readily appreciated.

Courses not requiring knowledge of the ancient languages

To obviate some of these defects, and also to provide courses on Greek and Roman culture for those unfamiliar with the ancient languages, courses which require no use of these languages are now given at various colleges on Classical Literature or Civilization.[1] A course on the "Greek Epic" at the University of California is described as follows: "A study chiefly of the Iliad and the Odyssey; their form, origin, and content; Homeric and pre-Homeric Aegean civilizations; relative merits of modern translations; influence of the Homeric poems on the later Greek, Roman, and modern literature. Lectures (partly illustrated), assigned readings, discussions, and reports." The course at Harvard entitled "Survey of Greek Civilization" is "A lecture course, with written tests on a large body of private reading (mostly in English). No knowledge of Greek is required beyond the terms which must necessarily be learned to understand the subject." "The prescribed reading includes translations of Greek authors as well as modern books on Greek life and thought." The lecturer frequently reads and comments upon selections from the ancient literature. At Brown University a course is given on Greek Civilization, including the following topics: I Topography of Greece, II Prehistoric Greece, III The Language, IV Early Greece (The Makers of Homer, Expansion of Greece, Tyrannies, The New Poetry, etc.), V The Transition Century, 600–500 B. C. ((a) Government and Political Life, (*b*) Literature, (*c*) art), VI The Classical Epoch, 500–338 B. C. ((*a*) Political and Military History, (*b*) Literature, (*c*) The Fine Arts), VII The Hellenistic and Græco-Roman Periods, ((*a*) History, (*b*) Literature. (*c*) Philosophy, (*d*) Learning and Science, (*e*) Art), VIII

[1] See above, page 407 f.

The Sequel of Greek History (The Byzantine Empire, the Italian Renaissance, Mediæval and Modern Greece). This is described as "Wholly a lecture course, with frequent written tests, examination of the notebooks, and a final examination on the whole. Definite selections of the most conspicuous authors are required in English translations." The lecturer also reads selections from Homer, the Greek drama, Pindar, etc. Similar courses on Roman civilization are given at both Brown and Harvard. There is also a course of fifteen lectures on "Greek Civilization" at Vermont; "The Culture History of Rome, lectures with supplementary reading in English," at Washington University; "Greek Civilization, lectures and collateral reading on the political institutions, the art, religion, and scientific thought of ancient Greece in relation to modern civilization," at Wesleyan; "The Rôle of the Greeks in Civilization" at Wisconsin.[1]

Defects of the lecture system

Whatever success such courses may have, they are open to one criticism. Most, if not all of them, appear to be primarily lecture courses, with more or less collateral reading controlled by tests and examinations. The experience of many, however, justifies to some extent the belief that college students derive little benefit from collateral reading controlled only in this way, because such reading is commonly most superficial. Little mental training, therefore, is involved in courses such as those just described, and the ideas which the students acquire in them are chiefly those given to them by others. And it may reasonably be doubted whether the value to the students of ideas received in this way is comparable to the value of those which they are led to discover for themselves. So far, then, as such courses fail to accomplish the purposes for which they were designed, their failure may be due wholly to this cause.

The study of literature apart from its original language

It is entirely possible to conceive of courses in which no use of the ancient languages would be required, but in which the students would acquire by their own efforts a

[1] For a fuller list of institutions where classical courses not requiring a knowledge of the ancient languages are given see above, page 407.

knowledge of the classical literature and civilization far more extensive and more satisfying than in courses largely devoted to translating from Greek and Latin. Such courses would not merely substitute English translations for the originals, and treat these translations as the originals are treated in courses of the traditional type; the ancient literature would be studied in the same way as English literature is studied. For example, in a course of this kind on Greek literature, in dealing with the Odyssey the students would discuss in class, or present written reports upon, the composition of the poem as a whole, and the relation to the main plot of different episodes such as the quest of Telemachus, his visit to Pylos and Lacedæmon, the scene in Calypso's cave, the building of the raft, the arrival of Odysseus among the Phæacians, his account of his own adventures, his return to Ithaca, the slaying of the wooers, etc.; also the characters of the poem, their individual experiences and behavior in various circumstances, and the ideas which they express, comparing these characters and ideas with those of modern times. In dealing with the drama, the students would study the composition of each play, present its plot in narrative form, and criticize it from the dramatic as well as from the literary standpoint; they would discuss the characters and situations, and the ideas embodied in each.[1] In dealing with Thucydides they would discuss the plan of his book and the artistic elements in its composition; also the critical standards of the author, his methods, his objectivity, and his personal bias. They would study the debates in which the arguments on both sides of great issues are presented, expressing their own opinions on the questions involved. They would study the great descriptions, such as the account of the siege of Platæa, the plague at Athens, the last fight in the harbor of Syracuse, making a summary in their own lan-

[1] "Die höchste Aufgabe bei der Lektüre des griechischen Dramas sei das Stück Leben, das uns der Dichter vor Augen führt, in seinem vollen Inhalt miterleben zu lassen." C. Wunderer, in *Blätter für das Gymnasial-Schulwesen*, Vol. LII (1916), 1.

guage of the most essential or effective details. Lastly they would discuss such figures as Pericles, Nicias and Alcibiades, Archidamus, Brasidas and Hermocrates, their characters, principles, and motives. In dealing with Plato they would study the character of Socrates and those ideas contained in the Platonic dialogues which can be most readily comprehended by college students.

Classical studies not confined to the ancient authors

The study of "The Classics" is not properly confined to the Greek and Latin literatures: it includes the military, political, social, and economic history of the ancient Greeks and Romans, their institutions, their religion, morals, philosophy, science, art, and private life. The geography and topography of ancient lands, anthropology and ethnology, archaeology and epigraphy contribute to its material. It is not necessary that all these subjects be taught by members of a classical department. In particular it is the common practice in this country to relegate the study of ancient philosophy to the Department of Philosophy, whereas in England and on the Continent such distinctions between departments are not recognized. But certainly these branches of the study of the classical civilization should be taught best by those most familiar with the classical civilization in all its phases, and most thoroughly trained in the interpretation and criticism of its literature. It is also obvious that the teaching of the classical literature would be emasculated if it were separated from these other subjects mentioned. Only, such subjects as history should not be taught from the literary point of view. History should be an account of what actually took place, derived from every available source and not from a synthesis of a literary tradition. In this respect the teachers of the Classics have from the earliest times made the most serious mistakes. To some extent the same charges may be brought against the methods and traditions of the teachers of modern history. The teaching of Greek and Roman history, however, is affected in a peculiar degree by the traditions of classical scholarship. The historical courses given by most classical teachers are based upon the translation and

discussion of the works of certain ancient authors, whose accounts are not only false and misleading in many respects, but characteristically omit those factors in the ancient life which are the most significant and interesting to the modern world. Such courses begin by implanting false impressions which no amount of explanation can eradicate. The ancient world, therefore, is made to appear to modern students unreal and unworthy of serious attention: it is not strange that they are dissatisfied with such teaching, and that it seems to many practically worthless. A true picture of the life and experience of the ancient Greeks and Romans would appear both interesting and profitable to a normal college student.

Summary of objects to be sought in the teaching of the classics

The aims of the teaching of the Classics in American colleges should be to give, in addition to a training of the mind:

1. An appreciation of the best of the classical literature. For this is, in many respects, the best literature which we have at all, even when without any allowances it is compared with the best of modern literatures. Much of it is universal in character. It is also the foundation of the modern literatures. By learning to appreciate it, students would learn to judge and appreciate all literature.

2. A familiarity with the characters and narratives of the ancient literature. The knowledge of these characters, their behavior under various vicissitudes of fortune, and their experiences, would of itself be a valuable possession and equipment for life.

3. A knowledge of the ideas of the ancient Greeks and Romans, revealed and developed in their literature, and tested in the realities of their life. Many of these ideas are of the utmost value today, and are in danger of being overlooked and forgotten in this materialistic age of ours, unless they are constantly recalled to our minds by such studies.

4. A knowledge of the actual experiences of the ancients, as individuals and as nations, their experiments in democracy and other forms of government, in imperialism, arbi-

tration, and the like, their solutions of the moral, social, and economic problems which were as prominent in their world as in ours.

To realize these aims old methods should be revised and improved, new methods developed. For there can hardly be a study more valuable and practical than this.

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XXI

THE TEACHING OF THE ROMANCE LANGUAGES

The college course must emphasize power, not facts

IT is well at times to emphasize old truths, mainly because they are old and are consecrated by experience. One of these, frequently combated nowadays, is that any college course — worthy of the name — has other than utilitarian ends. I therefore declare my belief that the student does not go to college primarily to acquire facts. These he can learn from books or from private instruction. *Me judice* — he goes to college primarily to learn *how to interpret* facts, and to arrive through this experience at their practical as well as their theoretic value: as respects himself, as respects others, and in an ever widening circle as regards humanity in general. The first object, thus, of a college course is to humanize the individual, to emancipate him intellectually and emotionally from his prejudices and conventions by giving him a wider horizon, a sounder judgment, a firmer and yet a more tolerant point of view. "Our proclivity to details," said Emerson, "cannot quite degrade our life and divest it of poetry." The college seizes upon the liberating instinct of youth and utilizes it for all it is worth. We summarize by saying that the college prepares not merely for "life" but for "living"; so that the society whom the individual serves will be served by him loyally, intelligently, and broad-mindedly, with an increasing understanding of its aims and purposes.

The college can attain its aim only when the student brings necessary facts from secondary schools

This, let us assume, is the somewhat lofty ideal. What about its concrete realization? Especially when the subject is a language, which, considering that it consists of parts of speech, inflections, phonetics, etc., is a very practical matter and apparently far removed from the ideal in question. Every language teacher is familiar with this stock objection. How often has he not been told that his

business is not to teach French culture or Spanish life, but French and Spanish? And as everybody knows, French and Spanish are not learned in a day, nor, indeed, if we judge by the average graduate of our colleges, in four years of classroom work. It is not my purpose to combat the contention that college French or Spanish or Italian could be taught better, and that from a utilitarian point of view the subject is capable of a great deal of improvement. As Professor Grandgent has trenchantly said: "I do not believe there is or ever was a language more difficult to acquire than French; most of us can name worthy persons who have been assiduously struggling with it from childhood to mature age, and who do not know it now: yet it is treated as something any one can pick up offhand. . . . French staggers under the fearful burden of apparent easiness." I do not think these words overstate the case. All the more reason, then, to bear in mind that the burden of this accomplishment should not fall on the college course alone, or, I should even say, on the college course at all. For the fact is that a thorough knowledge of the Romance tongues cannot be acquired in any college course, and to attack the problem from that angle alone is to attempt the impossible. It is on the school, and not on the college, that the obligation of the practical language problem rests. If our students are to become proficient in French — in the sense that they can not only read it but write and speak it with passable success — the language must be begun early, in the grade school (when memory and apperception are still fresh), and then carried forward systematically over a period of from six to seven years. But this will require on the part of our schools: (1) a longer time allotment to the subject than it now generally has, (2) a closer articulation between the grade-school, high-school, and college courses, and (3) the appointment of better and higher-paid teachers of the subject. An encouraging move is being made in many parts of the country to carry out this plan, though of course we are still a long way from its realization; and when it is realized we shall not yet have reached

the millennium. But at least we shall have given the practical teaching of the subject a chance, comparable to the opportunity it has in Europe; and the complaint against the French and Spanish teacher — if there still be a chronic complaint — will have other grounds than the one we so commonly hear at present.

Limitations of elementary and intermediate courses as college courses

In the meantime, let us remember that the college has other, and more pressing, things to do than to attempt to supply the shortcomings of the school. It is certainly essential that the college should continue and develop the practical work of the school in various ways, such as advanced exercises and lectures in the foreign idiom, special conversation classes, and the like — if only for the simple reason that a language that is not used soon falls into desuetude and is forgotten. But assuredly the so-called elementary, intermediate, and advanced courses in French and Spanish (as given in college) do not fall under that head. They exist in the college by *tolerance* rather than by sound pedagogical theory, and the effort now being made to force all such courses back into the school by reducing the college "credits" they give is worthy of undivided support. Not only are they out of place in the college program, but the burden of numerous and often large "sections" in these courses has seriously impeded the college in its proper language work. The college in its true function is the clarifier of ideas, the correlator of facts, the molder of personalities; and the student of modern languages should enter college prepared to study his subject from the college point of view. Much of the apparent "silliness" of the French class which our more virile undergraduates object to would be obviated if a larger percentage of them could at once enter upon the more advanced phases of the subject. It is, then, to their interest, to the interest of the subject, and to the advantage of the college concerned, that this reform be brought about.

Aim of the teaching of Romance languages in the college

In any case, the function of a college subject can be stated, as President Meiklejohn has stated it, in terms of two principles. He says: "The first is shared by both

liberal and technical teaching. The second applies to liberal education alone. The principles are these: (1) that activity guided by ideas is on the whole more successful than the same activity without the control of ideas, and (2) that in the activities common to all men the guidance of ideas is quite as essential as in the case of those which different groups of men carry on in differentiation from one another." As applied to the Romance languages, this means that while the college must of course give "technical" instruction in language, the emphasis of that instruction should be upon the "ideas" which the language expresses, in itself and in its literature. It is not enough that the college student should gain fluency in French or Spanish, he must also and primarily be made conscious of the processes of language, its logical and æsthetic values, the civilization it expresses, and the thoughts it has to convey. While it may be said that all thorough language instruction accomplishes this incidentally, the college makes this *the* aim of its teaching. The college should furnish an objective appraisal of the fundamental elements of the foreign idiom, not merely a subjective (and often superficial) mastery of details. For the old statement remains true that — when properly studied —"proverbs, words, and grammar inflections convey the public sense with more purity and precision than the wisest individual"; [1] and what shall we say when "literature" is added to this list?

Status of Romance languages in representative colleges — Early status

From these preliminary observations let us now turn to the present status of Romance languages in some of our representative colleges.[2] One gratifying fact may be noted at once. Whereas a quarter of a century ago Greek and Latin were still considered the *sine qua non* of a liberal education, today French and German, and to a lesser extent Spanish and Italian, have their legitimate share in this distinction. Indeed, to judge merely by the

[1] The quotation is from Emerson, *Nominalist and Realist.*

[2] I make no attempt in this article, written before 1917, to treat actual teaching conditions: the premises are too uncertain.

number of students, they would seem to have replaced Latin and Greek. To be sure, several colleges, as for instance Amherst and Chicago, alarmed by this swing of the pendulum, have reserved the B.A. degree for the traditional classical discipline. But in the first case the entire curriculum includes "two years of Greek or Latin," and in the second the B.A. students comprise but a very small percentage of the college body; and while in both cases Latin and Greek are required subjects, Romance is admitted as an elective, in which — to mention only Amherst — six consecutive semester courses, covering the main phases of modern French literature, can be chosen. As noted, the recognition of modern languages as cultural subjects is relatively recent. As late as 1884 a commission, appointed by the Modern Language Association, found that "few colleges have a modern language requirement for admission to the course in arts; . . . of the fifty reported, three require French, two offer an election between French and German, and two require both French and German." And of these same colleges, "eighteen require no foreign language, twenty-nine require either French or German, and eighteen require both French and German, for graduation in the arts."

Obviously, few (at most seven) of the colleges examined admitted students prepared to take advanced courses in French; and only eighteen, or 36 per cent, allowed students to begin French in the freshman year, over one half of the entire number postponing the beginners' French until the sophomore, junior, or even senior year. It is clear, therefore, that as late as 1864, and in spite of such illustrious examples as that set by Harvard in the appointment of Ticknor to the Smith professorship in 1816, the Romance languages could hardly be classed as a recognized college subject. At best, they were taught on the principles that "it is never too late to learn," and although this teaching failed from the "practical" point of view, it yet had little or no opportunity to concern itself with the cultural aspects of the

subject. No wonder the commission reported [1] that in the circumstances "a mastery of language, as well as a comprehensive study of the literature, is impossible." With the part played by our Greek and Latin colleagues in keeping the modern languages out of the curriculum we need not deal in detail here. It is enough, in order to explain their attitude, to observe that previous to 1884 the teaching of modern languages was generally poor: it was intrusted for the most part to foreigners, who, being usually ignorant of the finer shades of English and woefully ignorant of American students, could not have been expected to succeed, or to native Americans, who for various and often excellent reasons lacked the proper training, and therefore succeeded — when in rare cases they did succeed — in spite of their qualifications rather than because of them. Add to all this the conviction natural to every classicist, that Latin and Greek are the keys to all Western civilization and that without them Romance literatures (not to say "languages") are incomprehensible, and the situation up to the 90's is amply clear.

Contemporary status of Romance Languages in college curricula

Today, then, conditions are changed, and for better or worse the Romance tongues are on a par with other collegiate subjects. A glance at the latest statistics is instructive. In 1910, out of 340 colleges and universities in the United States, 328 taught French; 112 (the universities) offered more than four years' instruction, 50 offered four years, 90 three years, 68 two years, and only 8 one year. The present status can easily be divined: the interest in Spanish has certainly not waned, while the interest in French has grown by leaps and bounds. Some curtailment there has been, owing to the adoption of the "group system" of studies on the part of most of the colleges, and as the colleges are relieved of more and more of the elementary work there doubtless will be more. But, in any case, it is safe to say that French, Spanish, and

[1] The above statistics are from C. H. Handschin, *The Teaching of Modern Languages in the United States*, Washington, 1913, pages 40ff.

Italian are now firmly installed as liberal studies in the curricula of most of our colleges. Now, how do they fulfill this function? What changes will be necessary in order that they may fulfill it better? What particular advantages have they to offer as a college subject? A brief consideration of each of these points follows.

In general, our colleges require fifteen units of entrance credit and about twenty collegiate units for the college degree.[1] Of the entrance units, a maximum of four in French and two in Spanish is allowed; and of the college units, an average of five, or about one fourth of the entire college work,[2] must be taken consecutively in *one* department of study or in not more than *two* departments. This last group of approximately five units thus constitutes, so to speak, the backbone of the student's work. It is his so-called "principal sequence" (Chicago) or his "two majors" (Amherst) or his "major subject" (Wisconsin and Colorado); and while in the case of Amherst it cannot be begun "until after the freshman year," in general it must be begun by the junior year. Considerable variety prevails, of course, in carrying out this idea; for example, Johns Hopkins requires "at least two courses in the major and at least two in some cognate subject." Harvard states that "every student shall take at least six of his courses in some one department, or in one of the

[1] I cite the following figures: (*a*) Entrance: Harvard 16½, Amherst 14; Wisconsin 14, Columbia 14½, Colorado 15, Illinois 15, Chicago 15; (*b*) Collegiate Degree: Harvard 17½ "courses," Amherst 20 "courses," Wisconsin 120 "credits," Columbia 124 "points," Colorado 120 "hours of scholastic work," Chicago 36 "trimester majors." It is certainly desirable that our colleges adopt some uniform system for the notation of their courses. Johns Hopkins, at least, is specific in explaining the relationship of its "125 points" to its "courses"; see page 262 of the *University Register*, 1916.

[2] At Chicago exactly ¼ or "at least 9 coherent and progressive majors" must be taken in "one department or in a group of departments." But Chicago also requires a secondary sequence of at least 6 majors; Columbia requires three years of "sequential study — in each of two departments." Illinois, "a major subject (20 hours)" and "an allied minor subject (20 hours)."

recognized fields of distinction." Princeton demands of "every junior and senior . . . at least two 3-hour courses in some one department." But almost all representative colleges now recognize four general groups of study: Philosophy (including history), language, science, and mathematics; and the student's work must be so arranged that while it is fairly evenly distributed over three of the groups it is at the same time definitely concentrated in one of them.

Normal prescription in a Romance Language

In answer to our first question, it follows that the student entering with the maximum of French should be able, before graduation, to get enough advanced courses to give him an intelligent grasp of the literature as well as the language. In our better-equipped colleges this is undoubtedly the case. Harvard, for instance, would admit him to a course (French 2) in French Prose and Poetry, which includes some "composition," to be followed by (6) a General View of French Literature, (8) French Literature in the Eighteenth Century, (9) French Literature in the Seventeenth Century, (16) Comedy of Manners in France, (17) Literary Criticism in France; and in some of these courses the linguistic aspects would be considered in the form of "themes," "reports," etc., while the student could choose (5) Advanced French Composition for that special purpose. Other colleges (e. g., Johns Hopkins, Chicago, Stanford) offer the same or similar opportunities. So that, although titles of courses are often deceptive, the general plan of offering (1) an introductory course in which both the language and the literature are treated, (2) a survey-course in literature, leading to (3) various courses in literature after 1600, and supported by (4) at least one specific course in language, now constitutes the normal collegiate "major" in French; and, on the whole, it would be difficult in the present circumstances to devise a better plan.

It is obvious that the success of any plan depends on the thoroughness with which it is carried out, and this in turn depends on the qualifications and energy of those who have

Changes in current practice that will enhance effectiveness of teaching of Romance Languages — Danger of minimizing the language phase

the matter in hand. That contingency does not concern us here. But what is worth noting is that the fourth point mentioned above,— the specific language part of the " major "— might be strengthened, especially since some excellent institutions omit this consideration entirely. The danger of falling between two stools is never greater, it seems, than in treating both language and literature. An instructor who is bent on elucidating the range of Anatole France's thought naturally has little time to deal adequately with his rich vocabulary, his deft use of tense, the subtle structure of his phrase — and yet who can be said really to " know " such an author if he be ignorant of either side of his work? " Thought expands but lames," said Goethe — unless it is constantly controlled by fact. In order to give the undergraduate that control, it is essential that he should be placed in the position everywhere to verify his author's thought. How difficult it is to bring even the best of our undergraduates to this point I need not discuss. But at least once in the process of his work he might be held to a stricter account than elsewhere. And if we ask ourselves by what method this can best be accomplished, I believe the answer is by some *special* course in which the language of several representative writers is treated as such.[1] The point could be elaborated, particularly in view of the present-day tendency to dwell unduly on so-called *realia*, French daily life, and the like — all legitimate enough in their proper time and place. But enough has been said to show that excellent as the present plan is, it could without detriment enlarge the place given to linguistics. In this bewildered age of ours we are forever hearing the cry of " literature," more " literature ": not only our students but our teachers — and the connection is obvious — find language study dull and uninspiring, oblivious to the fact that the fault is theirs

[1] An excellent manner of procedure is that outlined by Professor Terracher in his interesting article in the *Compte rendu du Congrès de Langue et de Littérature Française*, New York (Fédération de l'Alliance Française), 1913.

and not the subject's. Yet, as we observed above, French is "hard," and its grammatical structure, apparently so simple, is in truth very complicated. Manifestly, to understand a foreign literature we must understand the language in which it is written. How few of our students really do! Moreover, language and literature are ultimately only parts of one indivisible entity: Philology — though the fact often escapes us. "The most effective work," said Gildersleeve,[1] "is done by those who see all in the one as well as one in the all." And strange as it appears to the laity, a linguistic fact may convey a universal lesson. I hesitate to generalize, but I believe most of our colleges need to emphasize the language side of the French "major" more.

Relative positions of French, Spanish, and Italian in a college course

As for Italian and Spanish, few of the colleges as yet grant these subjects the importance given to French. For one reason, entrance credit in Italian is extremely rare, and neither there nor in Spanish, in which it is now rather common, owing to the teaching of Spanish in the high schools, does it exceed two units. Some work of an elementary nature must therefore be done in the college; indeed, at Amherst neither language can be begun until the sophomore year — though fortunately this is an isolated case. Further, even when the college is prepared to teach these subjects adequately, it is still a debatable question whether they are entitled to precisely the same consideration as their more venerable sister. It is unnecessary to point out that such great names as Dante, Petrarch, Boccaccio, Alfieri, Leopardi, Carducci, Cervantes, Calderón, Lope de Vega, Benavente, *e tutti quanti*, are abundant evidence of the value of Italian and Spanish culture. They unquestionably are. Where the emphasis is cultural, it would certainly be unwise to neglect Italian, since the Renaissance is Italian and underlies modern European culture in general. On the other hand, Spanish is, so to speak, at our very doors because of our island possessions: it is the *one* foreign language which calls for no argument to make the undergraduate willing to learn to speak, and Spanish

[1] From *Johns Hopkins University Circular*, No. 151.

literature, especially in the drama, has the same romantic freedom as English literature and is thus readily accessible to the American type of mind. Pedagogically, thus, the question is far from simple. But while it is impossible to lay down any fixed precept, it seems worth while to remember: that the French genius is preëminently the vehicle of definite and clear ideas, that in a very real sense France has been and is the intellectual clearing-house of the world, and that potentially, at least, her civilization is of the greatest value to our intellectually dull and undiscriminating youth. From French, better than from Italian and Spanish, he can learn the discipline of accurate expression, of clear articulation, and the enlightenment that springs from contact with "general ideas." Moreover, we must not forget that the undergraduate's time is limited and that under the "group system" some discrimination must necessarily be made. Granted, then, that, all things considered, the first place will doubtless be left to French, the question remains whether the attention given to Spanish and Italian is at least adequate. And do the colleges extract from them the values they should?

As a general proposition, we may take it for granted that the college should offer at least *four* units in each of these subjects. For Spanish, certainly, the tendency will be to make the proportion larger. But two units devoted to learning the language and two devoted to the literature may be regarded as essential, and are as a matter of fact the common practice. Several illustrations will make this clear. *Johns Hopkins* offers: in Italian, 1. Grammar, Short Stories, etc., 2. Grammar, Written Exercises, Selections from classic authors, Lectures on Italian Literature; in Spanish, 1. Grammar, Oral and written exercises, Reading from Alarcón, Valdés, etc., 2. Contemporary Novel and Drama, Oral practice, Grammar and Composition, 3. The Classic Drama and Cervantes, oral practice, etc., History of Spanish Literature. *Illinois:* in Italian, 1a-1b Elementary Course, 2a-2b Italian Literature, nineteenth century; in Spanish, 1a-1b Elementary Course, 2a-2b

Modern Spanish, 3a-3b Introduction to Spanish Literature, 4a-4b Business Correspondence and Conversation, 5a-5b Business Practice in Spanish, 11a-11b The Spanish Drama of the Sixteenth and Seventeenth Centuries, 17a-17b The Spanish Drama of the Nineteenth Century. *Harvard:* in Italian, 1. Italian Grammar, reading and composition, 4. General View of Italian Literature, 5. Modern Italian Literature, 2. Italian Literature of the Fifteenth and Sixteenth Centuries, 10. The Works of Dante; in Spanish, 1. Spanish Grammar, reading and composition, 7. Spanish Composition, 8. Spanish Composition and Conversation (advanced course), 4. General View of Spanish Literature, 5. Spanish Prose and Poetry of the Eighteenth and Nineteenth Centuries, 2. Spanish Literature of the Sixteenth and Seventeenth Centuries.[1]

Since Spanish and Italian fall into the department of Romance languages, in order to make up his "major" the student is at present compelled to combine them with French. On the whole, this arrangement appears to me wise. To be sure, the deans of our colleges of commerce and administration will say that, granting the greater cultural value of French, the business interests of the country will force us nevertheless to give Spanish the same place in the curriculum as French. And the more radical educators will affirm with Mr. Flexner:[2] "Languages have no value in themselves; they exist solely for the purpose of communicating ideas and abbreviating our thought and action processes. If studied, they are valuable only in so far as they are practically mastered — not otherwise." I have taken a stand against this matter-of-fact conception of education throughout this chapter. I may now return to the

[1] It will be noted that throughout the amount offered in Spanish exceeds that in Italian. This is to be expected in view of the boom in Spanish studies. Moreover, most colleges now allow two units of entrance credit in Spanish, and 7 and 8 above, under Harvard, are half courses. Columbia is, I believe, the only college accepting 2 units of entrance credit in Italian; but I have not examined the catalogues of all our colleges.

[2] Publications of the General Education Board, 3, 1916, page 13.

charge by adding that the banality of our college students' thinking stares us in the face; if we wish to quicken it, to refine it, we should have them study other media of expression *qua* expression besides their own (that is what Europe did in the Renaissance, and the example of the Renaissance is still pertinent); that if Mr. Flexner's reasoning were valid the French might without detriment convey their "ideas" in Volapük or Ido (I suggest that Mr. Flexner subject Anatole France to this test); and that instead of being valueless in themselves, on the contrary, languages are the repositories of the ages: "We infer," said Emerson, "the spirit of the nation in great measure from the language, which is a sort of monument in which each forcible individual in the course of many hundred years has contributed a stone." In other words, however great the claim of Spanish as "a practical subject" may be and whatever concessions our schools and colleges may make to this fact, I still believe that Spanish should be subordinated as a college subject to the study of French. In principle we may admit the Spanish "major," as in fact we do at present with the Italian "major"; but some knowledge of French on the part of the student should be presupposed, or if not, it should be a required part of the Spanish sequence. This may seem extreme, but in reality few students would wish to proceed far in Spanish without some French, and, practically, the knowledge of one Romance tongue is always a great aid in the study of another.

Training teachers of Romance Languages

Thus we see that, with the addition here and there of an extra course (where the college is not up to the standard as we have outlined it), and an added stress on the advanced linguistics, the present curriculum in Romance apparently provides an excellent working basis. If properly carried out — and the success of all teaching depends of course ultimately on the teacher — it ought to fulfill all legitimate needs, so far as the strictly collegiate aims are concerned.

A word is now in order as to its fitness for those students

who are planning to take Romance as a profession. Normally these students would coincide with those who are taking up "special honors" in Romance languages; and for the latter group most of our colleges now make special provision — in the form of "independent work done outside the regular courses in the major subject and at least one other department during the junior and senior year (Wisconsin)," or as Amherst states it, "special work involving collateral reading or investigation under special conditions." In general, this gives the candidate certain professional options among the courses listed (in cases where the college is part of the university) as "primarily for graduates." In this way the student is able to add to his "major" such subjects as Old French (Chicago), Introduction to Romance Philology (Columbia), Practical Phonetics (Chicago), a Teachers' Course (Wisconsin), etc. Personally I am of the opinion that the day has passed when any of our graduates who has not at least a Master's degree in Romance should be recommended to a teaching position. But evidently any such hard and fast rule is bound to be unfair, especially since a large percentage of our students is compelled to earn a living immediately upon graduation. Thus here again — as in the elementary courses as now given in the colleges — we are confronted with a makeshift which only time and continued effort can correct. In the meantime the value of such professional courses depends to a very marked degree upon the success with which they can be carried out: where they are counted toward a higher degree (M.A. or Ph.D.) the difficulty is not so great, since their introductory nature is self-evident; but where they conclude, so to speak, the student's formal training the difficulty of making them "fit in" is often sadly apparent. At any rate, in this borderland between cultural and professional studies, where the college is merging with the university or professional school, the necessity for the able teacher is a paramount issue. If the transition is to be successful, the obligation rests upon the teacher so to develop his subject that the

specializing will not drown out the general interest but will inform it with those values which only the specialist can impart.

Final contributions of Romance Languages to the American college student

And now as to our final consideration: What particular advantages have the Romance tongues to offer as a college subject? An obvious advantage is: an understanding of foreign peoples. The Romance languages are modern. They are spoken today over a large part of the habitable globe. We stand in direct relations with those who speak them and write them. Above all, a large share of the world's best thought is being expressed in them. The point requires no arguing, that translations cannot take the place of originals: *traduttore traditore*, says an excellent Italian proverb. If we are really to know what other nations think,— whether we accept or reject their thought makes little or no difference here,— we can do so only by knowing their language. And the better we know it, the greater our insight will be. To speak at least *one* foreign language is not only a parlor accomplishment: it is for whoever is to be a citizen-of-the-world a necessity. There is a Turkish proverb that he who knows two languages, his own and another, has two souls. Certainly there is no better way to approach a nation's soul than through its language. But, in the second place, the Romance tongues have certain artistic qualities which English in a great measure lacks. The student who has intelligently mastered one of them has a better sense of form, of delicate shades of expression, and — if the language be French — of clarity of phrase: what Pater termed *netteté d'expression.* He learns to respect language (as few Americans now do), to study its possibilities in a way which a mere knowledge of English might never have suggested, and to appreciate its moral as well as its social power: for French forces him to curb his thought, to weigh his contention, to be simple and clear in the most abstruse matters. In a famous essay on the Universality of French, Rivarol said: "Une traduction française est toujours une *explication.*"

And lastly, in themselves and in the civilizations they

stand for, the Romance tongues are the bridge between ourselves and antiquity. Since the decline in the study of Greek and Latin, this is a factor to be seriously considered. It is the fashion today to berate the past, to speak of the dead hand of tradition, and to flatter ourselves with the delusion of self-sufficiency. To be sure, the aim of education is never to pile up information but to "fit your mind for any sort of exertion, to make it keen and flexible." But the best way to encompass this is to feed the mind on ideas, and ideas are not produced every day, nor for that matter every year, and luckily all ideas have not the same value. There are the ideas of Taine, of Rousseau, of Voltaire, of Descartes, of Montaigne, of Ficino, of Petrarch, of Dante, of Cicero, of Aristotle, of Plato; and in a moment I have run the gamut of all the centuries of our Western civilization. Who will tell me which ideas we shall need most tomorrow? Evidently, we cannot know them all. But we can at least make the attempt to know the best. And incidentally let it be said that he who professes the Romance tongues can no more dispense with the Classics than the Classics can today afford to dispense with Romance: French Italian, and Spanish are the Latin — and one might add the Greek — of today. But to return to our theme: to deny our interest in the past is to throw away our heritage, to sell our mess of pottage to the lowest bidder. If the Romance languages have one function in our American colleges, it is this: To keep alive the old humanistic lesson: *nihil humani a me alienum puto;* to the end that the modern college graduate may continue to say with Montaigne: "All moral philosophy is applied as well to a private life as to one of the greatest employment. Every man carries the entire form of the human condition. Authors have thitherto communicated themselves to the people by some particular and foreign mark; I . . . by my *universal* being, not as a grammarian, a poet, or a lawyer." The college course in the Romance languages should prepare for a profession, but it must first help to prepare thinking men and women.

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XXII

THE TEACHING OF GERMAN

Our aim

THE mechanical achievements of the nineteenth and twentieth centuries have obliterated geographical distances. The contact between nations, intermittent in former ages, has become a continuous one. It is no longer possible to ignore great cultural forces in foreign nations even temporarily — we may repudiate or appreciate them, as we see fit, but we should do so in a spirit of fairness and understanding, and not in ignorance.

This, however, is not possible unless those who are to become leaders of the people are intimately familiar with those treasure chests of the nations that contain the true gems of racial spirit more abundantly than even art or literature, history, law or religion, stored up in the course of hundreds and thousands of years — the nations' languages. It is the clear duty of the college to instill, through the right way of teaching foreign languages, a cosmopolitan spirit of this character into the growing minds of our young men and women, after the secondary school has given them the first rudiments of knowledge and cultural training.

According to one's point of view, there is as much to be said in favor of the classical as the modern languages. Without doubt, their growing neglect in our institutions of learning is deeply to be regretted; however, its causes do not concern us here directly. The study of modern languages is, relatively speaking, so manifestly in the ascendency, that a return to the emphasis that was formerly laid upon Latin and Greek is hardly imaginable. The choice between several modern languages must very largely be determined by personal preferences and purposes. So much, however, can safely be said, that an intelligent reading knowledge of German and French is the least that should be expected of a college graduate. For, while in

theory the humanistic importance of modern language study is the same for all languages, it rises, in practice, proportionately with the cultural level of the foreign nation — German and French obviously taking the lead in this regard.

Place of German in the college curriculum

I am optimistic enough to assume it to be generally granted that the study of a foreign language ought to be started early in life — say, at the age of twelve. While hardly challenged in theory, this desirable condition is far from being carried out in practice. Probably the time will never come when colleges will be able to dispense with elementary courses in modern foreign languages — not only for those who enter without any linguistic preparation, but also, and perhaps preëminently, for students who are taking up a second foreign language in addition to the one (or two) started in the preparatory school. Thus, the starting point of the modern language course in college is easily fixed: it must begin at the very rudiments of the language. Nor is it difficult to state, in general terms, the purpose of the most advanced work of the undergraduate curriculum: it must consist in adequate linguistic skill, literary knowledge and feeling, and cultural understanding to such an extent that the college graduate who has specialized in German may safely be intrusted with the teaching of German in secondary schools. At least, this holds good for the majority of institutions; a small number of colleges devote their whole effort to cultural training, and some of the larger institutions, particularly in the East, find it possible to postpone most of the professional preparation to a period of graduate work. But on the whole the average well-equipped college includes the training of teachers as one end of its foreign-language work. Ordinarily, such mastery of the subject as would prepare for teaching cannot be gained within the four years' college course. Rather, it might be said to require the average equivalent of something like six college years, with the understanding that not much more than one fourth of the student's time be devoted to German. This implies that only under uncommonly favorable conditions should

students be encouraged to specialize in a foreign language that they begin on entering college.

Organization of the German course

Thus, the peculiar conditions of modern language instruction bring it about that a discussion of its organization in college must deal with a six years' course: elementary instruction must be offered to those entering without any knowledge of German; courses of a sufficiently advanced character must be provided for those who enter with three or four years of high-school German; and there must be advanced work for students who intend to make the study and teaching of German their life's work.

In this six years' college course three divisions are clearly distinguishable: an elementary division devoted to such linguistic training as will enable a student to read with fair ease texts of moderate difficulty; an intermediate group during which literary and cultural appreciation should be developed, and an advanced group intended for the professional preparation of prospective teachers of German. These three divisions may be approximately equal, so that each of them covers about two years, with four or five hours a week. For graduation, all students should be required to present the equivalent of the first period for two languages (either classical or modern), one or both of which might with advantage be absolved in high school. The second division should be required of all students for at least one foreign language. Colleges of high standing may find it possible to exceed these requirements; no college should remain below them.

The first or elementary division should, at least for one foreign language, be finished before the student is admitted to the college. All that can reasonably be expected from this part of the work is a study of the elements of grammar, the development of a good pronunciation, a fair working vocabulary, and some ability to read, speak, understand, and write German.

The second group should include, in the main, reading courses to introduce the student to what is best in German literature, but no general theoretical study of the history

of literature need be contemplated. Besides, it must offer such work in speaking and writing as will develop and establish more firmly the results gained in the first two years, and an appropriate study of German history and institutions. Each of the three aims might be given about one third of the time available, but they may overlap to some extent. Thus, writing and speaking can be connected with each of them, and historical readings and reports may furnish a part of language practice.

The third group, intended for the training of teachers, must contain a course in the method of modern language teaching (connected with observation and practice), an advanced grammar course, and courses in the phonetics and historical development of the German language. These courses are indispensable for teachers, but will also be of advantage to students not intending to teach.

The elementary group

The first group is frankly of high school character. It is best to admit this fully and freely, and to teach these courses accordingly. Through greater intensity of study (more home work and longer class periods), the work of three or even four high school years may be concentrated into two college years, but the method cannot differ essentially. The way of learning a new language is the same, in principle, for a child of twelve years and a man of fifty years; in the latter case, there is merely the difficulty to be overcome that older persons are less easily inclined to submit to that drill which is necessary for the establishment of those new habits that constitute *Sprachgefühl.* It is a fallacy that the maturer mind of the college student requires a more synthetic-deductive study of the language than that of the high school student.

It is sad but true that many college teachers are more reactionary in questions of method than the better class of high school teachers. The claim that elementary work in college requires a method different from that used in the high school is one symptom of this, and another symptom of the same tendency is the motto of so many college teachers that there is no "best method," and that a good

teacher will secure good results with any method. At the bottom of such phrases there is usually not much more than indifference and unwillingness to look for information on the real character of the method at which they are generally aimed: the *direct method.* The regrettable superficiality appearing in the frequent confusion of the "direct" with the "natural" method is characteristic of this. I am, of course, willing to admit that what nowadays is termed the "direct method" is not the best way possible, but that it may and will be improved upon. However, it is not one of many methods that, according to circumstances, might be equally good, but it represents the application of the present results of psychological and linguistic research to the teaching of languages and distinctly deserves the preference over older ways.

The first demand of the direct method is the development not only of a fair but of a perfect pronunciation — not so much as the independent aim, but as an indispensable condition for the development of *Sprachgefühl.* It is immeasurably easier to obtain good pronunciation from the start than to improve bad pronunciation by later efforts. In the teaching of pronunciation a slight difference in the treatment of children of twelve years and of college students might be granted: young children are generally able to learn the sounds of a foreign language by imitation; students of college age can hardly ever do this well, and careful phonetic instruction is absolutely necessary with them. Whoever wishes to keep aloof from phonetic *terms* may do so; but not to know or not to apply phonetic *principles* is bad teaching pure and simple. The use of phonetic *transcription,* however, is a moot question. Its advantages are obvious enough: it insures a clear consciousness of correct pronunciation; it takes up the difficulties one by one: first pronunciation, then spelling; it safeguards greater care in matters of pronunciation in general. The objections are chiefly two: economy of time, and the fear of confusion between the two ways of spelling. The writer admits that until a few years ago he was skeptical as to the value of

phonetic transcription in the teaching of German. But the nearly general recognition of its value by the foremost educators of European countries and the good results achieved with it by teachers of French in this country caused him to give it a trial, under conditions that afforded not more than an average chance of success. The result was greatly beyond his expectations. Neither he nor, as far as he knows, any of his colleagues would contemplate abandoning phonetic script again. Without wishing to be dogmatic, I believe that this at least can be asserted with safety: on purely theoretical grounds, no teacher has a right to condemn phonetic transcription; those who doubt its value should try it before they judge.

In the writer's opinion it is best not to use any historical spelling at all during the first six or eight weeks of college German. If the confusing features of traditional orthography are eliminated during this period, it will be found that there results not a loss, but an actual *gain in time* from the use of phonetic script. Nor does the transition to common spelling cause any confusion. The less ado made about it, the better. It is a fact of experience, that students who have been trained in the use of phonetic script turn out to be better spellers than those who have not — simply because this training has made them more careful and has given them a clearer conception of the discrepancy between sound and letter.

That elementary grammar should be taught inductively is true to an extent, but often overstated. It is true for the more abstract principles, such as the formation of the compound tenses, the formation and the use of the passive voice, and so on. But attempts at inductive teaching of concrete elements of mechanical memory, such as the gender and plural of nouns, or the principal parts of strong verbs, are a misunderstanding of the principles of induction. It goes without saying that thorough drill is much more valuable than the most explicit explanation. It holds good for college as well as for high schools that there is but very little to "explain" about the grammar of any

language. Unnecessary explanations rather increase than remove difficulties.

The use of English

The use of English is another debated question. As far as the teaching of grammar is concerned, it is unessential. If inductive drill takes the place of explanations and abstract rules, the question is very largely eliminated from practical consideration. In those very rare cases when theoretical discussions might seem desirable, it does not make much difference whether a few minutes a week are devoted to English or not. The question assumes greater importance when the development of the vocabulary is considered. In this, there are three fairly well-defined elements to be distinguished. The first vocabulary, say, of the first two or three months should be developed by concrete associations with objects and actions in the classroom; the use of the vernacular has no justification whatever during that time — not on account of any objection to an occasional English word or phrase, but simply because there is no need of it, and every minute devoted to German is a clear gain. After this, the vocabulary should be further developed through the thorough practice of connected texts. If they are well constructed, the context will explain a considerable portion of the words occurring; those that are not made clear through the context form the third division of the vocabulary and can without hesitation be explained by English equivalents. In general, the principle will go rather far that the use of an occasional English *word* is entirely harmless, but that English *sentences* should as much as possible be avoided in elementary work. Connected translation, both from and into English, must absolutely be excluded from the first year's work, for the chief purpose of this year is not only the study of grammar and the development of an elementary vocabulary, but, even more than that, the cultivation of the right *attitude* toward language study. Reading should be our chief aim, and speaking a means to that end, but the student must be trained, from the very beginning, to understand what he is reading rather through an intelli-

gent grasp of the contents than by fingering the dictionary. In this way he will become accustomed to associating the German sentences *directly* with the thought expressed in them, instead of *indirectly* through the medium of his native tongue.

A great deal of misunderstanding is frequently involved in the emphasis laid upon speaking. There can hardly be a more absurd misinterpretation of the principles of the direct method than for college teachers to try to "converse" with the students in German — to have with them German chats about the weather, the games, the political situation. This procedure is splendidly fit to develop in the students a habit of guessing at random at what they hear and read — a slovenly contentedness with an approximate understanding. Both teacher and students should speak and hear German practically all the time. But this should be distinctly in the service of reading and grammar work, containing almost exclusively words and forms that the student must *know*, not guess at.

At the end of the first year a college student ought to have mastered the elements of grammar and possess good pronunciation and an active vocabulary of about six hundred or eight hundred words. If the second year is devoted to further drill on grammatical elements and to careful reading, its result ought to be the ability to read authors of average difficulty at a fair speed. During the first year all reading material should be practiced so intensively that an average of a little more than a page a week is not exceeded materially; but toward the end of the second year a limit of six or eight pages an hour may well be reached. By this time, translation into good English begins to be a valuable factor in the achievement of conscious accuracy; but it must under no circumstances be resorted to until the students have clearly obtained the habitual attitude of direct association between thought and sentence.

It is little short of a misfortune that there exists no adequate German-German dictionary (such as La Rousse's French dictionary). It would not be very difficult to write

such a book, but until we possess it the irritating use of German-English dictionaries and vocabularies will be a necessary evil.

The hardest problem of the second year — and this is progressively true of more advanced work — is the uneven preparation of the students. In large colleges it will often be feasible to have as many sections as possible at the same hour, distributing the students in accordance with their preparation. Where this is not possible, special help for poorly prepared students is generally indispensable.

The literature group

The literature group is as distinctly of college character as the elementary group is admittedly high school work. It is here, in fact, that the best ideals of the American college find the fullest opportunity. This is true both for the teacher and for the student. In the elementary group, pedagogical skill and a fair mastery of the language are the chief prerequisites of a successful teacher. In the second group, other qualities are of greater importance. While a certain degree of pedagogical skill is just as necessary here as there, it is now no longer a question of the systematic development of habits, but of the ability to create sympathetic understanding, idealism, depth of knowledge, and literary taste — in short, to strive for humanistic education in the fullest sense of the word. This is true not only for colleges with a professedly humanistic tendency; the broadening and deepening influence of foreign language study is nowhere needed more urgently than in technical and other professional colleges.

Speaking and writing must no longer stand in the center of instruction in the courses of the second group, but their importance should not be underrated, as is done so frequently (it is a fact that students often know less German at the end of the third year in college than at the end of the second year). At least during the first year of this group, a practice course in advanced grammar, connected with composition, is absolutely necessary. The grammatical work should consist in review and observation, supported by the study of a larger reference grammar (e.g.,

chapters from Curme's grammar, to introduce the students to the consistent use of this marvelous work). In composition, free reproduction should still be the main thing, but independent themes and translation from English into German — which would be distinctly harmful in elementary work — are now valuable exercises in the study of German style. It would be wholly wrong, however, to make linguistic drill the Alpha and Omega of this part of the college course. The preparatory years should have laid a sound basis, which during the college work proper should not be allowed to disintegrate, but the fact should not be lost sight of that the cultural aim must be stressed most in the second group.

To reach this aim, a familiarity with the best works of German literature is the foremost means. German literature affords a scant choice of good and easy reading for the elementary stage: Storm, Ebner-Eschenbach, Seidel, and Wildenbruch are justly favorites, but absurdities like Baumbach's *Schwiegersohn* are, unfortunately, still found in the curriculum of many colleges. In contrast with the small number of good elementary texts, there exists an abundance of excellent material for the second group. Aside from the classical poets, the novelists Keller, Meyer, Fontane, Raabe; the dramatists Hebbel, Grillparzer, Kleist, Hauptmann; poems collected in the *Balladenbuch* or the *Ernte* present an inexhaustible wealth, without our having to resort to the literary rubbish of Benedix or Moser or the sneering pretentiousness of Heine's *Harzreise*.

The details of organization will vary greatly for this group, according to special conditions. But in general it may be said that during the first year of this period about two hours a week should be devoted to the continuation of systematic language practice as outlined above, and three hours to the reading of German authors for literary purposes. Nor should this consist in "reading" alone. Reading as such should no longer present any difficulty, if the work of the elementary group has been done well. Special courses should be devoted to the study of the mod-

ern German novel, the drama, and the lyrics, and to individual authors like those mentioned. In these detached literature courses the principal endeavor must be to help the students to understand and feel, not so much the linguistic side of the texts read, as the soul of the author, and through him the soul of the German nation. Reading must become more and more independent, the major part of the time in class being devoted to the cultural and æsthetic interpretation of what has been read at home. It is evident that in this, the most important part of the German college work, all depends upon the personality of the instructor: literary and human understanding cannot be instilled into the student's mind by one who does not possess them himself, together with a love for teaching and the power to create enthusiasm.

All other requirements must be subordinate to this — even the instructor's mastery of the language. No doubt, in theory it would be most desirable that German be the exclusive language of instruction throughout; but in literary courses practical considerations will so often speak against this, that no sweeping answer to this question seems possible. For the chief aim must not be overshadowed by any other. If poor preparation on the part of the students or a deficient command of the language on the part of the instructor makes it doubtful whether the cultural aim can be attained, if German is the language of instruction, English should be used unhesitatingly. This implies that for this part of the work an instructor with a strong personality and an artistic understanding, although lacking in speaking knowledge, is far preferable to one who speaks German fluently but cannot introduce his students to the greatness of German literature and the spirit of the German people.

On the other hand, written reports in literary courses should always be required to be in German; it is also a good plan to devote a few minutes of each period to prepared oral reports, in German, on the part of the individual students. Where systematic practice in the colloquial use of

the language is desirable for special reasons, a conversation course may be established in addition to the main work, but literary courses are not the place for starting conversational practice with classes that have been neglected in this respect during their preparatory work.

The second year of the literary group should offer a choice between two directions of further literary development: about three hours of each week should be devoted either to a course on the general history of German literature, or to the intensive study of one of the greatest factors in German literature — such as Goethe's *Faust*. In large institutions both courses can probably be given side by side, the students taking their choice according to their preference, but in most colleges an alternation of two courses of this kind will be preferable.

The method of instruction is determined by the students' preparation and the teacher's personality, in literature courses more than anything else. Obviously, lectures (in German, where circumstances permit), extensive, systematic reading, written reports, and class discussion are the dominating features of such courses.

Some knowledge of German history and institutions is an indispensable adjunct of any serious work in German literature. Probably in all colleges such instruction will be incumbent upon the German departments, and it is rarely possible to combine it with the course on the general history of German literature. Therefore, a special course in German history and institutions should be offered during the second year of the literature group.

The professional group

The work of this group may overlap that of the second group to a considerable extent, in the sense that courses in both groups may be taken at the same time. The professional preparation of a teacher of German should include: a thorough knowledge of the structure of the German language, an appreciative familiarity with German literature, and a fair amount of specialized pedagogical training. The study of literature cannot be different for prospective teachers from that for all other types of col-

lege students, and, therefore, belongs to the second group. But their knowledge of language structure, though not necessarily of a specialistic philological character, must include a more detailed knowledge of German grammar, a familiarity with technical German phonetics, and at least an elementary insight into the historical development of the language. In addition to suitable courses in these three subjects, a pedagogical course, dealing with the methods of modern language teaching, and connected with observation and practice teaching, must be provided for. Where the previous training has been neglected, a course in German conversation may be added; but, generally speaking, this should no longer be necessary with students in their fifth or sixth year of German instruction. Wherever this need exists, the system of instruction is at fault.

Conclusion

Incomplete though this brief outline must necessarily be, the writer has attempted to touch upon the most important phases of the students' development of linguistic, cultural, and, where demanded, professional command of German. Little has so far been said concerning the college teacher. The strong emphasis placed upon the direct method in this article should not be misinterpreted as meaning that a fluent command of the spoken language is a *conditio sine qua non.* Nothing could be farther from the truth. First of all, the necessity of the exclusive use of the direct method exists obviously only in the elementary group. In this group, however, "conversation" in the generally accepted sense of the word should not be attempted — it will do more harm than good. The constant practice in speaking and hearing should be so rigidly subservient to the interpretation and practice of the texts being read and to grammatical drill, that only a minimum of "speaking knowledge" on the part of the teacher is unavoidably necessary; his pronunciation, of course, must be perfect. However desirable it may be that a teacher should know intimately well the language he is teaching in college, there are other requirements even higher than this; they are, in the first group, energy, thoroughness, and pedagogical skill, coupled with an in-

telligent understanding of the basic principles of the direct method; in the second group, literary appreciation and a sympathetic understanding of German thought, history, and civilization; and, for the third group, elementary philological training, theoretical as well as practical acquaintance with the needs of the classroom, and a long and varied experience in teaching. Rarely will all three qualifications be combined in one person, nor are such fortunate combinations necessary in most colleges. A wise distribution of courses among the members of the department can in most cases be effected in such a way that each teacher's talents are utilized in their proper places.

E. Prokosch

PART FIVE

The Arts

XXIII

THE TEACHING OF MUSIC

Music a comparatively recent addition to the college curriculum

THERE is perhaps no more direct way of throwing a sort of flashlight upon the musical activity in the colleges of America than the statement that a volume of this kind, if prepared a dozen years ago, would either have contained no chapter upon music, or, if music were given a place at all, the argument would have been occupied with hopes rather than achievements. Not that it would be literally true to say that music was wholly a negligible quantity in the homes of higher education until the twentieth century, but the seat assigned to it in the few institutions where it was found was an obscure and lowly one, and the influence radiating therefrom reached so small a fragment of the academic community that no one who was not engaged in a careful, sympathizing search could have been aware of its existence. It was less than twenty years ago that a prominent musical journal printed the very moderate statement that "the youth who is graduated at Yale, Harvard, Johns Hopkins, Brown, Dartmouth, Bowdoin, Amherst, Cornell, or Columbia has not even a smattering of music beyond the music of the college glee and mandolin club; and of course to cultivate that is the easiest road to musical perdition." One who looks at those institutions now, and attempts to measure the power and reach of their departments of music, will not deny the right to the satisfaction which their directors — men of national influence — must feel, and would almost expect them to echo the words of ancient Simeon. The contrast is indeed extraordinary, and, I believe, unparalleled. The work of these men, and of others who could be named with them, has not been merely development, but might even be called creation. Any one who attempts to keep track of the growth of musical education in our colleges, universities, and also in the secondary schools of the present day, will find that the bare sta-

tistics of this increase, to say nothing of a study of the problems involved, will engage much more than his hours of leisure. Music, which not long ago held tolerance only as an outside interest, confined to the sphere of influence of the glee club and the chapel choir, is now, in hundreds of educational institutions, accorded the privileges due to those arts and sciences whose function in historic civilization, and potency in scholarly discipline and liberal culture, give them domicile by obvious and inalienable right.

History of the subject of music in the American college curriculum

The first university professorships in music were founded at Harvard in 1876, and at the University of Pennsylvania at about the same time. Vassar College established musical courses in 1867, Oberlin in 1869. Harvard took the lead in granting credit for certain courses in music toward the degree of A.B. in 1870.[1] Progress thereafter for many years was slow; but in 1907 investigation showed that "approximately one half the colleges in the country recognize the value of instruction in music sufficiently to grant credit in this subject."[2] Since this date college after college and university after university have fallen into line, only a few resisting the current that sets toward the universal acceptance of music as a legitimate and necessary element in higher education. The problem with the musical educators of the country is no longer how to crowd their subject into the college preserve, but how to organize its forces there, how to develop its methods on a basis of scholarly efficiency, how to harmonize its courses with the ideals of the old established departments, and now, last of all, how to bring the universities and colleges into coöperation with the rapid extension of musical practice, education, and taste which has, in recent days, become a conspicuous factor in our national progress.

An investigation into the causes of this great change

[1] Arthur L. Manchester: "Music Education in the United States; Schools and Departments of Music." United States Bureau of Education Bulletin, 1908, No. 4.

[2] Papers and Proceedings of the Music Teachers' National Association, 1907; report by Leonard B. McWhood.

Changing social ideals responsible for the new attitude toward the study of music in colleges

would be fully as interesting as a critical examination of its results. The limits of this chapter require that consideration be given to the present and future of this movement rather than to its past; but it is especially instructive, I think, to those who are called upon to deal practically with it, to observe that the welcome now accorded to music in our higher institutions of learning is due to changes in both the college and its environment. In view of the constitution and relationships of our higher schools (unlike those of the universities of Europe), any alteration in the ideals, the practical activities, and the living conditions of the people of the democracy will sooner or later affect those institutions whose aim is fundamentally to equip young men and women for social leadership. It is unnecessary to remind the readers of such a book as this of the marked enlargement of the interests of the intelligent people of America in recent years, or of the prominent place which æsthetic considerations hold among these interests. The ancient thinker, to whom nothing of human concern was alien, would find the type he represented enormously increased in these latter days. The passion for the release of all the latent energies and the acquisition of every material good, which characterizes the American people to a degree hitherto unknown in the world since the outburst of the Renaissance, issues, as in the Renaissance, in an enormous multiplication of the machinery by which the enjoyment of life and its outward embellishment are promoted. But more than this and far better — the eager pursuit of the means for enhancing physical and mental gratification has coincided with a growing desire for the general welfare; — hence the æsthetic movement of recent years, and the zeal for social betterment which excludes no section or class or occupation, tend to unite, and at the same time to work inward and develop a type of character which seeks joy not only in beauty but also in the desire to give beauty a home in the low as well as in the high places. Whatever may be one's view of the final value of the recent American productions in literature and the fine arts, the social, democratic

tendency in them is unmistakable. The company of enthusiastic men and women who are preaching the gospel of beauty as a common human birthright is neither small nor feeble. The fine arts are emerging from the studios, professional schools, and coteries; they are no longer conceived as the special prerogative of privileged classes; not even is the creation of masterpieces as objects of national pride the pervading motive; — but they are seen to be potential factors in national education, ministering to the happiness and mental and moral health of the community at large. It was impossible that the most enlightened directors of our colleges, universities, and public schools should not perceive the nature and possibilities of this movement, hasten to ally themselves with it, and in many cases assume a leadership in it to which their position and advantages entitled them.

The educative function of music

The commanding claims which the arts of design, music, and the drama are asserting for an organized share in the higher education is also, I think, a consequence of the change that has come about in recent years in the constitution of the curriculum, the methods of instruction, the personnel of the student body, the multiplication of their sanctioned activities, and especially in the attitude of the undergraduates toward the traditional idea of scholarship. The old college was a place where strict, inherited conceptions of scholarship and mental discipline were piously maintained. The curriculum rested for its main support upon a basis of the classics and mathematics, which imparted a classic and mathematical rigidity to the whole structure. The professor was an oracle, backed by oracular textbooks; the student's activity was restricted by a traditional association of learning with self-restraint and outward severity of life. The revolutionary change came with the marvelous development of the natural sciences, compelling radical readjustments of thought both within and without the college, the quickening of the social life about the campus, and the sharp division of interest, together with a multiplication of courses which made the elective system inevi-

table. The consequence was, as President Wilson states it, that a "disintegration was brought about which destroyed the old college with its fixed disciplines and ordered life, and gave us our present problem of reorganization and recovery. It centered in the break-up of the old curriculum and the introduction of the principle that the student was to select his own studies from a great variety of courses. But the change could not, in the nature of things, stop with the plan of study. It held in its heart a tremendous implication; — the implication of full manhood on the part of the pupil, and all the untrammeled choice of manhood. The pupil who was mature and well-informed enough to study what he chose, was also by necessary implication mature enough to be left free to *do* what he pleased, to choose his own associations and ways of life outside the curriculum without restraint or suggestion; and the varied, absorbing life of our day sprang up as the natural offspring of the free election of studies." [1]

The development of emotions as well as the intellect a vital concern of the college curriculum

Into an academic life so constituted, art, music, and the drama must perforce make their way by virtue of their appeal to those instincts, always latent, which were now set in action. Those agencies by which the emotional life has always been expressed and stimulated found a welcome prepared for them in the hearts of college youths, stirred with new zests and a more lively self-consciousness. But for a time they met resistance in the supremacy of the exact sciences, erroneously set in opposition to the forces which move the emotions and the imagination, and the stern grip, still jealously maintained, of the old conception of "mental discipline" and the communication of information as the prime purpose of college teaching. The relaxation came with the recognition of æsthetic pursuits as "outside interests," and organization and endowment soon followed. But a college art museum logically involves lectures upon art, a theater an authoritative regulation of the

[1] *The Spirit of Learning*, Woodrow Wilson; in *Representative Phi Beta Kappa Orations*, edited by Northup, Lane and Schwab. Boston, Houghton Mifflin Company, 1915.

things offered therein, a concert hall and concert courses instruction in the history and appreciation of music. And so, with surprising celerity, the colleges began to readjust their schemes to admit those agencies that act upon the emotion as well as the understanding, and the problem how to bring æsthetic culture into a working union with the traditional aims and the larger social opportunities of the college faced the college educator, and disturbed his repose with its peremptory insistence upon a practical solution.

Problems in teaching of music in the college

Although the question of purpose, method, and adaptation presents general difficulties of similar character in respect to the college administration of all the fine arts, music is undoubtedly the most embarrassing item in the list. In this department of our colleges there is no common conviction as to methods, no standardized system; but rather a bewildering disagreement in regard to the subjects to be taught, the extent and nature of their recognition, the character of the response to be expected of the student mind, and the kind of gauge by which that response shall be measured by teachers, deans, and registrars. In the matter of literature and the arts of design, where there is likewise an implicit intention of enriching æsthetic appreciation, an agreement is more easily reached, by reason of their closer relationship to outer life, to action, and the more familiar processes of thought. Few would maintain that the purpose of college courses in English literature is to train professional novelists and poets; the college leaves to the special art schools and to private studios the development of painters, sculptors, and architects. What remains to the college is reasonably clear. But in music, on the contrary, the function of the college is by no means so evident as to induce anything like general agreement. Should the musical courses be exclusively cultural, or should they be so shaped as to provide training for professional work in composition or performance? Should they be "practical" (that is, playing and singing), or simply theoretical (harmony, counterpoint, etc.), or entirely confined to musical

history and appreciation? Should credits leading to the A.B. degree be given for musical work, and if so, ought they to include performance, or only theory and composition? Should musical degrees be granted, and if so, for what measure of knowledge or proficiency? One or two Western colleges give credit for work done under the direction of private teachers in no way connected with the institution: — is this procedure to be commended, and if so, under what safeguards? Should a college maintain a musical "conservatory" working under a separate administrative and financial system, many or all of whose teachers are not college graduates; or should its musical department be necessarily an organic part of the college of arts and sciences, exactly like the department of Latin or chemistry? If the former, as is the case with many Western institutions, to what extent should the work in the music school be supervised by the college president and general faculty; under what limitations may candidates for the A.B. degree be allowed to take accredited work in the music school? What should be the relation of the college to the university in respect to the musical courses? Is it possible to establish a systematic progress from step to step similar to that which exists in many of the old established lines? What should be the relation between the college and the secondary schools? Should the effort be to establish a continuity of study and promotion, such as that which exists in such subjects as Latin and mathematics? Should the college give entrance credits for musical work? If so, should it be on examination or certificate, for practical or theoretical work, or both? Should the courses in the history and appreciation of music be thrown open to all students, or only to those who have some preliminary technical knowledge?

These are some of the questions that face a college governing board when music is under discussion — questions that are dealt with on widely divergent principles by colleges of equal rank. Some institutions in the West permit to music a freedom and variety in respect to grades,

subjects, and methods which they allow to no other subject. The University of Kansas undertakes musical extension work throughout the state. Brown University restricts its musical instruction to lecture courses on the history and appreciation of music. Between these extremes there is every diversity of opinion and procedure that can be conceived. The problem, as I have said, is two-fold, and so long as disagreement exists as to the object of collegiate musical work, there can be no uniformity in administration.

In a university the problem is or should be somewhat more simple, just as there is a more general accord concerning the precise object of university training. In place of the confusion of views in regard to ideals and systems and methods which exist in the present-day college, we find in the university a calmness of conviction touching essentials that results from the comparative simplicity of its functions and aims. A conspicuous tendency in our universities is toward specialization; their spirit and methods are largely derived from the professional and graduate schools which give them their tone and prestige. They look toward research and the advancement of learning as their particular *raison d'être,* and also toward the practical application of knowledge to actual life and the disciplining of special faculties for definite vocational ends.[1] Since our universities, unlike those of Europe, consist of a union of graduate and undergraduate departments, any single problem, like that of music, is simplified by the opportunity afforded by the direct passage from undergraduate to graduate work, and the greater encouragement to specialization in the earlier courses. A graduate school which admits music will naturally do so on a vocational basis,

[1] I wish to safeguard this statement by saying that I have in mind not the more conservative universities of the East, but the state institutions of the Middle and Western commonwealths. In speaking of universities as compared with colleges I am also considering the graduate and professional departments. It is difficult to make general assertions on such a subject that do not meet with exceptions.

and the question is not of the aim to be sought, but the much easier one of the means of its attainment, since there is no more of a puzzle in teaching an embryo composer or music teacher than there is in teaching an incipient physician or engineer.

It seems to me that the opportunity before the university has been stated in a very clear and suggestive manner by Professor Albert A. Stanley of the University of Michigan: "If in the future the line of demarcation between the college and the university shall cease to be as sinuous and shadowy as at present, the university will offer well-defined courses in research, in creative work, possibly in interpretation — by which I do not mean criticism, but rather that which is criticized. [Professor Stanley evidently refers to musical performance.] The college courses will then be so broadened that the preparatory work will of necessity be relegated to the secondary schools. This will impose on the colleges and universities still another duty — the fitting of competent teachers. Logically music will then be placed on the list of entrance studies, and the circle will be complete. The fitting of teachers who can satisfy the conditions of such work as will then be demanded will be by no means the least function of the higher institutions. There will be more and more demand for the broadly trained teacher, and there will be an even greater demand for the specialist. By this I mean the specialist who has been developed in a normal manner, and who appreciates the greater relations of knowledge and life." [1]

Problems in teaching of music in secondary schools are intelligently attacked

There is no question that the future of music in the colleges will greatly depend upon the developments in the secondary schools. If the time ever comes when the administrators of our public school system accept and act upon the assertion of Dr. Claxton, United States Commissioner of Education, that "after the beginnings of reading, writing, and mathematics music has greater practical value than any

[1] Papers and Proceedings of the Music Teachers' National Association, 1906.

other subject taught in the schools," the college will find its determination of musical courses an easier matter than it is now. Students will in that event come prepared to take advantage of the more advanced instruction offered by the college, as they do at present in the standard subjects, and the musical pathway through the college, and then through the university, will be direct and unimpeded. Although such a prospect may seem to many only a roseate dream, it is a safer prophecy than it would have appeared a half-dozen years ago. The number of grammar and high schools is rapidly increasing in which the pupils are given solid instruction in chorus singing, ensemble playing, musical theory, and the history and appreciation of music; and in many places pupils are also permitted to carry on private study in vocal and instrumental music at the hands of approved teachers, and school credit given therefor. So apparent is the need of this latter privilege, and so full of fine possibilities, that the question of licensing private teachers with a view to an official recognition of the fittest has begun to receive the attention of state associations and legislatures. It is impossible that the colleges should remain indifferent to these tendencies in the preparatory schools, for their duty and their advantage are found in coöperating with them. The opportunity has been most clearly seen by those colleges which have established departments for the training of supervisors of public school music. Such service comes eminently within the rôle of the college, for a disciplined understanding, a liberal culture, an acquaintance with subjects once unrecognized as related to music teaching, are coming to be demanded in the music supervisor. The day of the old country-school singing master transferred to the public school is past; the day of the trained supervisor, who measures up to the intellectual stature of his colleagues, is at hand. So clearly is this perceived that college courses in public school music, which at first occupied one year at the most, are being extended to two years and three years, and in at least one or two instances occupying four years. And the benefit

is not confined to the schoolroom, for an educated man, conscious of his peculiar powers, will see and use opportunities afforded him not merely as a salaried preceptor but also as a citizen.

Vital function of music in college curriculum is emotional and æsthetic

To revert to the difficulties which the college faces in adjusting musical courses to the general scheme of academic instruction: it is clear that these difficulties lie partly in the very nature of musical art. For music is not only an art but a science. It is the product of constructive ingenuity as well as of "inspiration"; its technique is of exquisite refinement and appalling difficulty; it appeals to the intellect as well as to the emotion. And yet the intellectual element is but tributary, and if the consciousness willfully shuts its gates against the tide of rapture rushing to flood the sense and the emotion, then in reality music is not, for its spirit is dead. What shall be done with an agency so fierce and absorbing as this? Can it be tamed and fettered by the old conceptions of mental discipline and scholastic routine? Only by falsifying its nature and denying its essential appeal. Some colleges attempt so to evade the difficulty, and lend favor, so far at least as credit is concerned, only to the theoretical studies in which the training is as severe, and almost as unimaginative, as it is in mathematics. But to many this appears too much like a reversion to the viewpoint of the mediæval convent schools which classed music in the *quadrivium* along with arithmetic, geometry, and astronomy. Neither the creative power nor the æsthetic receptivity is considered in such courses as these, and the spirit of music revolts against this confinement and gives its pedantic jailers no peace.

The practical course as disciplinary as the theoretical

Shall practical courses in playing and singing be accepted? Now the objection arises that any proficiency with which a student — at least a talented one — would be satisfied, entails hours each day of purely technical practice, involving little of the kind of mental activity that is presupposed in the tradition of college training. Those institutions that have no practical courses are logical, at all

events, and seem to follow the line of least resistance. But the opposition against the purely theoretical side of musical culture will not down, and the "practical" element makes steady headway as the truth shines more clearly upon the administrative mind that musical performance is not a matter of mechanical technique alone, but of scholarship, imaginative insight, keen emotional reaction, and interpretation which involves a sympathetic understanding of the creative mind. The objection to practical exercise dwindles as the conception of its nature and goal enlarges.

Lack of college-trained teachers adds to difficulty of recognizing music as a college subject

Another hindrance presents itself — not so inherent in the nature of the case as those just mentioned — and that is the lack of teachers of music whose educational equipment corresponds in all particulars to the standard which the colleges have always maintained as a condition of election to their corps of instructors. That one who is not a college graduate should be appointed to a professorship or instructorship in a college or university might seem to a college man of the old school very near an absurdity. Yet as matters now stand it would be impossible to fill the collegiate musical departments with holders of the A.B. degree. The large and increasing number of college graduates who are entering the musical profession, especially with a view to finding a home in higher educational institutions, is an encouraging phase of present tendencies, and seems to hold out an assurance that this aspect of the college dilemma will eventually disappear.[1] It is possible, however, that the colleges may be willing to agree to a compromise, making a distinction between the teachers of the history and criticism of music and those engaged in the departments of musical theory and performance. Certainly no man should be given a college position who is not in sympathy with the largest purposes of the institution and able to contribute to their realization; but it must be remembered that broad intelligence and elevated character

[1] There is an interesting statistical article on the college graduate in the musical profession by W. J. Baltzell in the *Musical Quarterly*, October, 1915.

are to be found outside the ranks of college alumni, and are not guaranteed by a college diploma.

Teaching of the history and appreciation of music

Amid the jangle of conflicting opinions in regard to courses and methods and credits and degrees, etc., etc., one subject enjoys the distinction of unanimous consent, and that is the history and appreciation of music. This department may stand alone, as it does at Brown University, or it may supplement theoretical and practical courses; but there seems to be a universal conviction that if the colleges accept music in any guise, they must use it as a means of enlarging comprehension and taste on the part of their young people, and of bringing them to sympathetic acceptance of its finest manifestations. It seems incredible that a college should employ literature and the fine arts except with the fixed intention of bringing them to bear upon the mind of youth according to the purpose of those who made them what they are in the spiritual development of humanity. Even from the most rigid theoretical and technical drill the cultural aim must not be excluded if the college would be true to itself; how much more urgent is the duty of providing courses in which the larger vision of art, with the resultant spiritual quickening, is the prime intention! President Nicholas Murray Butler, in his address of welcome to the Music Teachers' National Association at their meeting in New York in 1907, struck a note that must find response in the minds of all who are called upon to deal officially with this question, when he recognized as a department of music worthy of the college dignity "one which is not to deal merely with the technique of musical expression or musical processes, but one which is to interpret the underlying principles of musical art and the various sciences on which it rests, and to set out and to illustrate to men and women who are seeking education what those principles signify, how they may be brought helpfully and inspiringly into intellectual life, and what part they should play in the public consciousness of a cultivated and civilized nation."

The first step in understanding the part which the prin-

Emphasis on appreciation rather than technique

ciples of music should play in the consciousness of a civilized nation is to learn the part they have played in history. A survey of this history shows that all the phenomena of musical development, even those apparently transient and superficial, testify to a necessity of human nature, an unappeasable thirst for self-expression. In view of the relationship of musical art to the individual and the collective need, it is plain that musical history and musical appreciation must be taught together as a supplementary phase of one great theme. And, furthermore, this phase is one that is not only necessary in a complete scheme of musical culture, but is also one that is conveyed in a language which all can understand. It is significant of the broad democratic outlook of our American institutions of learning, in contrast to the universities of Europe, that the needs of the unprepared students are considered as well as the benefit of those who have had musical preparation, and the mysteries of musical art are submitted to all who desire initiation. Too much emphasis cannot be laid upon this wise and generous attitude toward the fine arts which is maturing in our American colleges; by which they demonstrate their belief in the power of adaptation of all manifestations of beauty to the condition of every one of intelligence, however slight the experience or limited the talent. There are, unquestionably, certain puzzling difficulties in imparting an understanding of musical structure and principles to those who have not even a preliminary smattering of the musical speech, but the experiment has gone far enough to prove that music, with all its abstruseness, complexity, and remoteness from the world of ordinary experience, has still a message so direct, so penetrating, so human and humanizing, that no one can be wholly indifferent to its eloquence when it comes through the ministry of a qualified interpreter.

The properly trained college teacher of music

A qualified interpreter! — yes, there's the rub. Only a few years ago men competent to teach the history and philosophy of music in a manner which a college or university could consistently tolerate, were almost non-existent,

and even today many colleges are out of sheer necessity giving over this department to men of very scanty qualifications. Few men have faith enough to prepare for work that is not yet in sight. Then with the sudden breaking out of musical history and appreciation courses all over the country, the demand appeared instantly far in excess of the supply. The few men who had prepared themselves for scholarly critical work were, as a rule, in the employ of daily newspapers, and the colleges were compelled to delegate the historical and interpretative lectures to those whose training had been almost wholly in other lines of musical interest. No reputable college would think for a moment of offering chairs of political science, or general history, or English literature to men with so meager an equipment. There is no doubt that the disfavor with which the musical courses are still regarded by professors of the old school is largely due to the feeling that their musical colleagues as a rule have undergone an education so narrow and special that it keeps them apart from the full life of the institution. That this is the tendency of an education that is exclusively special, no one can deny. It is equally undeniable that such an education is quite inadequate in the case of one who assumes to teach the history and appreciation of music. This subject, by reason of the multifarious relations between music and individual and social life, demands not only a complete technical knowledge, but also a familiarity with languages, general history, literature, and art not less than that required by any other subject that could be mentioned. The suggestion by a French critic that a lecturer on art must be an artist, a historian, a philosopher, and a poet, applies with equal relevance to a lecturer on music.

It is only fair to the musical profession to say that its members are as eager to meet these requirements as the colleges are to make them. If music still holds an inferior place in many colleges, both in fact and in esteem, the fault lies in no small measure in the ignorance on the part of trustees, presidents, and faculties of the nature of music, its demands, its social values, and its mission in the de-

velopment of civilization. With the enlightenment of the powers that control the college machinery, encouragement will be given to men of liberal culture and scholarly habit to prepare themselves directly for college work. The hundreds of college graduates now in the musical profession will be followed by other hundreds still more amply equipped as critics and expounders. The natural place for the majority of them, I maintain, is not in the private studio or newspaper office, but in the college and university classroom.

There is no reason in the nature of things why our colleges and universities should not also be the centers of a concentrated and intensive activity, directed upon research and philosophic generalization in the things of music as in other fields of inquiry. For this they must provide libraries, endowments, and fellowships. Such works as Mr. Elson's *History of American Music*, Mr. Krehbiel's *Afro-American Folksongs*, and Mr. Kelly's *Chopin as a Composer* should properly emanate from the organized institutions of learning which are able to give leisure and facility to men of scholarly ambition. The French musical historian, Jules Combarieu, enumerates as the domains constantly open to musical scholarship: acoustics, physiology, mathematics, psychology, æsthetics, history, philology, palæography, and sociology.[1] Every one of these topics has already an indispensable place in the college and university system — it is for trained scholarship to draw from them the contributions that will relate music explicitly to the active life of the intellect.

But not for the intellect only. Here the colleges are still in danger of error, due to their long-confirmed emphasis upon concepts, demonstrations, scientific methods, and "positive" results, to the neglect of the imagination, the emotions, the intuitions, and the things spiritually discerned. "The sovereign of the arts," says Edmund Clarence Stedman, "is the imagination, by whose aid man makes every

[1] *Music; Its Laws and Evolution:* Introduction. Translation in Appleton's International Scientific Series.

leap forward; and emotion is its twin, through which come all fine experiences, and all great deeds are achieved. Youth demands its share in every study that can engender a power or a delight. Universities must enhance the use, the joy, the worth of existence. They are institutions both human and humane." [1]

The test of effective teaching of music in the college: Does it enrich the life of the student through the inculcation of an æsthetic interest?

Institutions which exclude the agencies which act directly to enhance "the joy and the worth of existence" are universities only in name. Equally imperfect are they if, while nominally accepting these agencies, they recognize only those elements in them which are susceptible to scientific analysis, whose effects upon the student can be tested by examinations and be marked and graded — elements which are only means, and not final ends. The college forever needs the humanizing, socializing power of music, the drama, the arts of design, and it must use them not as confined to the classroom or to any single section of the institution, but as the effluence of spiritual life, permeating and invigorating the whole. In the mental life of the college there have always ruled investigation, comparison, analysis, and the temper fostered is that of reflection and didacticism. Into this world of deliberation, routine, mechanical calculation, there has come the warm breath of music, art, and poetry, stirring a new fire of rapture amid the embers of speculation. The instincts of youth spring to inhale it; youth feels affiliation with it, for art and poesy, like nature, are ever self-renewing and never grow old. It works to unify the life of the college whose tendency is to divide into sealed compartments of special intellectual interests. It introduces a life that all may share, because men divide when led by their intellects, they unite when led by their emotions. Among the fine arts music is perhaps supreme in its power to refine the sense of beauty, to soften the heart at the touch of high thought and tender sentiment, to bring the individual soul into sympathy with the over-soul of humanity. It is this that gives music its su-

[1] *The Nature and Elements of Poetry*, page 5.

preme claim to an honored place in the halls of learning, as it is its crowning glory.

The whole argument, then, is reduced to this: that with all the scientific aspects of the art with respect to material, structure, psychological action, historical origins and developments and relations, of which the college, as an institution of exact learning, may take cognizance, music must be accepted and taught just because it is beautiful and promotes the joy of life, and the development of the higher sense of beauty and the spiritual quickening that issues therefrom must be the final reason for its use. At the same time it must be so cultivated and taught that it will unite its forces for a common end with all those factors which, within the college and without the college, are now working with an energy never known before in American history for a social life animated by a zeal for ideal rather than material ends, and inspired by nobler visions of the true meaning of national progress.

Among the worthy functions of our colleges there is none more needful than that of inspiring ardent young crusaders who shall go forth to contend against the hosts of mediocrity, ugliness, and vulgarity. One encouragement to this warfare is in the fact that these hosts, although legion, are dull as well as gross, and may easily be bewildered and put to rout by the organized assaults of the children of light. So may it be said of our institutions of culture, as Matthew Arnold said of Oxford, that they "keep ever calling us nearer to the true goal of all of us, to the ideal, to perfection — to beauty, in a word, which is only truth seen from another side."

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XXIV

THE TEACHING OF ART

Art instruction defined

IN this chapter an attempt is made to set forth the aims, content, and methods of art instruction in the college. In this discussion the word "college" will be regarded in the usual sense of the College of Liberal Arts, and art instruction as one of the courses which lead to the degree of bachelor of arts.

There is no term that is used more freely and with less precision than the word "art." In some usages it is given a very broad and comprehensive meaning, in others a very narrow and exclusive one. The term is sometimes applied to a human activity, at other times to the products of but a small part of that activity — for example, paintings and statuary.

In this chapter the term will be used in accordance with the definition evolved by Tolstoi, who says: "Art is a human activity, consisting in this, that one man consciously, by means of external signs, hands on to others feelings he has lived through, and that other people are affected by these feelings, and also experience them."[1] The external signs by which the feelings are handed on are movements, as in dancing and pantomime; lines, masses, colors, as in architecture, painting and sculpture; sounds, as in music; or forms expressed in words, as in poetry and other forms of literature. The external signs with which art instruction in the college deals are lines, masses, and colors. This discussion, therefore, treats of instruction in the formative or visual arts, which include architecture, painting, sculpture, decoration, and the various crafts, in so far as they come within the meaning of the definition given above.

Concerning the nature of art and the purpose of art instruction in the college, there is so much misunderstanding

[1] Tolstoi, L. N., *What Is Art?* Thomas Y. Crowell Company, 1899. Chapter V, page 43.

Instruction in art should be an integral part of a liberal education

that it will be well to make an attempt at clarification. Art is too commonly regarded as a luxury — a superfluity that may serve to occupy the leisure of the well-to-do — a kind of embroidery upon the edge of life that may be affixed or discarded at will. Whereas, art is a factor that is fundamental in human life and development, a factor that has entered into the being of the race from the dawn of reason. Its products, which antedate written history by thousands of years, form the most reliable source of information we possess of the habits and thoughts of prehistoric man. It has been the medium of expression of many of the choicest products of human thought throughout the ages. These products have been embodied in forms other than that of writing. Its functions are limited neither to the citizen, the community, nor the country; they extend beyond national bounds to the world at large. Art belongs to the brotherhood of man. It is no respecter of nationalities. It is obvious that in a general college course, a study of the religious, social, and political factors in civilization that does not include art among these factors is incomplete.

The question under discussion concerns the teaching of art to the candidate for the bachelor of arts degree, and this question will be solely kept in view. Since, however, graduates in science, engineering, law, medicine, etc., are not exempt from the needs of artistic culture, they too should have at least an effective minimum of art instruction.

Art a social activity

Art is recognized as a social activity. It enters largely into such practical and utilitarian problems of the community as town planning and other forms of civic improvement. As workers in such activities, college graduates are frequently called to serve on boards of directors and committees which have such work in charge. To most of such persons, education in art comes as a post-collegiate activity. Surely the interests of the community would be promoted if the men and women into whose hands these interests are committed had had some formal instruction in art during their college years.

If by practical education we mean training which prepares the individual for living, then the study of an activity that so pervades human life should be included in the curriculum of even a so-called practical college course. Art education has a more important function than to promote the love of the beautiful, to purify and elevate public taste, to awaken intellectual and spiritual desires, to create a permanent means of investing leisure. Important as all these purposes are, they are merely a part of a larger one — that of revealing to the student the relationship of art to living.

Flexibility of art expression determines flexibility of art instruction

Art expression has the quality of utmost flexibility. This flexibility appears also in art instruction, and it is for this reason that in no two institutions of higher learning is the problem of art instruction attacked in the same way. There is, consequently, a great diversity in the types of art courses, even in the college.

The flexibility of art instruction is both advantageous and embarrassing. It is an advantage in that it can be adapted to almost any requirement. It can be applied to the occupations of the kindergarten, or it can be made an intensive study suitable for the graduate school. But this very breadth is also a source of weakness in that it tends to divert the attention from that precision of purpose which all formal instruction should have, however elementary or advanced. It is apt to be too scattering in its aims. It is not easy to determine exact values either in the subject studied or in the accomplishment of the student. Estimates in art are, and should be, largely a matter of personal taste and opinion. They are not infrequently colored by prejudice, especially where the judgment of producing artists is invoked. This, again, is as it should be. An artist who assumes toward all works of art a catholic attitude, weakens that intensity of view and of purpose which animates his enthusiasm. It can easily be understood that to a larger extent than in other subjects the nature and scope of art instruction depends upon the personality of the instructor.

Values of art instruction

The flexibility to which we have adverted adapts art instruction to diverse educational aims.

In that it can be made to conduce to accurate observation of artistic manifestations, and to logical deduction therefrom, it may be given a disciplinary purpose. In its highest development, to which only the specially gifted can attain, the ability to observe accurately and to deduce logically demands the most exacting training of the eye, of the visual memory, and of the judgment. As an example of the exercise of this sort of discipline we may cite Professor Waldstein's recognition of a marble fragment in the form of a head in the Louvre as belonging to a metope of the Parthenon. When, after Professor Waldstein's suggestion of the probable connection, a plaster cast of the head was taken to the British Museum and placed upon the headless figure of one of the metopes, the surfaces of fracture were found to correspond.[1] The most useful application of this ability lies in the correct attribution of works of art to their proper schools and authorship. Signor Morelli in his method of identification used a system that is almost mechanical, yet the evidence supplied by concurrence or discrepancy of form in the delineation of anatomical details was supplemented by a highly cultivated sense for style, for craftsmanship, and for color as well as by an extensive historical knowledge.

In that art instruction cultivates taste and the appreciation of works of art, it has a cultural purpose. By many persons it is assumed that this is its sole value.

In that it serves to illuminate the study of the progress of civilization, it has an informative purpose.

In that it enables the technical student to correlate his work with that of past and present workers, it aids in the preparation for professional studies.

Art has been defined as "the harmonic expression of the emotions."[2] Accepting this definition as a modified con-

[1] Waldstein: *Essays on the Art of Pheidias*, Cambridge University Press, 1885, pages 95 et seq.

[2] *New Princeton Review*, II, 29.

densation of Tolstoi's definition, it is clear that in a work of art two separate personalities are involved — that which makes the expression, and the other to whom the expression is addressed; thus, there are artists on the one hand, and the public on the other. Since we shall have to speak of two distinct classes of students,— namely, those who are in training as future artists (as architects, painters, scupltors, designers, etc.), and those who are taking courses in the understanding or appreciation of art,— it will be convenient in this discussion to refer to the former as art students and to the latter as lay students.

Difference between technical and lay courses in art one of emphasis

Formal art instruction has been offered by colleges to both these groups. It is evident that for the training of the art student emphasis must be placed upon the technique of creative work, whereas for the lay student emphasis must be placed upon the study of the theory and the history of art. It would seem, however, that these two methods are not mutually exclusive; nor should they be, for the art student would surely gain by a study of the principles of art and its history, while the lay student would profit by a certain amount of practice directed by an observance of the principles.

Mr. Duncan Phillips, in an article entitled "What Instruction in Art Should the College A.B. Course Offer to the Future Writer on Art?" proposes a hypothetical course in which "the ultimate intention would be to awaken the æsthetic sensibilities of the youthful mind, to encourage the emergence of the artists and art critics, and the establishment of a residue of well-instructed appreciators."[1]

This proposal assumes the desirability of the completion of a general course designed for college students, before beginning the special courses designed for those individuals whose aptitudes seem to fit them for successful careers as artists on the one hand, or as successful writers on art, or art instructors on the other.

In this place the question of professional training will not be discussed. The courses under consideration are

[1] *The American Magazine of Art*, Vol. 8, No. 5, page 177.

designed to serve the group of lay students from which specialists may, from time to time, emerge. It is of the utmost importance that provision for the further training of such specialists should be made in the college, in the postgraduate school, or in an allied professional school of art.

In view of the great diversity in the treatment of the subject in different colleges, it will be impossible to present a series of courses that might, under other conditions, be representative of a general practice throughout the country. On the other hand, the attempt to make an epitome of the various methods in use at the more important colleges would result in the presentation of a succession of unrelated statements drawn from catalogues which would be hardly less exasperating to the reader than it would be for him to follow, successively, the outlines as presented in the catalogues themselves. Various summaries of these outlines have been made, and to these the reader is referred.[1]

A general course of study — Must be adjusted to local conditions

An attempt is here made to set forth a programme which is offered as a suggestion, upon which actual courses may be based, with such modifications as are demanded by local conditions, the number and personal training of the teaching staff, and the physical equipment available.

The task before the college art instructor is to cultivate the lay student's understanding and appreciation of the works of art and to develop an ardent enthusiasm for his

[1] Woodward, W. "Art Education in the Colleges," *Art Education in the Public Schools of the United States*, edited by J. P. Haney; American Art Annual, New York, 1908.

Ankeney. J. S., Woodward, W., Lake, E. J., "Final Report of the Committee on the Condition of Art Instruction in Colleges and Universities." *Seventeenth Annual Report of the Western Drawing and Manual Training Association.* Minneapolis, 1910.

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subject, tempered by good taste. This understanding will be based upon a workable body of principles which the student can use in making his artistic estimates and choices. Such a body of principles will constitute his theory of art.

Two methods of presenting art instruction to lay students

Art instruction for lay students may be presented in two ways:

1. By the study of theory supplemented by the experimental application of theory to practice, as by drawing, design, etc.

2. By the study of theory supplemented by an application of theory to the analysis and estimation of works of art as they are presented in a systematic study of the history of art.

Consider now the relation of practice and history to theory:

First as to practice: Art instructors are divided into three camps on the question of giving to the lay student instruction in practice: (1) Those who believe that not only is practice unnecessary in the study of theory, but actually harmful; (2) those who believe that practice will aid in a study of the theory of art; (3) Those who believe that practice is indispensable and who would, therefore, require that all students supplement their study of the theory of art by practice. As may be surmised, by far the largest number of advocates is found in the middle division.

One form of practice is Representation. In this form the student begins by drawing in freehand very simple objects either in outline or mass, and proceeds through more advanced exercises in drawing from still life, to drawing and painting of landscape and the human figure. With the addition of supplementary studies, such as anatomy, perspective, modeling, composition, craft work, theory, history, etc., this would be, broadly speaking, the method followed in schools of art, where courses, occupying from two to four or five years, are given, intended primarily for those who expect to make some sort of creative art their vocation.

It is this kind of work which opponents to practice for the lay student have in mind. They claim that only by

long and severe training can he produce such works as will give satisfaction to him or to others who examine his handiwork. They contend that the understanding of works of art is not dependent upon ability to produce a poor example. They offer many amusing analogies as arguments against practice courses for lay students. They maintain that the proof of the pudding is in the eating, rather than in the making; that to enjoy music one need not practice five-finger exercises; that other creatures than domestic fowls are capable of judging of the quality of eggs; that to appreciate the beauty of a tapestry it is not necessary to examine the reverse side. It will perhaps be sufficient, for the present, to point out that in so far as such alleged analogies can be submitted for arguments, they are equally applicable to laboratory courses in any subject which is studied with a non-professional or non-vocational purpose.

It is true, however, that such a course as that outlined above demands a large amount of time, compared with the results attained; and while successful courses in Representation are offered in certain colleges, the great mass of college students, who cannot hope to acquire a high degree of skill, would hesitate to devote a large part of their training to technical work, even if college faculties were willing to grant considerable proportions of credit for it toward the bachelor of arts degree.

Relative value of freehand drawing and design

It will be understood by the reader that the value of elementary freehand drawing as a means of discipline or as an aid to the technical student is not under discussion. The value of drawing as a fundamental language for such purposes is universally admitted. The questions are these: Can some form of practice in art be used to aid in the understanding of the principles of art? Is representative drawing the only form of practice available for the lay student who undertakes the study of art? Fortunately, the advocates of practice can offer an alternative; namely Design. Mr. Arthur Dow distinguishes between the Drawing method (Representation) and the Design method by calling the former *Analytical* and the latter *Synthetical.* In

an article on "Archaism in Art Teaching"[1] he says: "I wish to show that the traditional 'drawing method' of teaching art is too weak to meet the new art criticism and new demands, or to connect with vocational and industrial education in an effective way; but that the 'Design method' is broad and strong enough to do all of these things."

"The drawing method," he continues, "is analytic, dealing with the small, the details, the *application* of art; the design method is synthetic, dealing with wholes, unities, principles of art."

Mr. Dow carries his exposition into the application of the Design method to vocational work, but it can be used with equal effect in supplementing the lay student's study of art.

But the questions immediately arise: Is not a preparation as long and arduous required to make a designer as to make a painter or a sculptor? And is not the half-baked designer in as sorry a plight as the half-baked artist of any kind? The answer to both is simple: The lay student is not in any degree a painter or a sculptor or a designer, neither is he in training for any of these professions. The advantage of the Design method is, that with no skill whatsoever in drawing, the beginner in the study of art can apply to his own efforts the same principles of design which have from time immemorial entered into the creation of great works of art. The college freshman planning a surface design with the aid of "squared" paper is applying the same principles that guided the hand of Michelangelo as it swept across the ceiling of the Sistine Chapel.

Such principles as symmetry, balance, rhythm, emphasis, harmony in form, mass, value, and color can be inculcated by solving the simplest as well as the most complicated problems. A graded series of exercises can be undertaken by the student that will, with a comparatively small amount of manual skill carry him a considerable distance in the understanding of the principles of design upon which all creative art rests. Another advantage is that, in the process,

[1] *Nineteenth Annual Report, Western Drawing and Manual Training Association*, Cincinnati, 1912, page 19.

considerable skill in freehand drawing also can be acquired. But this advantage is merely incidental.

The greatest value lies in the fact that the Design method offers to the student an excellent means of self-expression. The student, through no fault of his, is too prone to absorb and too little inclined to yield of the fruits of his knowledge. Herein lies a partial remedy for the tendency of college students to make receptacles of their minds into which knowledge is poured through the ear by listening to lectures, or through the eye by reading. Herein is a means of overcoming mental inertia, for, certainly, the solution of a problem in design calls for thought — the amount of mental exertion being commensurate with the difficulty of the problem. In this, the Design method is superior to the Representation method, though it would be an error to assume that freehand drawing is chiefly a manual operation. Such an error is entertained by those only who never have learned to draw. Another considerable value lies in the fact that even if the lay student of design should in later life never set hand to paper,— as he probably will not, any more than he who has taken courses in drawing and painting will ever attempt to paint a picture,— yet he has come into practical contact with the leading principles of art, and has gained a knowledge that can be applied not merely to the discriminating understanding of the artistic qualities of the exhibits in art museums or in private galleries, but to the art of every day. It can be applied to the estimating of the artistic value of a poster, a book cover, or a title page; to the choosing of wall paper; to the arranging of the furniture in a room; to the laying out of a garden; to intelligent coöperation in the designing of a house or in replanning, on paper at least, the street system of a city; or to the selecting of a design for a public memorial. It is not to be assumed that in thus exercising a cultivated taste he would always make conscious application of the principles of design in making his estimates. These would have so entered into his habit of thought that he would unconsciously make what Mr. Dow calls "fine choices."

The educational value of the Design method is almost universally recognized in the art departments of our public schools and in our art schools, and it is probable that when its aims and methods are better understood by our college faculties, its disciplinary, cultural, and informative value will be more widely recognized in the college of liberal arts, and that it will take equal rank with theme and report writing as a means of cultivating a taste for literature, with the practice of harmony and counterpoint as a means of appreciating music, and with laboratory work in acquiring knowledge of a science.

Art history as a means of inculcating principles of art

Next, consider art history as a means of inculcating the principles of art. It is evident that the emotions or feelings of the artist and the methods he employs to express them may be studied in such masterpieces as the *Hermes* of Praxiteles and the *Lincoln* of St. Gaudens. In either he may observe the application of the principles of balance, mass, repose, harmony, and the analysis of character. In either he may study the technique which involves the material of the statues, the tools employed, and the manner of working.

There is, however, great advantage in considering such examples in their place in the evolution of art, and their significance in their relation to the social and political development of the human race — in other words, in studying systematically the history and development of art.

Instruction in history of art is not without its pitfalls. It is too apt to lapse into a mere listing of names and dates of artists and their work, with the introduction of interesting biographical details and some discussion limited to the subjects treated in selected examples. It is often too much concerned with *who*, *when*, and *where* and not sufficiently with *why* and *how*. A person may possess a large fund of the facts of art history and yet have but little understanding or appreciation of the aims and underlying principles of art production. It should never be forgotten that for the college student the history of art is merely a convenient scheme or system upon which to base discussions of the

principles of art as involved in the works themselves, an outline for the study of the artistic affiliations of any artist with the great company of his antecedents, his contemporaries, and his successors. The instructor should never regard practice or history as ends in themselves, but as means to the development of the understanding.

Years in which art courses should be offered

In some colleges only the more advanced students are permitted to take art courses. It does not seem wise thus to limit the years in which courses may be taken. An elementary course should be offered in the freshman year, while other courses of increasing difficulty should be offered in each of the succeeding years. The greatest variety is seen in the colleges throughout the country in the amount of art taught, and the amount of credit given toward the A.B. degree. When the subject is elected as a "minor," it should be one-tenth to one-eighth of all the work undertaken by a candidate for the bachelor's degree; while a "major" elective usually should cover from one-fifth to one-fourth of all the work of a candidate for the same degree. Some zealous advocates maintain that a certain amount of art training should be required for graduation. Valuable as art training would be to every graduate, it does not seem wise to make art a required subject in the curriculum. To compel men and women to study art against their will would destroy much of the charm of the subject both for the teacher and the student. Unless the subject is pursued with enthusiasm by both, it loses its value.

Organization and content of courses in art

The courses suggested are as follows:

Course I (Freshman year). Introduction to the study of art. A study of the various forms of artistic expression, together with the principles which govern those forms. The study would be carried on (1) by means of lectures, (2) by discussions led by the instructor and carried on by members of the class, (3) by laboratory or studio practice in the application of the principles of art expression to graded problems in design, (4) by collateral reading, (5) by the occasional writing of themes

and reports, (6) by excursions to art collections (public and private), artists' studios, and craft shops.

Some of the topics for lectures and discussion would be: Primitive art and the factors which control its rise and development; principles of harmony; design in the various arts; an outline study of historic ornament; composition in architecture, painting, and sculpture; concept in art, with a study of examples drawn from the master works of all ages; processes in the artistic crafts; application of the principles of design to room decoration.

The studio or laboratory work would include: Application of the principles of design; spacing of lines and spots; borders and all-over designs achieved by repetition of various units; studies in symmetry and balance; color study, including hue, value, intensity; exercises in color harmony; problems in form and proportions, decoration of given geometrical areas; applications to practical uses; studies in form and color from still life; use of charcoal, brush, pastel, water color; simple exercises in pictorial composition; problems in simplification necessitated by technique; application of principles of design to room decoration. (This course would be prerequisite for all subsequent courses in practice.)

Course II (*Sophomore year*). A general course in the history of art. A consideration of the development of the arts of architecture, sculpture, and painting from prehistoric periods to recent times. In this course emphasis would be laid upon the periods of higher attainments in artistic expression, and the discussions would be directed toward the qualities of great masterpieces rather than toward those of the multitude of lesser works.

The work would be carried on (1) by means of lectures; (2) by discussions led by the instructor and carried on by members of the class; (3) by collateral reading; (4) by study of original works of art, photographs, and other forms of reproduction; (5) by the writing of themes and reports; (6) by visits to art galleries and artists' studios. (This course would be pre-

requisite for all subsequent courses in history, etc.)

Following these two general courses there should be two groups of courses: *Group A, Practice courses: Group B, History courses.* Candidates for the A.B. degree who expect to take postgraduate work in creative art or in the teaching of creative art would elect chiefly from Group A. Lay students who are candidates for the A.B. degree and who expect to make writing or criticism in art, or teaching of art to lay students, or art museum work their vocation, would elect chiefly from Group B; as would, also, those composing the greater number, who study art as one means of acquiring general culture.

In the following lists of courses the grade of each course is indicated by a roman numeral placed after the title of the course, the indications being as follows:

I. Elementary (primarily for freshmen and sophomores).
II. Intermediate (primarily for sophomores and juniors).
III. Advanced (primarily for juniors and seniors).
IV. Graduate (primarily for seniors and graduates).

Beyond these indications no attempt is here made to prescribe the subdivisions of the courses, nor the number of hours per week, nor the number of weeks per year in each course.

GROUP A: PRACTICE COURSES

A1 *Freehand Drawing.* (I) Drawing in charcoal and pencil from simple objects, plaster casts, still life, etc. Elements of perspective with elementary problems.

A2 *Freehand Drawing (continued).* (II) Drawing in charcoal, pencil, pen and ink, brush (monochrome in water color) from plaster casts, still life and the costumed figure. Out-of-door sketching.

A3 *Color* (Water Color or Oil Color). (II) Drawing in color from still life and the costumed figure. Out-of-door sketching.

A4 *Modeling.* (III) Modeling in clay from casts of antique sculpture and of architectural ornament as an aid to the study of form and proportion.

A5 *Advanced Design.* (III) Theory and practice. (Continuation of Course I. Introduction to the study of art.)

A6, A7, . . . etc. *Advanced Courses in Drawing, Painting, Modeling, and Applied Design* (IV) selected from the following: Studies in various media from life. Composition. Illustration. Portrait work. Practical work in pottery, bookbinding, enameling, metal work, interior decoration, wood carving, engraving, etching. These courses would be supplemented by lectures on the theory and principles of art. Topics of such lectures would be: Theory of Design, Composition, Technique of the Various Arts, Artistic Anatomy, Perspective, Shades and Shadows, etc.

GROUP B: HISTORY COURSES

B1 *History of Ancient Art.* (II)

B2 *History of Roman and Medieval Art.* (II)

B3 *History of Renaissance Art in Italy.* (III)

B4 *History of Modern Art.* (III) History of art in Western Europe during the eighteenth and nineteenth centuries.

B5, B6, . . . etc. *History of Special Periods; Consideration of Special Forms of Art, and of Great Masters in Art* (IV) selected from the following: Art of Primitive Greece, Greek Sculpture, Greek Vases, Early Christian and Byzantine Architecture, History of Mosaic; Medieval Illumination; Sienese Painters of the Thirteenth and Fourteenth Centuries; Florentine Painting; Domestic Architecture of Various Countries; Leonardo da Vinci and His Works; Art of the Netherlands; History of Mural Painting; History and Principles of Engraving; Prints and Their Makers; Chinese and Japanese Art; Colonial Architecture in America; Painting and Sculpture in America, etc., etc.

No attempt will here be made to comment upon the

Teaching equipment for college courses in art

general furnishing and equipment of lecture rooms, laboratories, and studios. Nevertheless, some reference to the special teaching equipment is necessary for the further consideration of the methods of teaching.

Illustrations are of the greatest importance in the study of art. The best illustrations are original works of art. For manifest reasons these are not usually available in the classroom, and the teacher is dependent upon facsimiles and other reproductions. These take the form of copies, replicas, casts, models, photographs, stereopticon slides, prints in black and white and in color, including the ubiquitous picture postal card.

The collections of public art museums and of private galleries are of great value for illustrative purposes; but of still greater value to the student is the departmental museum, with which, unfortunately, but few colleges are equipped. Some colleges have been saddled by well-meaning donors with collections of various kinds of works of art which are but ill related to the instruction given in the department of art. The collections of the college museum need not be large but they should be selected especially with their instructional purpose in view. The problems of expense debars most colleges from establishing museums of art; but with a modest annual appropriation a working collection can be gradually gathered together. A collection which is the result of gradual growth and of careful consideration will usually be of greater instructional value than one which is acquired at one time.

An institution which owns a few original works of painting, sculpture, and the crafts of representative masters is indeed fortunate, but even institutions whose expenditures for this purpose are slight may possess at least a few original lithographs, engravings, etchings, etc., in its collection of prints.

Fortunately, there are means whereby some of the unobtainable originals of the great public museums and private collections of the world may be represented in the college museums by adequate reproductions. The methods

of casting in plaster of Paris, in bronze and other materials; of producing squeezes in papier maché; and of reproducing by the galvano-plastic process, are used for making facsimiles of statues, vases, terra cottas, carved ivories, inscriptions and other forms of incised work, gems, coins, etc., at a cost which, when compared with that of originals, is trivial.[1] Paintings, drawings, engravings, etc., are often admirably reproduced by various photographic and printing processes in color or black and white.

Generally speaking, the most valuable adjunct of the college art museum or of the college art library is the collection of photographs properly classified and filed for ready reference by the instructor or student.

A specially designed museum building would present opportunities for service that would extend beyond the walls of the art department, but if such a building is not available, a single well-lighted room furnished with suitable cabinets and wall cases, and with ample wall space for the display of paintings, prints, charts, etc., would be of great service.

A departmental library of carefully chosen books on the theory, history, and the practice of the various arts, together with current and bound numbers of the best art periodicals of America and of foreign countries, is indispensable.

Methods of teaching

Methods will naturally depend somewhat upon the size of the class. In large classes — of, say, more than forty — the lecture method, supplemented by section meetings and conferences, would usually be followed. In the following discussion it is assumed that the classes will not exceed forty.

Under the head of Methods of Teaching are here included: Work in Class and Work outside of Class.

The work in class consists of lectures; discussions by the members of the class; laboratory or studio work; excursions. There is no worse method than that of exclusive

[1] Robinson, D. M., " Reproductions of Classical Art," *Art and Archaeology*, Vol. V, No. 4, pages 221–234.

lecturing by the instructor. If the methods employed do not induce the student to do his own thinking, they have but little value. Much of the instructor's time will be occupied in devising methods by which the students themselves will contribute to their own and their fellows' advancement.

Discussions led by the instructor and carried on by the members of the class should be frequent. From time to time a separate division of a general topic should be assigned to each member of the class, who will prepare himself to present his part of the topic before the class either by reading a paper or otherwise. Discussions by the members of the class, concluded by the instructor, should generally follow this presentation. Topics for investigation, study, and discussion should be so selected as to require the students to make application of their study to their daily life and environment. In this way their critical interest in the design of public and private buildings, of monuments, and of the innumerable art productions which they see about them would be stimulated.

For the purpose of illustrating lectures and aiding in discussions, prints and photographs may be shown either directly or through the medium of the reflectoscope. Or, they may be transferred to lantern slides and shown by means of the stereopticon. To a limited extent the Lumière color process has been used in preparing slides.

The methods of laboratory and studio work have already been briefly treated under the head of Courses of Instruction, and hardly need to be further amplified here.

It has already been stated that original works of art are the best illustrations, and that these are but rarely available within the walls of the college. Instructors in institutions which are situated within or near to large centers of population can usually supply this deficiency by arranging visits to museums and other places where works of art are preserved and exhibited; and to artists' studios and to workshops where works of art are produced. Instructors in institutions which are not so situated may

supply the deficiency, in some measure, by arranging for temporary exhibitions in the museum or other rooms of the department. Rotary exhibitions of paintings, prints, craftwork, sculpture, designs, examples of students' work, etc., may be arranged whereby groups of institutions within convenient distances from each other may share the benefits offered by such exhibitions, as well as the expense of assemblage, transportation, and insurance. In arranging for such temporary exhibitions it is essential that only works of the highest quality, of their kind, should be selected.

Selections can best be made personally by the instructor or by capable and trustworthy agents who are thoroughly informed as to the purpose of the exhibition and as to the needs of the institutions forming the circuits. Such rotary exhibitions possess a wider usefulness than that of serving as illustrative material for the college department of art: they serve also as an artistic stimulus to the members of the college at large, and to the community in which the college is situated.[1]

The work of students outside of class has already been mentioned. It consists of collateral reading, the study of prints and photographs, and the preparation of written themes and reports. Notwithstanding the lavish production of books relating to art, there are but very few that are suitable for use as college textbooks. The instructor will usually assign collateral reading from various authors.

Testing results of art instruction

In attempting to measure the success or failure of the work, the teacher must ask himself, What do our college graduates who have taken art courses possess that is lacking in those who have not taken such courses?

The immediate test of the results of the work is in the attitude of mind of the students. Do they think differently about works of art from what they did before entering the courses? Is there a change in their habit of thought? Have they done no more than accept the lessons they have

[1] Rotary art exhibitions for educational purposes are arranged by the American Federation of Arts, 1741, New York Avenue, Washington, D. C.

been taught, or have they so absorbed them and made them their own that they are capable of self-expression in making their estimates of works of art? These questions may be answered by the result of the written examination and by the oral quiz.

It must be confessed that the chief purpose of art instruction in the college is to supply a lack in our national and private life. Citizens of the older communities of Europe pass their lives among the accumulated art treasures of past ages. The mere daily contact with such forms of beauty engenders a taste for them. Partly through our Puritan origin, partly through our preoccupation with the development of the material resources of our country, we, as a people, have failed to cultivate some of the imponderable things of the spirit. So far as we have had to do with its creation, our environment in town and village is generally lacking in artistic charm.

The study by lay students of the art of the past has one chief object; namely, to train them to understand the works of the masters in order that they may discriminate between what is beautiful and what is meretricious in the art of the present day; to learn the lessons of art from the monoliths of Egypt, the tawny marbles of ancient Greece, the balanced thrusts of the Gothic cathedral, the gracious and reverent harmonies of the primitives, the delicate handicrafts of the Orient, the splendors of the Renaissance, the vibrant colors of the latest phase of impressionism, and to apply these lessons in the search for hidden elements of beauty in nature and art in their own country and in their own lives and surroundings.

Believing, as he does, in the value of artistic culture, it becomes the duty of the college art instructor to teach with enthusiasm unmarred by prejudice; to cultivate in the minds of his students a catholic receptivity to all that is sincere in artistic expression; to open up avenues of thought in the minds of those whose lives would otherwise be barren of artistic sympathy; to cull the best from the experience of the past, and, by its help, to impart to his

hearers some of his own enthusiasm; for their lives cannot fail to touch at some point the borderlands of the magic realm of art.

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NOTE. For numerous discussions of problems of college art teaching, the Bulletins of the College Art Association of America may be consulted.

PART SIX

Vocational Subjects

XXV

THE TEACHING OF ENGINEERING SUBJECTS

EACH of the preceding chapters of this volume treats of a subject which is substantially a unit in method and content; but the subjects assigned to this chapter include a variety of topics which are quite diverse in scope and character. For example, such subjects as German and physics represent the work of single collegiate departments; while engineering subjects represent substantially the entire work of an engineering college, of which there are many in this country, each having a thousand or more students. It is necessary, then, to inquire as to the scope of this chapter.

I. SCOPE OF THIS CHAPTER

Contents of engineering curricula

The contents of the representative four-year engineering curriculum of the leading institutions may be classified about as in the table on page 502. In addition to the subjects listed, most institutions require freshmen to take gymnasium practice and lectures on hygiene, and many colleges require freshmen, and some also sophomores, to take military drill and tactics. Formerly many institutions required all engineering freshmen to take elementary shop work; but at present in most institutions this practice has been discontinued, owing to the establishment of manual-training high schools and to the development of other engineering subjects.

The order of the subjects varies somewhat in the different institutions. For example, instead of as in the table on page 502, rhetoric may be given in the sophomore year and language in the first. Again, in some institutions a little technical work is given in the freshman year. Further, the total number of semester-hours varies somewhat among the different institutions. However, the table is believed to be fairly representative.

CONTENTS OF ENGINEERING CURRICULA

The unit is a semester-hour; i. e., five class-periods a week for half a year.

GENERAL SUBJECT	COLLEGIATE YEAR				TOTAL
	I	II	III	IV	
Mechanical drawing and descriptive geometry	10	...	...	...	10
Rhetoric	6	...	...	...	6
Modern language	...	8	...	...	8
Pure mathematics	10	8	...	...	18
Science — physical and social	10	9	6	4	29
Theoretical and applied mechanics	...	3	10	...	13
Technical engineering	...	8	20	32	60
Total	36	36	36	36	144

The different engineering curricula

Below is a list of the principal four-year curricula offered by the engineering colleges of this country. The list contains forty different engineering curricula. No one institution offers all of these, but some of the larger and better equipped offer fifteen or sixteen different curricula for which a degree is given.

1. *Architecture* (which is usually classified as an engineering subject): general architecture; architectural design; architectural construction.

2. *Ceramics engineering:* general ceramics and ceramics engineering; ceramics; ceramics engineering.

3. *Chemical engineering:* general chemical engineering; metallurgical engineering; gas engineering; pulp and paper engineering; electro-chemical engineering.

4. *Civil engineering:* general civil engineering; railway civil engineering; municipal engineering; structural engineering; topographic or geodetic engineering; hydraulic engineering; irrigation engineering; highway engineering.

5. *Electrical engineering:* general electrical engineering; telephone engineering; electrical design; power-plant design; electrical railway engineering.

6. *Marine engineering:* general marine engineering; naval architecture; marine engineering.

7. *Mechanical engineering:* general mechanical engineering; steam engineering; railway mechanical engineering; hydro-mechanical engineering; machine design and construction; heating, ventilating, and refrigerating; industrial engineering; automobile engineering; aëronautical engineering.

8. *Mining engineering:* general mining engineering; metallurgical engineering; coal mining; ore mining.

The first engineering curriculum established was civil engineering, which was so called to distinguish it from military engineering. At first the course contained only a little technical work, but in course of time specialized work was increased; and later courses were established in mining and mechanical engineering, and more recently followed specialized courses in architecture, electrical engineering, marine engineering, chemical engineering, and ceramic engineering — about in the order named. The order of the various special courses in the several groups above is roughly that of their establishment.

Number of engineering subjects

In the preceding list are eight groups of curricula, each of which contains about 60 semester-hours peculiar to itself; and, considering only a single curriculum in each of the eight groups, there are 480 semester-hours of specialized work. In addition there are in the list thirty-two subdivisions, each of which differs from the parent by at least 10 semester-hours. Hence the total number of engineering subjects offered is at least 800 semester-hours. It is safe to assume that for administrative reasons, each 3 semester-hours on the average represents a distinct title or topic, and that therefore the engineering colleges of the country offer instruction in 267 different engineering subjects.

However, the diversity is not so great as the preceding statement seems to imply, since for convenience in program making and in bookkeeping many subjects are listed under two or more heads. For example, a subject which runs

through two semesters will for administrative reasons appear under two different heads in the above computations. Again, the lecture or textbook work in a subject will usually appear under one head and the laboratory work under a separate title. Finally, some subjects which differ but little in character may for convenience be listed under two different titles. If the subjects that are subdivided for the above reasons were listed under a single head, the number of topics would be reduced something like 20 to 25 per cent.

Therefore, the topics of engineering instruction which differ materially in character number about 200. This, then, is the field assigned to this chapter. Obviously it is impossible to consider the several subjects separately.

II. DIFFERENTIATION IN ENGINEERING CURRICULA

For a considerable number of years there has been much discussion by both college teachers and practicing engineers concerning differentiation in engineering curricula; and the usual conclusion is that undue differentiation is detrimental. But nevertheless specialization has gone on comparatively rapidly and extensively — as shown in the previous article. Since the degree of differentiation determines in a large measure (1) the spirit with which a student does his work, (2) the method of teaching that should be employed, and (3) the results obtained, it will be wise briefly to consider the merits of specialization. The arguments against specialization have been more widely and more earnestly presented than those in favor of specialization. The usual arguments pro and con may be summarized as follows:

1. It is frequently claimed that the undergraduate is incapable of wisely choosing a specialty, and that hence specialization should come after a four-year course,— i. e., in the graduate school or by self-instruction after graduation. But the parents and friends of a student usually help him in deciding upon a profession or on a special

line of study, and therefore it is not likely that a very serious mistake will be made. Of necessity a decision must be made whether or not to seek a college education; and a decision must also be made between the great fields of knowledge,— liberal arts, agriculture, engineering, etc. If the student decides to take any branch of engineering, he usually has his whole freshman year in which to make a further specialization. At the end of the sophomore year the specialization has not gone very far; and therefore if the student finds he has made a mistake, it is not difficult to change.

2. "The undergraduate seldom knows the field of his future employment, and hence does not have the data necessary for an intelligent decision." The young man will never have all of the data for such a decision until he has actually worked in that field for a time, and there is no reason why he should not make a decision and try some particular line of preparation.

3. Some opponents of specialization claim that the more general the engineering training, the easier to obtain employment after graduation; but this is not in harmony with the facts. The opposite is more nearly true. For example, who ever heard of a practicing engineer preferring a liberal arts student to a civil engineering student as a rodman?

4. Specialized courses require that the college should have larger equipment and a more versatile staff. The larger institutions can prepare for specialized sections nearly as easily and cheaply as for duplicate sections; and institutions having only a few students or meager financial support should not offer highly specialized courses.

5. The opponents of specialization claim that to be a successful specialist one should have a broad training, and that therefore the broader the curriculum the better. It is true that to be a successful specialist requires a considerable breadth of knowledge, but that does not prove that the student should be required to get all of his general knowledge before he gives attention to matters peculiar

to his specialty. No engineer can be reasonably successful in any field with only the knowledge obtained in college, whether that be general or special.

6. It is claimed that specialization should be postponed to a fifth year. It seems to have been settled by experience that four years is about the right length of the college course for the average engineering student, and that in that time he should test his fitness and liking for his future work by studying some of the subjects relating to his proposed specialized field.

7. The chief reason in favor of specialization is that the field of knowledge is so vast that it is absolutely necessary for every college student — engineering or otherwise — to specialize; and in engineering this specialization is vitally important, since fundamental principles can be taught most effectively in connection with their application to specialized problems. In no other way is it possible to invest theoretical principles with definite meaning to the student, and by this process it is possible to transform abstract theory into glowing realities which under a competent teacher arouse the student's interest and even his enthusiasm.

8. Specialization in engineering curricula is a natural outgrowth of the evolution of engineering knowledge, and is in harmony with sound principles of teaching. For example, all engineering students should have a certain amount of mechanical drawing; but the best results will be obtained if the civil engineer, after a study of the elementary principles, continues his practice in drawing by making maps, while the mechanical engineer continues his by making details of machinery. Both will do their work with more zest and much more efficiency than if both were compelled to make drawings which meant nothing to them except practice in the art of drawing. Similar illustration can be found throughout any well-arranged engineering curriculum. A vitally essential element in any educational diet is that the subject shall not pall upon the appetite of the student. He should go to every in-

tellectual meal with a hearty gusto. The specialized course appeals more strongly to the ambition of the student than a general course. The engineering student selects a specialized course because he has an ambition to become an architect, a chemical engineer, a civil engineer, or perhaps a bridge engineer, a highway engineer, a mechanical engineer, or perhaps a heating engineer or an automobile engineer; and having an opportunity to study subjects in which he is specially interested, he works with zest and usually accomplishes much more than a student who is pursuing a course of study only remotely, if at all, related to the field of his proposed activities after leaving college. Further, the more specialized the course, the greater the energy with which the student will work.

Many of those who have discussed specialization seem to assume that the only, or at least the chief, purpose of an engineering education is to give technical information, and that specialization is synonymous with superficiality. From this point of view the aim of a college education is to give a student information useful in his future work, and the inevitable result is that the student has neither the intellectual power nor the technical knowledge to enable him to render efficient service in any position in which he will work whole-heartedly. The weakness and superficiality of such a student, it is usually said, is due to excessive specialization, while in reality it is primarily due to wrong methods of teaching. Within reasonable limits specialization has little or nothing to do with the result; and under certain conditions, as previously stated, specialization helps rather than hinders intellectual development. If a subject has real educational value and is so taught as to train a student to see, to analyze, to discriminate, to describe, the more the specialization the better; but if a subject is taught chiefly to give unrelated information about details of practice, the more the specialization the less the educational value.

10. Experience has conclusively shown that an engineering student is very likely to slight a general subject in favor

of a simultaneous technical or specialized subject. This fact, together with the necessity of a fixed sequence in technical engineering subjects, makes it practically impossible to secure any reasonable work in most general subjects when a student is at the same time carrying one or more technical studies. For these reasons it is necessary to make the later years of the curriculum nearly wholly technical, which makes specialization possible, if it does not invite it.

III. AIM OF ENGINEERING EDUCATION

Disciplinary values of engineering subjects

The three elements of engineering education, as indeed of all education, should be development, training, and information. The first is the attainment of intellectual power, the capacity for abstract conception and reasoning. The second includes the formation of correct habits of thought and methods of work; the cultivation of the ability to observe closely, to reason correctly, to write and speak clearly; and the training of the hand to execute. The third includes the acquisition of the thoughts and experiences of others, and of the truths of nature. The development of the mental faculties is by far the most important, since it alone confers that "power which masters all it touches, which can adapt old forms to new uses, or create new and better means of reaching old ends." Without this power the engineer cannot hope to practice his profession with any chance of success. The formation of correct habits of thinking and working, habits of observing, of classifying, of investigating, of discriminating, of proving instead of guessing, of weighing evidence, of patient perseverance, and of doing thoroughly honest work, is a method of using that power efficiently. The accumulation of facts is the least important. The power to acquire information and the knowledge of how to use it is of far greater value than any number of the most useful facts. The value of an education does not consist in the number of facts acquired, but in the ability to discover facts by personal

observation and investigation and in the power to use these facts in deducing new conclusions and establishing fundamental principles. There is no comparison between the value of a ton of horseshoe nails and the ability to make a single nail.

Utilitarian aim of the engineering subjects: information and training

The engineering student usually desires to reverse the above order and assumes that the acquisition of information, especially that directly useful in his proposed profession, is the most valuable element of an education; and unfortunately some instructors seem to make the same mistake. The truth is that methods of construction, details of practice, mechanical appliances, prices of materials and labor, change so rapidly that it is useless to teach many such matters. However important such items are to the practicing engineer, they are of little or no use to the student; for later, when he does have need of them, methods, machines, and prices have changed so much that the information he acquired in college will probably be worse than useless. Technical details are learned of necessity in practice, and more easily then than in college; whereas in practice fundamental principles are learned with difficulty, if at all. A man ignorant of principles does not usually realize his own ignorance and limitations, or rather he is unaware of the existence of unknown principles. The engineering college should teach the principles upon which sound engineering practice is based, but should not attempt to teach the details of practice any further than is necessary to give zest and reality to the instruction and to give an intelligent understanding of the uses to be made of fundamental principles.

As evidence that technical information is not essential for success in an engineering profession, attention is called to the fact that a considerable number of men who took a course in one of the major divisions of engineering have practiced in another branch with reasonable success. The only collegiate training one of the most distinguished American engineers of the last generation had was a general literary course followed by a law course. Further,

a considerable number have successfully practiced engineering, after only a general college education, and this in recent years when engineering curricula have become widely differentiated. Examples in other lines of business could be cited to show that a knowledge of technical details is not the most important element in a preparation for a profession or for business. The all-important thing is that the engineering student shall acquire the power to observe closely, to reason correctly, to state clearly, that he shall be able to extract information from books certainly and rapidly, and that he shall cultivate his judgment, initiative, and self-reliance. A student may have any amount of technical information, but if he seriously lacks any of the qualities just enumerated, he cannot attain to any considerable professional success. However, if he has these qualities to a fair degree, he can speedily acquire sufficient technical details to enable him to succeed fairly well.

The chief aim of the engineering college should be to develop the intellectual power that will enable the student not only to acquire quickly the details of practice, but will also enable him ultimately to establish precedents and determine the practice of his times. Incidentally the engineering college should seek to expand the horizon and widen the sympathy of its students. In college classes there will be those who are either unable or unwilling to attain the highest educational ideals, and who will become only the hewers of wood and drawers of water of the engineering profession; but a setting before them of the highest ideals and even an ineffective training in methods of work will prepare them the better to fill mediocre positions.

The nearly universal engineering college course requires four years. The field properly belonging to even a specialized curriculum is so wide and the importance of a proper preparation of the engineers of the future is so great as appropriately to require more than four years of time; but the consensus of opinion is that for various reasons only four years are available for undergraduate work —

the only kind here under consideration. Hence it is of vital importance that the highest ideals shall be set before the engineering students and that the methods of instruction employed shall be the best attainable.

IV. METHODS OF TEACHING

Instruction in technical engineering subjects is given by lectures, recitations from textbooks, assigned reading, laboratory work, surveying, field-practice, problems in design, memoirs, and examinations. Each of these will be briefly considered.

Lecture system

The term "lecture system" will be used to designate that method of instruction in which knowledge is presented by the instructor without immediate questioning of, or discussion by, the student. In the early history of engineering education, when instruction in technical engineering subjects was beginning to be differentiated from other branches of education, the lecture was the only means of acquainting the student with either the principles or details of engineering practice, since textbooks were then few and unsatisfactory. But at present, when there are so many fields of technical knowledge in which there are excellent books, the lecture system is indefensible as a means either of communicating knowledge or of developing intellectual strength.

It is a waste of the student's time to present orally that which can be found in print. At best the lecturer can present only about one third as much as a student could read in the same time; and, besides, the student can understand what he reads better than what he hears, since he can go more slowly over that which he does not understand. The lecturer moves along approximately uniformly, while some students fail to understand one part, and others would like to pause over some other portion. A poor textbook is usually better than a good lecturer.

It is a fundamental principle of pedagogy that there can be no development without the activity of the learner's

mind; and hence with the lecture system it is customary to require the student to take notes, and subsequently submit himself to a quiz or present his lecture notes carefully written up. If the student is required to take notes, either for future study or to be submitted, his whole time and attention are engrossed in writing; and at the close of the lecture, if it has covered any considerable ground, the student has only a vague idea of what has been said. Further, the notes are probably so incomplete as to afford inadequate material for future study.

If the subject matter is really new and not found in print, the lecture should be reproduced for the student's use. It is more economical and more effective for the student to pay his share of the cost of printing, than to spend his time in making imperfect notes and perhaps ultimately writing them out more fully.

The lecture system is less suitable for giving instruction in engineering subjects than in general subjects, such for example as history, sociology, and economics, since technical engineering subjects usually include principles and more or less numerical data that must be stated briefly and clearly.

If a student has had an opportunity to study a subject from either a textbook or a printed copy of the lecture notes, then comments by the teacher explaining some difficult point, or describing some later development, or showing some other application or consequence of the principle, may be both instructive and inspiring; but the main work of teaching engineering subjects should be from carefully prepared textbooks. However, an occasional formal lecture by an instructor or a practicing engineer upon some subject already studied from a textbook can be a means of valuable instruction and real inspiration, provided the lecture is well prepared and properly presented.

In the preceding discussion the term "lecture" has been employed as meaning a formal presentation of information; but there is another form of lecture, a demonstration lecture, which consists of an explanation and discussion by

the instructor of an experiment conducted before the class. The prime purpose of the experiment and the demonstration lecture is to explain and fix in mind general principles. This form of lecture is an excellent method of giving information; and if the student is questioned as to the facts disclosed and is required to discuss the principles established, it is an effective means of training the student to observe, to analyze, and to describe.

Recitation system

This system of instruction consists in assigning a lesson upon which the student subsequently recites. In subjects involving mathematical work, the recitation may consist of the presentation of the solution of examples or problems; but in engineering subjects the recitation usually consists either of answers to questions or of the discussion of a topic.

The question may be either a "fact" question or a "thought" question. If the main purpose is to give information, the "fact" question is used, the object being to determine whether the student has acquired a particular item of information. Not infrequently, even in college teaching, the question can be answered by a single word or a short sentence; and usually such a question, even if it does not itself suggest the answer, requires a minimum of mental effort on the part of the student. This method determines only whether the student has acquired a number of unrelated facts, and does not insure that he has any knowledge of their relation to each other or to other facts he may know, nor does it test his ability to use these facts in deducing conclusions or establishing principles. Apparently this method of conducting a recitation, or quiz as it is often called, is far too common in teaching engineering subjects. It is the result chiefly of the mistaken belief that the purpose of technical teaching is to give information.

The "thought" question is one which requires the student to reflect upon the facts stated in the book and to draw his own conclusions. This method is intermediate between the "fact" question and the topical discussion; it is not

so suitable to college students as to younger ones, and is not so easily applied in engineering subjects as in more general subjects such as history, economics, or social science. It will not be considered further.

The topical recitation consists in calling upon the student to state what he knows upon a given topic. This method not only tests the student's knowledge of facts, but also trains him in arranging his facts in logical order and in presenting them in clear, correct, and forceful language. (1) One advantage of this method of conducting the recitation is that it stimulates the student to acquire a proper method of attacking the assigned lesson. Many college students know little or nothing concerning the art of studying. Apparently, they simply read the lesson over without attempting to weigh the relative importance of the several statements and without attempting to skeletonize or summarize the text. The ability to acquire quickly and easily the essential statements of a printed page is an accomplishment which will be valuable in any walk of life. In other words, this method of conducting a recitation forces the student to adopt the better method of study. (2) A second advantage of the topical recitation is that it trains the student in expressing his ideas. It is generally conceded that the engineering-college graduate is deficient in his ability to use good English, which is evidence that either the topical recitation is not usually employed, or good English is not insisted upon, or perhaps both. (3) A third advantage of the topical recitation is that it trains the student in judgment and discrimination — two elements essential in the practical work of all engineers.

Apparently many college teachers think it more creditable to deliver lectures than to conduct recitations. The formal lecture is an inefficient means of either conveying information or developing intellectual power, and hence no one should take pride in it. The textbook and quiz method of conducting a recitation is more effective than the lecture system, but is by no means an ideal method of either imparting information or giving intellectual training.

Neither of these methods is worthy of a conscientious teacher. The textbook and topical recitation affords an excellent opportunity to teach the student to analyze, to observe, to discriminate, to train him in the use of clear and correct language, and in the presentation of his thoughts in logical order — an object worthy of any teacher and an opportunity to employ the highest ability of any person. In the conduct of such a recitation in engineering subjects, there is abundant opportunity to supplement the textbook by calling attention to new discoveries and other applications, and to introduce interesting historic references. It is often instructive to discuss differences in construction which depend upon differences in physical conditions or in preferences of the constructor, and such discussions afford excellent opportunities to train the student in discovering the causes of the differences and in weighing evidence, all of which helps to develop his powers of observation and analysis and above all to cultivate his judgment. If a teacher is truly interested in his work, such a recitation gives opportunity for an interchange of thoughts between the student and teacher that may be made of great value to the former and of real interest to the latter. The conduct of such a recitation should be much more inspiring to the teacher than the repetition of a formal lecture which at best can have only little instructional value.

Suggestions for increasing effectiveness of the recitation

The recitation is such an important method of instruction that it is believed a few suggestions as to its conduct may be permissible, although a discussion of methods of teaching does not properly belong in this chapter. (1) The students should not be called upon in any regular order. (2) If at all possible, each student should be called upon during each recitation. (3) The question or topic should be stated, and then after a brief pause a particular student should be called upon to recite. (4) The question or topic should not be repeated. (5) The student should not be helped. (6) The question should be so definite as to admit of only one answer. (7) "Fact" questions and topical discussions should be interspersed.

(8) Irrelevant discussion should be eliminated. (9) The thoughtful attention of the entire class and an opportunity for all to participate may be secured by interrupting a topical discussion and asking another to continue it. (10) Clear, correct and concise answers should be insisted upon. (11) In topical discussions the facts should be stated in a logical order. (12) Commend any exceptionally good answer.

Assigned reading

A student is sometimes required to read an assigned chapter in a book or some particular article in a technical journal as a supplement to a lecture or a textbook. Sometimes the whole class has the same assignment, and sometimes different students have different assignments. Each student should be quizzed on his reading, or should be required to give a summary of it. The method of instruction by assigned reading is most appropriate when the lecture presentation or textbook is comparatively brief. This method is only sparingly permissible with an adequate textbook.

Laboratory work

The chief purpose of laboratory work is to illustrate the principles of the textbook and thereby fix them in the student's mind. The manipulation of the apparatus and the making of the observations is valuable training for the hand and the eye, and the computation of the results familiarizes the student with the limitations of mathematical processes. The interpretation of the meaning of the results cultivates the student's judgment and power of discrimination, and the writing up of the report should give valuable experience in orderly and concise statement. Sometimes the student is not required to interpret the meaning or to discuss the accuracy of his results, and sometimes he is provided with a tabular form in which he inserts his observed data without consideration of any other reason for securing the particular information. He should not be provided with a sample report nor with a tabular form, but should be required to plan his own method of presentation, determine for himself what matter shall be in tabular form and what in narrative form, and plan

his own illustrations. Of course, he should be required to keep neat, accurate, and reasonably full notes of the laboratory work, and should be held to a high standard of clearness, conciseness, and correctness in his final report. Providing the student with tabular forms and sample reports may lessen the teacher's labors and improve the appearance of the report, but such practice greatly decreases the educational value to the student.

Surveying field-practice

In its aims surveying field-practice is substantially the same as engineering laboratory work, and all the preceding remarks concerning laboratory work apply equally well also to surveying practice. Ordinarily the latter has a higher educational value than the former in that the method of attack, at least in minor details, is left to the student's initiative, and also in that the difficulties or obstacles encountered require the student to exercise his own resourcefulness. The cultivation of initiative and self-reliance is of the highest engineering as well as educational value. Further, in the better institutions the instructor in surveying usually knows the result the student should obtain, and consequently the latter has a greater stimulus to secure accuracy than occurs in most laboratory work. Finally, the students, at least the civil engineering ones, always feel that surveying is highly practical, and hence are unusually enthusiastic in their work.

Design

When properly taught an exercise in design has the highest educational value; and, besides, the student is usually easily interested, since he is likely to regard such work as highly practical and therefore to give it his best efforts. Instruction in design should accomplish two purposes; viz., (1) familiarize the student with the application of principles, and (2) train him in initiative. Different subjects necessarily have these elements in different degrees, and any particular subject may be so taught as specially to emphasize one or the other of these objects.

Sometimes a problem in design is little more than the following of an outline or example in the textbook and substituting values in formulas. The design of an ordinary

short-span steel truss bridge, as ordinarily taught, is an example of this method of instruction. Another example is the design of a residence for which no predetermined limiting conditions are laid down and which does not differ materially from those found in the surrounding community or illustrated in the textbook or the architectural magazine. Such work illustrates and enforces theory, gives the student some knowledge of the materials and processes of construction, and also trains him in drafting; but it does not give him much intellectual exercise nor develop his mental fiber, although it may prepare him to take a place as a routine worker in his profession. Such instruction emphasizes utilitarian training but neglects intellectual development, mental vigor, and breadth of view.

The exercise in design which has the highest educational value is one in which the student must discover for himself the conditions to be fulfilled, the method of treatment to be employed, the materials to be used, and the details to be adopted. An example of this form of problem is the design of a bridge for a particular river crossing, without any limitations as to materials of construction, type of structure, time of construction, etc., except such as are inherent in the problem and which the student must determine for himself. A better example is the architectural design of a building to be erected in a given locality to serve some particular purpose, with no limitations except perhaps cost or architectural style.

Experience of several teachers with a considerable number of students during each of several years conclusively shows that students who have had only comparatively little of the design work mentioned in the preceding paragraph greatly exceed other students having the same preparation except this form of design work, in mental vigor, breadth of view, intellectual power, and initiative. This difference in capacity is certainly observable in subsequent college work, and is apparently quite effective after graduation.

Examinations

The term "examination" will be used as including the comparatively brief and informal quizzes held at inter-

vals during the progress of the work and also the longer and more formal examinations held at the end of the work. Usually the examination is regarded as a test to determine the accuracy and extent of the student's information, which form may be called a question-and-answer examination or quiz. A more desirable form of examination is one which requires the student to survey his information on a particular topic, and to summarize the same or to state his own conclusions concerning either the relative importance of the different items or his interpretation of the meaning or application of the facts. Such an examination could be called a "topical examination." The remarks in the earlier part of this chapter concerning the relative merits of the question-and-answer and the topical recitation apply also with equal force to these two forms of examinations. However, the topical examination can be made of greater educational value than the topical recitation, since the student is likely to be required to survey a wider field and organize a larger mass of information, and also since the examination is usually written and hence affords a better opportunity to secure accuracy and finish.

It is much easier for the instructor to prepare and grade the papers for the question-and-answer examination than for the topical examination, and perhaps this is one reason why the former is nearly universally employed. Of course, the topical examination should not be used except in connection with the topical recitation. Some executives of public school systems require that at least a third, and others at least a half, of all formal examinations shall be topical; and as the examination papers and the grades thereon are subject to the inspection of the executive, this requirement indirectly insures that the teacher shall not neglect the topical recitation. Apparently a somewhat similar requirement would be beneficial in college work.

Memoir

The term "memoir" is here employed to designate either a comparatively brief report upon some topic assigned in connection with the daily recitation or the graduating thesis.

The former is substantially a form of laboratory work in which the library is the workroom and books the apparatus. This method of instruction has several merits. It makes the student familiar with books and periodicals and with the method of extracting information from them. It stimulates his interest in a wider knowledge than that obtained only from the textbook or the instructor's lectures. It is valuable as an exercise in English composition, particularly if the student is held to an orderly form of presentation and to good English, and is not permitted simply to make extracts. The value to be obtained from such literary report depends, of course, upon the time devoted to it, and also upon whether the instructor tells the student of the articles to be read or requires him to find the sources of information for himself.

Thesis

The thesis may be a description of some original design, or a critical review of some engineering construction, or an account of an experimental investigation. The thesis differs from other subjects in the college curriculum in that in the latter the student is expected simply to follow the directions of the instructor, to study specified lessons and recite thereon, to solve the problems assigned, and to read the articles recommended; while the preparation of the thesis is intended to develop the student's ability to do independent work. There is comparatively little in the ordinary college curriculum to stimulate the student's power of initiative, but in his thesis work he is required to take the lead in devising ways and means. The power of self-direction, the ability to invent methods of attack, the capacity to foresee the probable results of experiments, and the ability to interpret correctly the results of experiments is of vital importance in the future of any engineering student. Within certain limits the thesis is a test of the present attainments of the student and also a prophecy of his future success. Therefore, the preparation of a thesis is of the very highest educational possibility. Unfortunately many students are too poorly prepared, or too lacking in ambition, or too deficient in self-reliance and initiative to make it feasible for

them to undertake the independent work required in a thesis. Such students should take instead work under direction. Further, it is unfortunate that, for administrative reasons, the requirement of a thesis for graduation is made less frequently now than formerly. The increase in number of students has made it practically impossible to require a thesis of all graduates, because of the difficulty of providing adequate facilities and of supervising the work. Again, it is difficult to administer a requirement that only part of the seniors shall prepare a thesis. Consequently the result is that at present only a very few undergraduate engineering students prepare theses.

Graduate work

All of the preceding discussion applies only to undergraduate work. Only comparatively few engineering students take graduate work. A few institutions have enough such students to justify, for administrative reasons, the organization of classes in graduate work, but usually such classes are conducted upon principles quite different from those employed for undergraduates. No textbooks in the ordinary sense are used. Often the student is assigned an experimental or other investigation, and is expected to work almost independently of the teacher, the chief function of the latter being to criticize the methods proposed and to review the results obtained. Such work under the guidance of a competent teacher is a most valuable means for mental development, training, and inspiration.

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Bibliography

Below is a list of the principal articles relating to engineering education, arranged approximately in chronological order.

1. The annual *Proceedings of the Society for the Promotion of Engineering Education*, from 1913 to date, contain many valuable articles on various phases of engineering education. Each volume consists of 200 to 300 8vo pages. The society has no permanent address. All business is conducted by the secretary, whose address at present is University of Pittsburgh, Pittsburgh, Pennsylvania.

The more important papers of the above *Proceedings* which are closely related to the subject of this chapter are included in the list below. Many of the articles relate to the teaching of a particular branch of engineering, and hence are not mentioned in the following list.

2. "Methods of Teaching Engineering: By Textbook, by Lecturing, by Design, by Laboratory, by Memoir." Professor C. F. Allen, Massachusetts Institute of Technology. An excellent presentation, and discussion by others. *Proceedings of the Society for the Promotion of Engineering Education*, Vol. VII, pages 29–54.

3. "Two Kinds of Education for Engineers." Dean J. B. Johnson, University of Wisconsin. An address to the students of the College of Engineering of the University of Wisconsin, 1901. Pamphlet published by the author; 15 8vo pages. Reprinted in *Addresses of Engineering Students*, edited by Waddell and Harrington, pages 25–35.

4. "Potency of Engineering Schools and Their Imperfections." Professor D. C. Jackson, University of Wisconsin. An address presented at the Quarto-Centennial Celebration of the University of Colorado, 1902. *Proceedings* of that celebration, pages 53–65.

5. "Technical and Pedagogic Value of Examinations." Professor Henry H. Norris, Cornell University. A discussion of the general subject, containing examples of questions in a topical examination in an electrical engineering subject. Discussed at length by several others. *Proceedings of the Society for the Promotion of Engineering Education.* Vol. XV, pages 605–618.

6. "Limitations of Efficiency in Engineering Education." Professor George F. Swain, Harvard University. An address at the opening of the General Engineering Building of Union University, 1910. A discussion of various limitations and defects in engineering education. Pamphlet published by Union University; 28 small 8vo pages. Reprinted in *Addresses of Engineering Students*, edited by Waddell and Harrington, pages 231–252.

7. "The Good Engineering Teacher: His Personality and Training." Professor William T. Magruder, Ohio State University. An inspiring

and instructive presidential address. *Proceedings of the Society for the Promotion of Engineering Education.* Vol. XXI, pages 27–38.

8. "Hydraulic Engineering Education." D. W. Mead, University of Wisconsin. An interesting discussion of the elements an engineer should acquire in his education. The article is instructive, and is broader than its title; but it contains nothing directly on methods of teaching engineering subjects. *Bulletin of the Society for the Promotion of Engineering Education*, Vol. IV, No. 5, 1914, pages 185–198.

9. "Some Considerations Regarding Engineering Education in America." Professor G. F. Swain, Harvard University. A paper presented at the International Engineering Congress in 1915 in San Francisco, California. A brief presentation of the early history of engineering education in America, and an inquiry as to the effectiveness of present methods. *Transactions of International Engineering Congress*, Miscellany, San Francisco, 1915, pages 324–330; discussion, pages 340–348.

10. "Technical Education for the Professions of Applied Science." President Ira N. Hollis, Worcester Polytechnic Institute. A discussion of the methods and scope of engineering education, and of the contents of a few representative engineering curricula. *Transactions International Engineering Congress*, San Francisco, 1915, Miscellany, pages 306–325.

11. "What is Best in Engineering Education." Professor H. H. Higbie, president Tau Beta Pi Association. An elaborate inquiry among graduate members of that association as to the value and relative importance of the different subjects pursued in college, of the time given to each, and of the methods employed in presenting them. Pamphlet published by the Association, 107 8vo pages.

12. "Some Details in Engineering Education." Professor Henry S. Jacoby, Cornell University. A president's address, containing many interesting and instructive suggestions concerning various details of teaching engineering subjects and the relations between students and instructor. *Proceedings of the Society for the Promotion of Engineering Education*, Vol. XXIII, 15 pages.

13. "Report of Progress in the Study of Engineering Education." Professor C. R. Mann. Several of the National Engineering Societies requested the Carnegie Foundation to conduct a thorough investigation of engineering education, and the Foundation committed the investigation to Professor C. R. Mann. First Report of Progress, *Proceedings of the Society for the Promotion of Engineering Education*, Vol. XXIII, pages 70–85; Second Report, Bulletin, same, November, 1916, pages 125–144; Final Report: A Study of Engineering Education by Charles Riborg Mann, *Bulletin Number* 11, *Carnegie Foundation for Advancement of Teaching*, 1918.

14. "Relation of Mathematical Training to the Engineering Profession." H. D. Gaylord, Secretary of the Association of Teachers of

Mathematics in New England, and Professor Paul H. Hanus, Harvard University. An elaborate inquiry as to the opinion of practicing engineers concerning the importance of mathematics in the work of the engineer. *Bulletin of the Society for the Promotion of Engineering Education*, October, 1916, pages 54–72.

15. "Does Present-Day Engineering College Education Produce Accuracy and Thoroughness?" Professor D. W. Mead, University of Wisconsin, and Professor G. F. Swain, Harvard University. An animated discussion as to the effectiveness of a collegiate engineering education. *Engineering Record*, Vol. 73 (May 6, 1916), pages 607–609.

16. "Teach Engineering Students Fundamental Principles." Professor D. S. Jacobus, Stevens Institute. Address of the retiring president of the American Society of Mechanical Engineers. A clear and forceful discussion of general methods of studying and teaching, and of the choice of subjects to be taught. *Engineering Record*, December 16, 1916, pages 739–740.

17. A considerable number of thoughtful articles on the general subject of technical education appeared in the columns of *Mining and Scientific Press* (San Francisco, California) during the year 1916. In the main these articles discuss general engineering education, and give a little attention to mining engineering education.

18. Since the preceding was written there has appeared a little book, the reading of which would be of great value to all engineering students, entitled *How to Study*, by George Fillmore Swain, LL.D., Professor of Civil Engineering in Harvard University and in the Massachusetts Institute of Technology. McGraw-Hill Book Company, New York City, 1917. 5 x 7½ inches, paper, 63 pages, 25 cents.

XXVI

THE TEACHING OF MECHANICAL DRAWING

Mechanical drawing a mode of expression

DRAWING is a mode of expression and is therefore a form of language. As applied in the engineering field drawing is mechanical in character and is used principally for the purpose of conveying information relative to the construction of machines and structures. It seems logical that the methods employed and the standards adopted in the teaching of engineering drawing should be based on an analysis of conditions found in the engineering world. In the best engineering practice the technical standards of drawing are high, so high in fact that they may be used as an ideal toward which to work in the classroom. Examples of good draftsmanship selected from practice may well serve to furnish standards for classroom work, both in technique and methods of representation.

Mechanical drawing disciplinary as well as practical in value

Engineering drawing demands intellectual power quite as much as it does skill of hand. The draftsman in conceiving and planning his design visualizes his problem, makes calculations for it, and graphically represents the results upon the drafting board. The development of the details of his design makes it necessary that he be a trained observer of forms. Since new designs frequently involve modifications of old forms, in his efforts to recall old forms and create new ones, he develops visual memory. If the requirements of a successful draftsman or designer be taken as typical, it is evident that the young engineer must develop, in addition to a technical knowledge of the subject, and a certain degree of skill of hand, a habit of quick and accurate observation and the ability to perceive and retain mental images of forms.

Modern methods of instruction recognize both the motor and mental factors involved in the production of engineering drawings. It is the aim of the drawing courses in engineering colleges to familiarize the student with the

standards of technique and methods of representation found in the best commercial practice; likewise to develop in him the powers to visualize and reason, which are possessed by the commercial draftsman and designers.

Organization and content of courses in mechanical drawing

The drawing courses of engineering curricula may be divided into two groups: (1) *General courses*, in which the principles and methods of representation are taught, together with such practice in drawing as will develop a satisfactory technique. (2) *Technical courses*, the aim of which is to assist the student to acquire technical knowledge or training, drawing being used primarily for the purpose of developing or testing a student's knowledge of the subject matter.

The general courses usually include an elementary course and a course in descriptive geometry. These courses deal with the fundamental principles and methods which have universal application in the advanced and technical courses. While the courses of the two groups may overlap, the general courses precede the courses of the technical group. There is no general agreement as to the order in which the subjects belonging to the general group should be given. Each of the following orders is in use:

1. A course in descriptive geometry followed by an elementary technical course.
2. An elementary course and a course in descriptive geometry given simultaneously.
3. An elementary course followed by a course in descriptive geometry.

The *first plan* is followed by a number of institutions which conclude, because of the general practice of offering courses in drawing in the secondary schools, that pupils entering college have a knowledge of the fundamentals ordinarily included in an elementary course. In other institutions it is held that the principles of projection can be taught to students of college age in a course of descriptive geometry without preliminary drill.

Where the *second plan* is used, the courses are so correlated that the instruction in the use of instruments given in

an elementary course is applied in solving problems in descriptive geometry, while the principles of projection taught in descriptive geometry are applied in the making of working drawings. This plan is followed by several of the larger engineering colleges.

Under the *third plan* the principles of projection are taught through their applications in the form of working drawings. In this way the principles may be taught in more elementary form than is possible in any adequate treatment of descriptive geometry. The illustration of the principles in a concrete way makes it possible for those who find visualizing difficult, to develop that power before abstract principles of projection are taken up in the descriptive geometry. The skill of hand developed in the elementary course makes it possible to give entire attention to a study of the principles in the course in descriptive geometry. While excellent results are being obtained under each of the three plans, this plan is the one most generally adopted.

The order of courses in the technical drawing groups is determined by other considerations than those relating to drawing, such as prerequisites in mathematics, strength of materials, etc.

The elementary courses

The elementary courses have undergone a number of important changes during recent years. In those of the present day more attention than formerly is given to the making of complete working drawings. In the earlier courses the elements were taught in the form of exercises. In the latter part of the courses the elements were combined in working drawings. In the modern courses, however, there is a very marked tendency to eliminate the exercise and make the applications of elements in the form of working drawings throughout the course.

In the early type of course the theory of projection was taught by using the synthetic method; i. e., by placing the emphasis first upon the projection of points, then lines, surfaces, and finally geometrical solids. In the modern type of course, however, this order is reversed and the

analytic method is used; i. e., solids in the form of simple machine or structural parts are first represented, then the principles of projection involved in the representation of their surfaces, edges, and finally their corners are studied. In this type of course the student works from the concrete to the abstract rather than from the abstract to the concrete.

Fundamentals of the elementary course

Geometrical constructions, which were formerly given as exercises and which served as a means of giving excellent practice in the use of instruments, are now incorporated in working drawings and emphasized in making views of objects. It is believed that in the applied form these constructions offer the same opportunity for the training in accuracy in the use of instruments that was had in the abstract exercises, to which is added interest naturally secured by making applications of elements in working drawings.

Conventions are also taught in an applied form and are introduced as the skill for executing them and the theory involved in their construction are developed in the progress of the course.

The type of *freehand lettering* most generally taught is that used in practice; i.e., the single-stroke Gothic. The best commercial drafting-room practice suggests the use of the vertical capitals for titles and subtitles, and the inclined, lower case letters and numerals for notes and dimensions.

The plan generally found to produce satisfactory results is to divide the letters and numerals of the alphabet into groups containing four or five letters and numerals on the basis of form and to concentrate the attention of the student on these, one group at a time. The simple forms are considered first, and enough practice is given to enable the student to proportion the letters and numerals and make the strokes in the proper order.

It is more natural to make inclined letters than vertical ones, and they are therefore easier to execute. If both vertical and inclined letters are taught, the instruction on

the vertical should be given first, as it is more difficult to make vertical strokes after becoming accustomed to the inclined strokes.

Freehand perspective sketching affords the most natural method of representing objects in outline. It is of particular value in interpreting orthographic drawing. The student who first draws a perspective sketch of an object becomes so familiar with every detail of it that he cannot fail to have a clearer mental image of its form when he attempts to draw its orthographic views. It gives a valuable training in coördinating the hand and eye in drawing freehand lines and estimating proportions. It also serves as an intermediate step between observing an object and drawing it orthographically.

Freehand orthographic sketching is now quite commonly incorporated in modern courses in mechanical drawing. Such sketches serve as a preliminary step in the preparation of the mechanical drawing. They correspond to the sketches made by the engineer or draftsman for drafting-room or shop use. The experience of many instructors seems to indicate that the early introduction of freehand perspective and orthographic sketching in a course of mechanical drawing serves as a means of developing that skill in freehand execution which is so necessary in rendering the freehand features of a mechanical drawing. When this type of skill is acquired before the mechanical work is started, the mechanical and freehand technique may be simultaneously developed.

The organization of an elementary course composed largely of a progressive series of working drawings necessitates the giving of considerable attention to the selection of problems involving the use of the above-named fundamentals to make the course increasingly difficult for the student. The drawing of views involves geometrical constructions and conventions, while the dimensions, notes, and title involve the making of arrowheads, letters, and numerals. In such an elementary course the student receives not only the training in the fundamentals, but also

in their application in working drawings which furnish complete and accurate information in the desired form.

Descriptive geometry

The modern methods of teaching descriptive geometry apply the theory of the subject to applications in problems taken from engineering practice. The introduction of practical applications adds interest to the subject and makes the theory more easily understood. The number of applications should be as great as possible without interfering with the development of the theory. Such a treatment of descriptive geometry, following a thorough course in elementary drawing, should make it possible to deal with abstract principles of projection with a few well-chosen applications.

Descriptive geometry aids materially in developing the power of visualization which is so essential to the training of the engineer. The graphical applications of the subject in the solution of engineering problems may be used as a means of testing the student's ability to visualize.

There is now very little discussion relative to the advantages and disadvantages of the first and third angle projection. Since the third angle is generally used in the elementary course as well as in engineering practice, it seems logical that it should be emphasized in descriptive geometry. Recent textbooks on this subject confirm the tendency toward the use of the third angle.

The use of the third angle presents new difficulties, such as that of locating the positions of magnitudes in space in relation to their projections. Magnitudes must be located behind or below the drawing surface. To obviate such difficulties, some instructors demonstrate principles by first angle constructions. Others invert surfaces which in the first angle have their bases in the horizontal plane. This undesirable device may be overcome by using a second horizontal plane in the third angle. Such means of demonstration may be avoided altogether by considering the space relations of magnitude to one another instead of relating them to the planes of projection. This method centers the attention of the student on the relation of magnitudes represented and develops visualization. It has been found to

give excellent results in both elementary drawing and descriptive geometry.

To bring the teaching of descriptive geometry into closer harmony with its application in practice, auxiliary views are frequently used instead of the method of rotations.

Briefly, then, it appears that the modern course in descriptive geometry should contain enough applications to hold the interest of the student and to test his power of visualization; that the third angle should be emphasized, and some use should be made of auxiliary views. Above all, the development of visualizing ability should be considered one of the chief aims of the course.

Methods of instruction in general courses

In teaching drawing and descriptive geometry, lectures, demonstrations, and individual instruction each have a place. Principles can best be presented in the form of lectures. The manual part of the work can be presented most effectively by means of demonstrations. The instructor should illustrate the proper use of instruments and materials by actually going through the process himself, calling attention to important points and explaining each step as he proceeds. Individual instruction given at the student's desk is a vital factor in teaching drawing, as it offers the best means of clearing up erroneous impressions and ministering to the needs of the individual student.

Frequent recitations and quizzes serve the purpose of keeping the instructor informed as to the effectiveness of his instruction and as a means by which the student can measure his own progress and grasp upon the subject.

Methods of instruction in technical drawing courses

Those drawing courses which have for their primary object the teaching of technical subject matter make use of the drawings as an instrument to record facts and to test the student's knowledge of principles and methods.

In the technical courses it should be possible to assume a knowledge of the material given in the general courses. Some effort is usually necessary, however, to maintain the standards already established. The effort thus expended should result in improving technique and increased speed.

The four-year drawing course

In an institution where drawing courses are given throughout the four years, much can be done by organization and coöperation to make the time spent by the student productive of the best results. More time than can usually be secured for the general courses is necessary to develop skill that will be comparable with that found in practice. The conditions in technical drawing courses approximate those in practice. They apply methods taught in the general courses. The limited time, frequently less than 300 clock hours, devoted to the general courses makes it desirable that advantage be taken in the technical courses for further development of technique and skill. In a number of institutions all work in drawing is so organized as to form a single drawing unit. This plan calls for coöperation on the part of all drawing teachers in the institution. The results obtained by this method seem amply to justify the effort put forth.

Conclusion

The final test in any course or group of drawing courses may be measured by the student's ability to solve problems met with in engineering practice. Measured upon this basis, the newer types of courses discussed herein, those founded upon the analytic method and developed largely as a progressive series of working drawings, seem to be meeting with better results than did those of the older type in which the synthetic method predominated and in which abstract problems were principally used.

While the college man is not fitting himself to become a draftsman, it is quite true that many start their engineering careers in the drafting office. Those who think well and are proficient in expressing their thoughts through the medium of drawing are most apt to attract attention which places them in line for higher positions.

Those who do not enter the engineering field through the drafting office will find the cultural and disciplinary training and the habits of precision and neatness instilled by a good course in drawing of great value.

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XXVII

THE TEACHING OF JOURNALISM

THE education of the journalist or newspaper man has been brought into being by the evolution of the newspaper during the last half century. Addison's *Spectator* two centuries ago counted almost wholly on the original and individual expression of opinion. It had nothing beyond a few advertisements. The news sheet of the day was as wholly personal, a billboard of news and advertisements with contributed opinion in signed articles. A century ago, nearly half the space in a daily went to such communications. In the four-page and the eight-page newspaper of sixty to eighty years ago, taking all forms of opinions,— leaders contributed, political correspondence from capitals, state and federal, and criticism,— about one fourth of the space went to utterance editorial in character. The news filled as much more, running to a larger or smaller share as advertisements varied. The news was little edited. The telegraph down to 1880 was taken, not as it came, but more nearly so than today. In an eight-page New York paper between 1865 and 1875, a news editor with one assistant and a city editor with one assistant easily handled city, telegraph, and other copy. None of it had the intensive treatment of today. It was not until 1875 that telegraph and news began to be sharply edited, the New York *Sun* and the Springfield *Republican* leading. Between 1875 and 1895, the daily paper doubled in size, and the Sunday paper quadrupled and quintupled. The relative share taken by editorial and critical matter remained about the same in amount, grew more varied in character, but dropped from 25 per cent of the total space in a four-page newspaper to 3 to 5 per cent in the dailies with sixteen to twenty pages, and the news required from three to five times as many persons to handle it. The circulation of individual papers in our large cities doubled and quadrupled, and the weekly

expenditure of a New York paper rose from $10,000 a week to thrice that. These rough, general statements, varying with different newspapers as well as issue by issue in the same newspaper, represent a still greater change in the character of the subjects covered.

When the newspaper was issued in communities, of a simple organization, in production, transportation, and distribution, the newspaper had some advertising, some news, and personal expression of opinion — political-partisan for the most part, critical in small part. This opinion was chiefly, though even then not wholly, expressed by a single personality, sometimes dominant, able, unselfish, and in nature a social prophet, but in most instances weak, time-serving, and self-seeking, and partisan, with one eye on advertising, official preferred, and the other on profits, public office, and other contingent personal results.

In the complex society today, classified, stratified, organized, and differentiated, the newspaper is a complex representation of this life. The railroad is a far more important social agency than the stagecoach. It carries more people; it offers the community more; but the individual passenger counted for more in the eye of the traveling public in the stagecoach than today in the railroad train; but nobody would pretend to say that the railroad president was less important than the head of a stage line, Mr. A. J. Cassatt, President of the Pennsylvania Railroad and builder of its terminal, than John E. Reeside, the head of the express stage line from New York to Philadelphia, who beat all previous records in speed and stages.

The newspaper-complex, representing all society, still expressing the opinion of society, not merely on politics but on all the range of life, creating, developing, and modifying this opinion, publishes news which has been standardized by coöperative news-gathering associations, local, national, and international. In the daily of today "politics" is but a part and a decreasing part, and a world of new topics has come into pages which require technical skill, the well-equipped mind, a wide information, and knowledge of the

condition of the newspaper. The early reporter who once gathered the city news and turned it in to be put into type and made up by the foreman,— often also, owner and publisher,— in a sheet as big as a pocket-handkerchief, is as far removed from the men who share in the big modern daily, as far as is the modern railroad man from the rough, tough individual proprietor and driver of the stagecoach, though the driver of the latter was often a most original character, and a well-known figure on the highway as railroad men are not.

Evolution of the profession of journalism

As this change in the American newspaper came between 1860 and 1880, the public demand came for the vocational training of the journalist and experiments in obtaining it began. When Charles A. Dana bought the New York *Sun* in 1868, he made up his staff, managing editor, news editor, city editor, Albany correspondent and political man, from among the printers he had known on the New York *Tribune*. In ten years these were succeeded by college graduates, and the *Sun* became a paper whose writing staff, as a whole, had college training, nearly all men from the colleges.

College men were in American journalism from its early beginnings; but, speaking in a broad sense, the American newspaper drew most of its staff in the eighteenth century and in the first half of the nineteenth century from among men who had the rough but effective training of the composing room, with the common school as a beginning. When the high school developed from 1860 on, it began to furnish a large number of journalists, particularly in Philadelphia, where the Central High School manned many papers. By 1880, college men began to appear in a steadily growing proportion, so far as the general writing staff was concerned. If one counted the men at the top, they were in a small proportion. In journalism, as in all arts of expression, a special and supreme gift will probably always make up for lack of special training.

Between 1890 and 1900, the American newspaper as it is today was fairly launched, and Joseph Pulitzer, the ablest man in dealing with the journalism of and for the many,

was the first conspicuous figure in the newspaper world to see that the time had come for the professional training of the journalist, the term he preferred to "newspaper men." Neither the calling nor the public were ready when he made his first proposal, and with singular nobility of soul and sad disappointment of heart he determined to pledge his great gift of $2,000,000, paying $1,000,000 of it to Columbia University before his death and providing that the School of Journalism, to which he furnished building and endowment, should be operated within a year after his death. This came October 29, 1911, and the school opened the following year.

Journalism today requires general and technical training

The discussion of the education of the journalist has been in progress for twoscore years. In 1870 Whitelaw Reid published his address on the "School of Journalism" and urged systematic training, for which in the bitter personal newspaper of the day he was ridiculed as "the young professor of journalism." In 1885, Mr. Charles E. Fitch, but just gone after long newspaper service, delivered a course of lectures on the training of the journalist, at Cornell University. Two years later Mr. Brainerd Smith, before and after of the New York *Sun*, then professor of elocution in the same university, began training in the work of the newspaper in his class in composition, sending out his class on assignments and outlining possible occurrences which the class wrote out. This experiment was abruptly closed by Mr. Henry W. Sage, Chairman of the Cornell Board of Trustees, because the newspapers of Minneapolis inclined to treat the university as important, chiefly because it taught "journalism." Mr. Fred Newton Scott, professor of rhetoric in the University of Michigan in 1893, began, with less newspaper notice, training in newspaper English, continuing to the present time his happy success in teaching style to his students.

In 1908, Mr. Walter Williams, for twenty-four years editor, first of the Boonville *Advertiser*, and then of the Columbia, Missouri, *Herald*, became dean of the first school of journalism opened in the same year by the University of

Missouri. This example was followed under the direction of Willard G. Bleyer in the University of Wisconsin. By 1911, nearly a score of colleges, universities, and technical schools were giving courses in journalism.

By 1916, the directory of teachers of journalism compiled by Mr. Carl F. Getz, of the University of Ohio, showed 107 universities and colleges which gave courses in journalism, 28 state universities, 17 state colleges and schools of journalism, and 62 colleges, endowed, denominational, or municipal.

The teachers who offered courses in journalism numbered 127. Of these, 25 were in trade, industrial, and agricultural schools, their courses dealing with aspects of writing demanded in the fields to which the institution devoted its work. The number of students in all these institutions numbered about 5000. This gave about 1200 students a year, who had completed their studies and gone out with a degree recording college or technical work in which training in journalism played its part. With about 40,000 men and women who were "journalists" in the country at this time, there are probably — the estimate is little better than a guess — about 3000 posts becoming vacant each year, in all branches of periodical work, monthly, weekly, and daily.

The various training in journalism now offered stands ready to furnish a little less than half this demand. I judge it actually supplies yearly somewhat less than a fourth of the new men and women entering the calling, say about 750 in all. As in all professional schools, a number never enter the practice of the calling for which they are presumably prepared and still larger numbers leave it after a short trial. In addition, training for the work of the journalist opens the door to much publicity work, to some teaching, and to a wide range of business posts where writing is needed. No account also has been made here of the wide range of miscellaneous courses in advertising provided by universities, colleges and schools of journalism by advertising clubs, by private schools, and by teachers, local,

lecturing and peripatetic. It will take at least ten years more before those who have systematic teaching in journalism will be numerous enough to color the life of the office of the magazine or newspaper, and a generation before they are in the majority.

Development of courses and schools of journalism

But numbers are not the only gauge of the influence of professional study on the calling itself. The mere presence, the work, the activities, and the influence of professional schools raise the standards of a calling. Those in its work begin to see their daily task from the standpoint which training implies. Since the overwhelming majority of newspaper men believe in their calling, love it, rejoice in it, regret its defects, and honor its achievements, they begin consciously to try to show how good a newspaper can be made with nothing but the tuition of the office. Inaccuracy, carelessness, bad taste, and dubious ethics present themselves at a different angle when judged in the light of a calling for which colleges and universities furnish training. A corporate spirit and a corporate standard are felt more strongly, and men who have learned all they know in a newspaper office have a just, noble, and often successful determination to advance these standards and endeavor to equal in advance anything the school can accomplish. This affects both those who have had college training and those who come to their work as newspaper men with only the education of the public schools, high or elementary. More than 1000 letters have been received by the School of Journalism in Columbia University, since it was opened, asking advice as to the reading and study which could aid a man or woman unable to leave the newspaper office to study to improve their work. College graduates, in particular on newspapers, begin systematic study on their own account, aware of an approaching competition. Definite standards in newspaper writing and in diction begin to be recognized and practiced in the office, and slips in either meet a more severe criticism.

Newspaper associations of all orders play their part in this spontaneous training. Advertising clubs and their

great annual gatherings have censored the periodic publicity of the advertising column as no other agency whatever could possibly have done. How far this educating influence has transformed this share of the American periodical in all its fields only those can realize who have studied past advertisements. Every state has its editorial association. These draw together more men from the weeklies and the dailies in cities under 50,000 of population than from cities of more than 500,000. These associations thirty years ago were little more than social. They have come to be educational agencies of the first importance. They create and assert new norms of conduct and composition. The papers read are normally didactic. All men try to be what they assert they are. From the American Newspaper Publishers' Association, bringing together nearly 1000 of our leading newspapers to meetings of the weeklies of a county, a region in a state, a whole state, sections like New England or the Southern States of particular classes of periodicals, these various organizations are rapidly instituting a machinery, and breathing a spirit whose work is a valid factor in the education of the newspaper man. Not the least influence which the schools of journalism exert on the active work of the calling is through these associations, particularly in the states west of the Mississippi where, at the present stage of journalism in this region, state universities can through schools of journalism bring newspapers together at a "newspaper week."

Journalism raised to dignity of a profession by schools of journalism

The rapid growth in students registered in "journalism" courses did not gauge the demand for professional teaching in the craft of the newspaper or the magazine. A large share of the "journalism" taught consisted simply in teaching newspaper English. The college course has been nowhere so vehemently and vigorously attacked as in the training it gave in writing English. Few were satisfied with it, least of all those who taught it. At least one college professor, whose method and textbooks were launched thirty years ago, has recanted all his early work in teaching composition and pronounced it valueless or worse. The col-

lege graduate, after courses in English composition (at least one in the freshman year and often two or three more), in many instances found himself unable to write a business letter, describe a plan projected in business affairs, compose advertisements, or narrate a current event. This was not invariably the case, but it occurred often enough to be noted. Books, pamphlets, and papers multiplied on this lack of training for practical writing in college composition courses. The world of education discovered, what the newspapers had found by experience, that the style of expression successful in literature did not bring results in man's daily task of reaching his fellow man on the homely and direct issues of daily life. In literature, genius is seeking to express itself. In the newspaper and in business, the writer is trying — and only trying — to express and interpret his subject so as to reach the other and contemporary man. If he does this, he wins. If not, he fails. Genius can, should be, careless of the immediate audience, and wait for the final and ultimate response. No newspaper article and no advertisement can. For them, style is only a means. In letters, form is final. The verdict of posterity and not of the yearly subscriber or daily purchaser is decisive.

Journalistic writing demands a distinctive style and calls for immediate response

In the high school and college, from 1910 on, there came courses in English which turned to the newspaper for methods and means of expression, and were called "courses in journalism." They were really courses in the English of the newspaper, besprinkled with lectures on the diction of the newspaper and the use of words — futile efforts, through lists of words that must not be used, to give a sound rule of the selection of language by the writer, and, above all, attempts to secure simple, direct, incisive narrative and discussion. These are all useful in their place and work. They prepare a man for some of the first steps of the newspaper office, particularly in the swift, mechanical routine and technique of "copy," indispensable where what is copy now is on the street for sale within an hour.

Where an instructor has himself the gift of style and the capacity to impart it, where he is himself a man who sells his stuff and knows what stuff will sell, where he has taste and inspiring, effective teaching power, a course in newspaper English may carry a man far in acquiring command of his powers of expression to their profitable use. These "courses in journalism" sometimes run for only a single semester. Many run for the normal span of three hours a week through a year. Sometimes there are two in succession, the second assuming the task of teaching work which a newspaper beginner usually reaches in from three to five years: the special article, the supplement, study of a subject, the "feature" story, criticism, and the editorial. When these courses are based on assignments which lead a man to go out and get the facts on which he writes, they furnish a certain share of training in the art of reporting. Where this is done in a college town and a college community, however, the work is a far remove from that where the reporter must dive and wrestle in the seething tide of a great city, to return with news wrested from its native bed.

Courses in "newspaper English"

Newspaper English has its great and widest value to the man who wishes to learn how he can affect the other man. A course in it is certain, if the instruction is effective, to leave a student better able to express himself in the normal needs of life. This work is taken by many students as part of the effective training of college life, with no expectation of entering active newspaper work. The demand for publicity work in all business fields, and its value to the social worker, the teacher, and the clergyman, lead others to this specialized training. In at least one of our state universities, half those who take the courses in journalism do not look to the newspaper in the future. The curriculum is often so arranged that in a four-year college course it will be practicable to combine these courses in newspaper English with the parts of work offered, required for, or preparatory to the three learned professions, social service, business, and the applied sciences. Such an arrangement of studies frankly recog-

nizes the value in general education and after life of training in the direct expression the newspaper uses. In no long time every college will have at least one such course in its English department.

But this course in direct writing stands alone, without any systematic training in journalism; it should not be called a course in journalism any more than a course in political science dealing with law, or a course in physiology or hygiene, can be called courses in law or medicine, because they cover material used in schools of law or schools of medicine. It is an advantage for any educated man to learn to write clearly, simply, to the point; to put the purpose, object, and force of an article at the beginning, and to be as much like Daniel Defoe and Franklin, and as little like Walter Pater or Samuel Johnson, as possible; it is well for him to have a general view of the newspaper and its needs; it is a mistake to leave him with the impression that he has the training journalism demands. He is no better off at this point than any college graduate who has picked up for himself, by nature or through practice and imitation, the direct newspaper method.

Functions of a school of journalism: To select as well as to train

President Eliot, when the organization of a school of journalism came before him, cast his august and misleading influence for the view that a college education was enough training for newspaper work. Many still believe this. In more than one city-room today college men are challenging the right of the graduates of a school of journalism to look on themselves as better fitted for the newspaper office than those who are graduates of a good college. If the training of the school has done no more than graft some copy-writing and some copy-editing on the usual curriculum, they are right. If the coming journalist has got his training in classes, half of whose number had no professional interest in the course offered, the claim for the college course may be found to be well based. Men teach each other in the classroom. A common professional purpose creates common professional ideals and common professional aims as no training can, given with-

out this, though it deal with identically the same subjects.

The training of the journalist will at this point go through the same course as the training of other callings. The palpable thing about law, the objective fact it presents first to the layman, is procedure and form. This began legal education. A man entered a law office. He ran errands and served papers which taught him how suits were opened. A bright New York office boy in a law firm will know how many days can pass before some steps must be taken or be too late, better than the graduate of a law school. The law students in an office once endlessly copied forms and learned that phase of law. For generations men "eat their dinners" at the Inns of Court and learned no more. The law itself they learned through practice, at the expense of their clients. Anatomy was the obvious thing about medicine when Vesalius, of the strong head and weak heart, cleaned away the superstitions of part of the medical art and discovered a new world at twenty-eight. The medical training of even seventy years ago, twenty years after cellular pathology had dawned, held wearisome hours of dissection now known to be a waste. It is the functions of the body and its organs which we now know to be the more important, and not the bones, muscles, nerves, and organs considered as mere mechanism.

The classroom is the patent thing about instruction. The normal schools lavished time on the tricks of teaching until flocks of instructors in the high schools and colleges could not inaccurately be divided into those who could teach and knew nothing and those who knew something and could not teach. Our colleges early thought they could weave in Hebrew and theology, and send out clergymen, and later tried to give the doctor a foundation on which eighteen subsequent months could graft all he needed of medicine.

Reporting is the obvious aspect of journalism which the ignorant layman sees. Many hold the erroneous view that the end of a school of journalism is to train reporters. Reporting is not journalism. It is the open door to the news-

paper office, partly because there are very few reporters of many years' service. Some of them are, but able men before long usually work out of a city-room, or gain charge of some field of city news, doing thus what is in fact reporting, but combined with editorial, critical, and correspondent work. Such is the Wall Street man, the local politics man, the City Hall man, or the Police Headquarters man, who gathers facts and counts acquaintance as one of his professional assets. But these men are doing, in their work, far more than reporting as it presents itself to those who see in the task only an assignment. Such men know the actual working of the financial mechanism, not as economists see it, but as Bagehot knew it. They understand the actual working of municipal machinery besides having a minute knowledge of character, decision, practice, and precedent in administration. In our real politics, big and little, they and the Washington and Albany correspondents are the only men who know both sides, are trusted with the secrets of both parties, and read closed pages of the book of the chronicles of the Republic. As for the Police Headquarters man, he too alone knows both police and crime, and no investigation surprises him by its revelations. If a man, for a season, has had the work of one of these posts, he comes to feel that he writes for an ignorant world, and if he have the precious gift of youth, looks on himself as favored of mortals early, seeing the events of which others hear, daily close to the center of affairs, knowing men as they are and storing confidence against the day of revelation.

Men like these are the very heart's core of a newspaper. Their posts train them. So do the key posts of a newspaper, its guiding and directing editors and those who do the thinking for thinking men by the hundred thousand in editorial, criticism, and article. It is for this order of work on a newspaper that a school of journalism trains. It is to these posts that, if its men are properly trained, its graduates rapidly ascend, after a brief apprenticeship in the city-room and a round in the routine work of a

paper. Dull men, however educated, will never pass these grades, and not passing they will drop out. A school should sift such out; but so far, in all our professional training, it is only the best medical schools which are inflexible in dealing with mediocrity. Most teachers know better, but let the shifty and dull pass by. The newspaper itself has to be inexorable, and no well-organized office helps twice the man who is dull once; but he and his kind come often enough to mar the record.

Journalism, like other professions, has its body of special tasks and training, but, as in other callings, clear comprehension of this body of needs will develop in instruction slowly. The case system in law and the laboratory method in medicine came after some generations or centuries of professional work and are only a generation old. Any one who has sought to know the development of these two methods sees that much in our schools of journalism is where law and medical schools were sixty years ago. We are still floundering and have not yet solved the problem of giving background, concision, accuracy, and interest to the report, of really editing copy and not merely condensing and heading it, of recognizing and developing the editorical and critical mind, and most of all, of shutting out early the shallow, the wrong-headed, the self-seeking, and the unballasted student.

The very best law and medical schools get the better of this, and only the best. They are greatly aided by a state examination which tests and tries all their work, braces their teaching, stimulates their men, and directs their studies. This will inevitably come in journalism, though most practicing newspaper men do not believe this. Neither did doctors before 1870 expect this. As the newspaper comes closer and closer into daily life, inflicts wounds without healing and does damage for which no remedy exists, the public will require of the writer on a daily at least as much proof of competency as it does of a plumber. This competency sharply divides between training in the technical work of the newspaper and in those studies that

The average college student lacks expressional power: Reasons

knowledge which newspaper work requires. Capacity to write with accuracy, with effect, with interest, and with style is the first and most difficult task among the technical requirements of the public journal. As has already been said, a gift for expression is needed, but even this cannot be exercised or developed unless a man has acquired diction and come in contact with style, for all the arts rest on the imitation of accepted models. Many students in all schools of journalism come from immigrant families and are both inconceivably ignorant of English and inconceivably satisfied with their acquirement of English, as we all are with a strange tongue we have learned to speak. Even in families with two or more generations of American life, the vocabulary is limited, construction careless, and the daily contact with any literature, now that family prayers and Bible reading are gone, almost nil. Of the spoken English of teachers in our public schools, considered as the basis of training for the writer, it is not seemly to speak. Everybody knows college teachers who have never shaken off the slovenly phrases and careless syntax of their homes. The thesis on which advanced degrees are conferred is a fair and just measure of the capacity to write conferred by eleven years of education above the "grammar grades." The old drill in accurate and exact rendering of Greek and Latin was once the best training for the writer; but slovenly sight reading has reduced its value, and a large part of its true effect was because the youth who studied the classics fifty years ago came in a far larger share than today from families whose elders had themselves had their expression and vocabulary trained and developed by liberal studies. The capacity for good writing apparent at Oxford and Cambridge rests in no small measure on the classical family horizon in teacher and taught.

Kind of training in composition to be given students of journalism

Those who turn to journalism naturally care for writing, but in an art to "care" is little and most have never had the personal environment, the training, or the personal command of English to enable them to do more than write a stiff prose with a narrow vocabulary and no sense of

style. Even those who have some such capacity are hampered by the family heritage already outlined. College writing is in the same condition; but the average college man is not expecting to earn his living by his typewriter. In order to receive a minimum capacity in writing enough to pass, every year of study for journalism must have a writing course and the technical work must run to constant writing. From start to finish there must be patient, individual correction. The use of the typewriter must be made obligatory. Rigid discipline must deal with errors in spelling, grammar, the choice of words and phrases. Previous college training in composition must in general be revised and made over to secure directness and simplicity. At the end, the utmost that can be gained for nineteen out of twenty is some facility, a little sense of style and diction, and copy that will be above the average of the newspaper and not much above that. Examine the writing in the newspapers issued by some schools and the work in schools that do not, and a distressingly large portion is either dull or "smart," the last, worst fault of the two.

Effective training in reporting must be given in large urban centers

Reporting is the first use to which writing is put and through which the writer is trained. For this, abundant material is indispensable, as much as clinical material for a medical school. As the medical schools gravitate to cities, and the rural institutions flicker out one by one, so in the end the effectively trained reporter will gravitate to a large city. Towns of under 20,000 population furnish a very tame sort of reporting, and those who get this training in them find reporting is under new conditions in a great metropolis. In such a place the peril is that routine news will take too much of the precious time for training the reporter and the demands of academic hours will interfere with sharing in the best of big stories.

Aims in teaching the art of reporting

Routine is the curse of the newspaper, and it is at its worst in reporting. In its face the four hard things to get are the combination of the vivid, the accurate, and the informed and the condensed story. Equipped newspapers of high standards like the New York *World* require re-

course to reference books, the "morgue," and the files in every story where details can be added to the day's digging in that particular news vein. Condensation comes next. The young cub reporter generally shuns both. He hates to look up his subject. He spreads himself like a sitting hen over one egg. Both must be required for efficient training. Compression it is difficult to enforce in a school where paper bills are small or do not exist and the space pressure of the large daily is absent. A number of dailies of large circulation are cultivating very close handling of news and space for feature and woman stuff with very great profit, and the schools give too little attention to this new phase of the newspaper. In all papers, the old tendency to print anything that came by wire is gone and mere "news" has not the place it once had. In particular, local news was cut down one half in a majority of dailies in cities of 250,000 and over from August, 1914, to the close of the war. The small daily in places of less than 50,000 and weeklies did not do this, which is one reason why great tracts of the United States were not ready for war when it came. Woe to the land whose watchmen sleep!

The teaching of copy-editing

Copy-editing is the next task in the training of the coming newspaper man. On the small daily and weekly, there is little of this, but it is practiced on the metropolitan daily. There ten to twelve men are needed, doing nothing else but editing copy. In the office, two or three years are needed to bring a man to this work. No school can teach this unless its men give at least a full day to editing a flood of copy that will fill a 12 to 16 page newspaper. Where the work of the students runs day by day on the copy of one of the lesser dailies, editing for that purpose is secured, but not the intensive training needed to handle the copy-desk requirements of newspapers in a city of 1,000,000 population or more in its urban ring. Success in this field is proved when men go direct from the classroom to such a desk. This carries with it tuition in heads for all needs, make-up, and the close editing of special articles, features, and night Associated Press copy.

A liberal curriculum must be part of training for journalism

Newspaper training will always deal also with subjects and needs a course containing a larger proportion of the studies usually taught in college or offered in its curriculum. Medicine requires the same chemistry, organic and inorganic, the same physics, and the same elementary biology as our college courses cover; these sciences are more or less like a Mother Hubbard, no very close fit and concealing more than is revealed. Johns Hopkins has been able at this point to apply tests, personal and particular, gauging both teacher and taught, more searching than are elsewhere required. The fruits abundantly justify this course, and in time some school of journalism will apply like tests to history,— ancient, medieval, and modern,— political economy, political science, and the modern languages, which are the basis of its work. The practical difficulty is that it is far easier to test the three sciences just mentioned than history, politics, and economics. No one will seriously assert that these are as rigorously taught as chemistry, physics, and biology. The personal equation of the teacher counts for more, it is both easier and more tempting to inject social theories, not yet tested by current facts, than in science. Sciolism is less easily detected in courses which deal with the humanitarian field than in science, but it is not less perilous and it is not less possible to apply the same experimental tests as in the scientific laboratory. He is blind, however, who does not see that much advance in the current teaching at any time of history, politics, and economics has had its experimental tests as complete and as convincing as in any laboratory, which certain teachers wholly refuse to accept — sometimes because they are behind the times, sometimes because they are before the times; sometimes they are in no time whatever but the fool time of vain imaginings that somewhere, somewhen, and somehow there is a place where human desires are stronger than the inevitable laws which guide and guard the physics, the chemistry, and the biology of social bodies.

A notable difference exists between the views of law

Social sciences must be related to life

taught and discussed in a law school and in a school of political science. The medical lectures preserve a sobriety in discussing sundry biological problems not always present in advanced courses of biology. Both lecturers, in both instances, are scientific men, both are faithful to the truths of science, but as a distinguished economist, who in his early years had been accused of being an advanced socialist, said, after he had won a comfortable fortune by judicious investments in business, banking, and realty, to a friend of earlier and far-distant years: "My principles remain exactly the same, but, I admit, my point of view has changed." There is not one biology of the medical school, another of the biological laboratory. Neither does the body of law differ in a law school or in a school of political science. The principles remain exactly the same. Of necessity, however, the point of view has changed and treatment has changed with it. So has responsibility.

The subject offers some difficulties. The analogy is not at all points exact. Medicine and law have a definite body of doctrine. Schools of biology and political science have not, but granting all this, it still remains true that exactly as the law student and the medical student must have what is defined, established, and unmistakable in the world of law and of life, so the student looking to journalism needs and must have what is defined, established, and unmistakable in economics and political science. Here, again, no one will pretend that the usual college course in either of these branches is taught with the same determination to keep within the same metes and bounds of recorded, tested, and ascertained facts as is true of courses in physics, chemistry, and biology. The boundary marked is less distinct. The periodic law by which the atomic values of elements are established is more definite than the periodic law under which wealth is distributed through society, though in the end some Mendelléeff will record the periodic law of social elements in their composition and action. Research is needed and must be free. Theory and speculation are as necessary to secure an experiment and observation. The

principle is clear, however, that the student who is to make professional use of a topic needs to have a definite and established instruction, not required in one to whom topic is incidental. The medical student or law student who has a new view of economic results or a new theory of the cause and purpose of our judicial and constitutional system as organized to protect the few against the many will work this off in the school of life, and is unaffected in his professional work. The journalist within his first year's work must apply his college economics and political science, and a wrong starting point may have serious consequences to his own career in the end, perhaps to society. Fortunately the work of the journalist so brings him in contact with things as they are, that the body of newspaper writers, taken as a whole, represents the stability of society. The convictions and principles created by their daily work tend this way. The labor union has few illusions to the reporter, and it was the editorial writers of the land who carried the gold standard in 1896, when many a publisher was hazy and scary. The causes of crime grow pretty clear to a police reporter, and a few assignments in which a newspaper man sees a riot convinces him of the value of public order, rigidly enforced. None the less, the reporter should start right on these sciences, basic in his calling; in the end, as the medical school has steadied the college teaching of chemistry and biology, so the school of journalism, the school of business, and the school of railroad practice *et al* will steady economics and political science. But the duty of the college and university remains clear, to be as watchful that the sciences of social action and reaction shall be taught with the same adherence to the established and the same responsibility to their professional use as the sciences of physical, chemical, and biological action and reaction.

Especially adapted content in social sciences to meet professional needs

The college studies needed as preparation for journalism call for a special proficiency and content as much as for a professional viewpoint. The journalist makes precisely the same use of his fundamental studies as does the medical student of his. If a future lawyer neglects his chemistry

and biology, it is of little moment. He can get up what he needs of a case. A medical student who neglects these studies will find that the best schools bar him. In time the school of journalism will refuse the college passing mark for admission. The newspaper man almost from the start has to use his economics, his political science, and his history. Elementary economics is in great measure given to theory, though a change has begun. For the journalist, this course needs to be brought in close contact with the actual economic working of society. The theory may be useful to the man who expects in the end to teach economics. It is of next to no value to the writer on public affairs. Of what possible use is it to him to learn the various theoretic explanations of Boehm-Bawerk's cost and value? The newspaper man needs to see these things and be taught them as Bagehot wrote on them and Walker and Sumner taught them.

General science course of inestimable worth to the journalist

In Columbia, this change is already recognized as necessary. So in political science, the actual working of the body politic needs to be taught, and this is too often neglected for explanatory theories and a special interpretation. A single elementary course in chemistry, physics, or biology presupposes two or three more courses which fill out the special opening sketch. Newspaper works requires a general account of science, derided by the scientist who is himself satisfied in his own education with a similar sketch in history. These general science courses are being smuggled in as "history of science," or "scientific nomenclature." Much can be done in a year with such a three-hour course, if the teaching be in exceptional hands; but adequate treatment requires two years of three hours, one on organic and one on inorganic science. The latter should give a view of anthropology and the former dwell on the application of science in modern industry.

In history attention must be focalized on modern movements

College history courses end thirty to fifty years ago. The journalist needs to know closely the last thirty years, at home and abroad. Weeks given to colonial charters in American history are as much waste as to set a law student

to a special study of the Year Books of Edward I and II. College students have to put up with a good deal of this kind of waste. If twelve hours can be assigned to history, three should be on the classical period, three introductory to the modern world, three to European history since 1870, and three hours for American history; at least two of these three hours should go to American history since Garfield.

Recent progress in all subjects must be summed up for the student of journalism

The writing course should be used to supplement this by articles on both these fields so that a student will learn the sources of history for the last thirty years, its treaties, its elections, its movements, its statutes, its reference works. He will need all this knowledge as soon as he has to write as a correspondent, a feature writer, or an editor, on the important topics of the day. Statistics need to supplement economics and advanced courses, two, if possible, should give knowledge and method in the approach to new problems in currency, banking, trusts, and unions. At least one general course in philosophy is needed, and Freud is as important for him here as Aristotle. The contact of the newspaper man with book reviewing, book advertising, and the selection of fiction and news in supplements and magazines calls for the "survey course in English literature" and a knowledge of the current movement in letters for thirty years back. In science, in politics, in history, in economics, in philosophy, and in letters, it is indispensable that the young newspaper man should be introduced by lecture, and still more by reading, to the speaking figures of his own day on affairs, political life, letters, the theatre, and art.

The journalist must ever be a student of human affairs

These things are indispensable. The man who knows them can learn to write and edit, but the man who can only write and edit and does not know them will speedily run dry in the newspaper, weekly and monthly. News is today standardized. Each President, each decade, each great war, the Associated Press and City Press Associations cover more completely the current news. Presentation, comment, handling special articles, grow each year more important and more in demand. The price of supplement and maga-

zine articles has trebled in the last twenty years. The newspaper grows more and more to be a platform, particularly the Sunday newspaper and popular magazine. If a man is to be a figure in the day's conflict and on its wider issues, he needs the special training just outlined, and when this outline is begun, he will find the toil of the years in these fields has but begun. About the safe harbors of journalism where men come and go, dealing with the affairs of and finding the ready market of the day, are the reefs strewn with the wrecks of ready and often "brilliant" writers whose few brief years left them empty and adrift, telling all they meet that no man can long earn a fair income and hold his own through the years in journalism.

A school can ameliorate all this by one course which requires much reading of the Bible and Shakespeare, by furnishing in the school library abundant access to the best current prose and verse of the day which will directly appeal to the young reader, since each decade has its new gods in letters, and by selecting teachers for the professional courses who have shown that they can write at least well enough to be paid by newspapers and magazines for their work. The teacher in writing whose work is not salable is not as likely to teach students how to write so that their work can sell as one who has earned his living by selling his stuff.

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XXVIII

BUSINESS EDUCATION

Evolution of business education

BUSINESS education of collegiate grade is a very recent development. The world's first commercial college was established at Antwerp in 1852, while the forerunner of American institutions of this sort, the Wharton School, was founded in 1881. Others followed in the nineties, but the general establishment of schools of commerce as parts of colleges and universities, as well as the inclusion of business subjects in the curricula of liberal colleges, took place after 1900. This sudden flowering at the top was preceded by a long evolution quite typical of the development of education in all the branches of learning to which institutions devote time because of their cultural or professional worth.

Some practical end and not the desire for abstract knowledge prompted early instruction and stimulated business education as well as education in general through various stages of progress. Of course all education is a process whereby technical operations and abstract truth developed by many generations are systematized, compressed, and imparted to individuals in a relatively short time.

The first stage in the evolution in a given field may be called the *apprentice stage*. Just as physicians, lawyers, and in fact practitioners in all the professions and crafts trained their assistants in their establishments for the purpose of making them proficient in their daily work, so did merchants at this stage give apprentice training in commercial branches to their employees. Traditional ways of carrying out certain transactions, convenient rules of thumb, and habits of neatness and reliability were passed on in a given establishment. As industry grew and guilds were formed, the training tended to become more standardized and merchants joined in establishing guild schools for their

employees. Many such schools were conducted in the various crafts, and their modern counterparts are the well-known vocational or trade schools. This *vocational training stage* was developed by business men for persons not employed as productive craftsmen but rather as workers in business offices which administered production and directly attended to selling and exchange, and for others looking forward to such employment. At this stage there grew up also private schools, usually conducted by teachers especially proficient in particular lines of service. Thus inventors of shorthand systems, devisers of systems of penmanship, and authors of methods of bookkeeping and accounting set up schools in these specialties. Here we have training outside the business house itself to prepare for participation in business, and the enterprises flourish because there is a demand for the people they train. At this stage rules of thumb are supplanted by systems based on principles, and the way is paved for the *technical school stage.* The training here is practical, but it is broad and based on scientific knowledge. This stage is not reached in all fields of endeavor, for some stop at the first or the second, while on the other hand the existence of a higher stage of education does not preclude the continuation at the same time of agencies carrying on instruction after the mode of the lower stages. With the rise of the factory system and the extension of capitalistic production and industrial integration in the form of "big business," there came a demand in the business world for men widely informed and thoroughly trained. Not only did men to meet this demand have to have good foundations of general education, but they needed technical preparation in the specialized field of business itself.

Business science is not only applied science, but it is secondary or derived from a number of the fundamental sciences. It draws its principles from the physical sciences of physics, chemistry, geology, and biology; it utilizes the engineering applications of these sciences; it derives valu-

able information from physiology and psychology, and it makes use of the modern languages. Borrowing from all the pure sciences and their applied counterparts, it formulates its own regulations so that it may manage the work of the world *economically*, so that it may bring about the production of goods necessary to meet humanity's many, varied, and recurrent wants, and make these commodities available in advantageous times and places with individual title to them established according to existing standards of personal justice and social expediency.

The final stage, the *cultural stage*, is reached when the educator determines that the field in question is so much a part of the general civilization or intellectual wealth of the world that it ought to receive some consideration, not only by specialists in the field but also by the student pursuing a well-planned course of a general or non-technical character designed to enable him to appreciate and play some rôle in the world in which he lives. It is because new branches of human endeavor constantly blossom forth into this stage, while more ancient branches wither and no longer bear fruit of contemporary significance, that the very humanities themselves change as well as realities.

Business as a field of human thought and activity has reached this stage, and educators reckon with it in laying out courses of general elementary, secondary, and collegiate study.

No one would contend that educators should in any way cease to offer general or cultural courses, but they should insist that these general courses embrace all of humanity's wealth, including that which modern society contributed, and that they should with each addition reshape their general offerings so that appropriate proportions will be preserved.

Before the development of modern highly organized production, business training would have been synonymous with commercial training; that is, training to prepare men

Definition of business education

to play their parts in the *exchange* of goods. This would embrace correspondence with customers, the keeping of records of stock, the cost of stock, making out bills, and attending to all financial operations which were associated with marketing and exchange. Successful training would imply, of course, the broad foundational grasp of arithmetic, reading, and writing of the mother tongue and of such foreign languages as the nature of the market might require, a grasp of various money values, banking procedure, and other information concerning financial affairs, the means of transportation, freight charges, etc. Manual skill had to be developed in penmanship, in the technique of bookkeeping, general office organization, and filing. With the invention of mechanical and labor-saving office devices, facility in operating them was required to supplement skill in penmanship.

Of course, with the development of the market the complexity of office management increased. In modern times the business man concerns himself not only with the duties of the merchant and exchanger, but also with the organization of industry and economical procedure. The modern business man, entrepreneur or manager, and all those assisting him in the discharge of his duties, perform functions in two directions: first, in the direction of the market in the establishment of price, in the selling of his goods, and in attending to all matters which flow therefrom, and secondly toward the production plant itself; while he employs technicians who know how to perform operations skillfully according to the laws of science, nevertheless he must know how to buy labor and how to organize labor and materials and put them in coördinate working relationship most economically.

We can therefore define business education as *education which directly prepares people to discharge the business function; namely, the economical organization of men and materials in production and the most advantageous distribution and exchange of the commodities or service for consumption.*

In the modern world it is hard sometimes to draw the line between the field of technology in production and the field of business management in production, but in general the two functions are fairly distinct. The technician is interested in operations of production, while the business manager is interested in their economical organization and in their government with relation to market conditions. The very engineers themselves must be selected, engineered, and paid by the business man. The business manager is interested in keeping the total price of his commodities above his total entrepreneur's cost. The technician is interested in inventing and operating the machinery of production, if and when the business man determines what operations will be profitable.

Aims and curricula of business education

The aims of business education are, first and foremost, professional; second, civic; and third, cultural. At no time can the three be separated, but it is possible to devise a curriculum which stresses one or two of the aims. It is also possible to treat a subject so as to emphasize technical and practical skill or to promote philosophical reflection.

The professional aim prompted the establishment of the first schools or colleges of commerce, and it is kept to the fore not only in institutions giving courses of study which lead to distinctive degrees in commerce, but also in places which give specialized instruction in particular fields. We shall consider curricula of the following types:

Type I. Curriculum designed to give the student training to meet a definite professional requirement established by law.

Type II. Curriculum designed to make a student proficient in a particular narrow field.

Type III. Curriculum leading to a baccalaureate degree in commerce or business, vertical type.

Type IV. Curriculum leading to a baccalaureate degree in commerce or business, horizontal type.

TYPE I. A TECHNICAL COURSE, DESIGNED TO PREPARE STUDENTS TO MEET THE STATE REQUIREMENTS FOR CERTIFIED PUBLIC ACCOUNTANTS

Entrance requirements for students matriculating for the whole course as candidates for a Diploma of Graduate in Accountancy — high school graduation, college entrance or a State Regents' C.P.A. Qualifying Certificate.

Non-matriculated students — mature persons wishing to pursue certain subjects without academic credit.

Prescribed

Accounting, Theory, Practice and Problems
4 terms, 4 hours a week — 256 hours

This course covers general accounting for the single proprietor, partnerships and corporations, embracing financing, manufacturing, and selling operations, with agencies and branches, the formation of mergers, syndicates, holding companies, etc.; dissolutions and reorganizations.

Cost accounting 1 term, 2 hours a week — 32 hours
Auditing 1 term, 2 hours a week — 32 hours
Public utilities accounting
1 term, 2 hours a week — 32 hours
Judicial (fiduciary) accounting
1 term, 2 hours a week — 32 hours
Advanced accounting, theory, and problems
2 term, 2 hours a week — 64 hours
Commercial Law
3 terms, 3 hours a week 144 hours

Covering general principles of law, contracts, and all forms of special contracts of interest to the business man, especially those related to personal property, risk insurance, credit and real property, and forms of business associations.

Economics
  Economic principles
    1 term, 3 hours a week — 48 hours
  Economic development of the United States
    1 term, 3 hours a week — 48 hours
  Money and banking 1 term, 3 hours a week — 48 hours
English — Written, Business English
    2 terms, 2 hours a week — 64 hours
  Oral English — Public Speaking
    4 terms, 1 hour a week — 64 hours

Additional electives — one course of at least 96 hours in Government and enough other elective subjects in technical commercial work or Political Science to accrue at least a total of 1000 hours.

The available additional electives in accounting are advanced courses in different special fields such as Advanced Cost Accounting, Municipal Accounting — General and Departmental, Systems for particular industries or forms of business, Public Utilities Rate Making and Regulation, etc.

In Government the available electives include such subjects as American Government and Citizenship, American Constitutional Law, International Law, Political Theory, Comparative Government, State Legislation and Administration, Municipal Administration, etc.

In Political Science, courses in Economics and Business, such as Economic Problems, Business Organization and Management, Public Finance, Foreign Trade, Foreign Exchange, Insurance, Advertising, Salesmanship, etc., are available, while general and special courses may be taken in Sociology and Statistics.

Courses of study of this sort in a specialized field are offered in colleges usually at night for students who are in active business during the day. With more or less extensive additions in scientific, literary, and linguistic fields

they become the curricula leading to baccalaureate degrees as represented by Type III, to follow. Large private institutes or schools conducted for profit and also correspondence institutions offer similar courses. Other groups of studies in particular fields are: in banking, in transportation or traffic, in sales management, including advertising and salesmanship, and in foreign trade.

A group in Foreign Trade will typify this sort of course of study, which differs from the one in Accountancy just given because the make-up will be determined wholly by each institution quite independent of legally established professional standards.

TYPE II. TO PREPARE STUDENTS FOR WORK IN A SPECIAL FIELD, FOREIGN TRADE

Principles of economics
1 term, 3 hours a week — 48 hours
Economic resources of the U. S.
1 term, 3 hours a week — 48 hours
Commercial geography
1 term, 3 hours a week — 48 hours
Money and banking 1 term, 3 hours a week — 48 hours
Foreign exchange 1 term, 3 hours a week — 48 hours
Foreign credit 1 term, 2 hours a week — 32 hours
International law 1 term, 3 hours a week — 48 hours
Tariff history of the U. S.
1 term, 2 hours a week — 32 hours
U. S. and foreign customs administrations
1 term, 2 hours a week — 32 hours
Export technique 1 term, 2 hours a week — 32 hours
Practical steamship operation
1 term, 2 hours a week — 32 hours
Marketing and salesmanship
General course 1 term, 2 hours a week — 32 hours
Special courses as desired on South American Markets, Mediterranean Markets, Russian Markets, Northwest Empire Markets, etc.

Foreign Languages:

Practical courses in Conversation and correspondence in French, Spanish, Portuguese, German, Russian, etc., according to market in which trade is specialized, at least

4 terms, 3 hours a week — 192 hours

Total (in 2 years, with weekly schedule of 10 or 12 hrs.)

672 hours

A special course of this sort usually leads to a certificate but not a diploma or degree. Obviously the technical aim is very prominent, though civic and cultural benefits of no mean character will of necessity be derived. New groups will be found as new fields of business become important and develop definite, recognizable requirements of a scientific sort. Naturally each such specialty goes through the usual evolution and contributes its philosophical distillation or essence to the cultural college course.

When we come to the construction of a curriculum leading to a bachelor's degree in business, economics, or commerce, we have the problems of the engineering schools. Just how far will specialization be carried, in what sequence will the foundational subjects and the specialties be taken up, and to what extent will other more general subjects not directly contributing to a technical end be admitted? In most institutions of good standards the degree is regarded as representing not only technical proficiency in business but also some acquaintance with science, politics, and letters in general. The question (already an old one in schools of engineering) arises then concerning the best way to arrange the special or distinctively business subjects in relation to the more general. Although there are a number of variations, two outstanding types are recognizable. We may devise labels for them: the *vertical* curriculum, which offers both general and special courses side by side right up through the college course, and the *horizontal*, which requires a completion of the whole or nearly all of the general group during the first two years of college before the special subjects are pursued in the last two.

TYPE III. VERTICAL TYPE OF UNDERGRADUATE CURRICULUM, LEADING TO THE DEGREE OF B. S. IN ECONOMICS

Entrance: College entrance requirements.

Requirement for graduation: 74 units, of which 40 must be in general business and in liberal subjects, with 34 in specialized fields of business activity, to be taken after the freshman year.

A unit here represents successful work for one hour a week for two semesters. Therefore the total 74 is equivalent to 148 of the usual collegiate units.

Freshman Required Work

English composition	2 hours a week — 2 terms
English, history of the language	1 hour a week — 2 terms
English literature	1 hour a week — 2 terms
Chemistry — general or Business law	3 hours a week — 2 terms
Physical education	2 hours a week — 2 terms
Government — federal and state	3 hours a week — 2 terms
Principles of economics	3 hours a week — 2 terms
Economic resources	2 hours a week — 2 terms
Accounting——general course	3 hours a week — 2 terms

Sophomore Required Work

English literature and composition	3 hours a week — 2 terms
Physical education	2 hours a week — 2 terms
General history	2 hours a week — 2 terms

Required before End of Junior Year

Additional political science	2 hours a week — 2 terms
Physical education	1 hour a week — 2 terms

Required before Graduation

Additional history	3 hours a week — 2 terms

Physical education 1 hour a week — 2 terms
A modern language beyond the first year in college
3 hours a week — 4 terms
Total required units 40 units

Elect after the Freshman year courses aggregating 34 additional units in fields of

I.	Business law	4 courses, 10 units available
II.	Commerce and transportation	9 courses, 19 units available
III.	Economics	8 courses, 15 units available
IV.	Finance and accounting	20 courses, 53 units available
V.	Geography and industry	11 courses, 26 units available
VI.	Insurance	7 courses, 16 units available
VII.	Political science	22 courses, 43 units available
VIII.	Sociology	6 courses, 12 units available

Total required for the degree, 74 units

There is a school which grants a degree in Commerce for the equivalent of 36 of these units or 72 of the usual college credits, if the student has business experience, and for the equivalent of 48 of these units or 96 of the usual college credits if he has not. The course is essentially like Type I and includes no broad liberal requirements in literature, foreign language, and history and on the other hand is not so strictly prescribed as Type I. A strictly technical degree may be desirable for such a short course, provided the prescription is severe and includes languages. Generally it seems best to reserve degrees for full college courses of four years or more which include a reasonable general requirement in languages and science. This leads us to Type IV, or the curriculum which requires the first regular two years of the college course prescribed for one of the liberal degrees and permits business specialization in the last two undergraduate years or these with an additional postgraduate year. One institution requires the first three

years as a foundation for a two-year course in business, and one conducts a postgraduate school of business administration leading to the degree of Ph.D. in Business Economics. No doubt postgraduate work will be continued mainly in the research direction, but undergraduate day and continuation courses will be devoted mainly to preparation for business.

It is not necessary to illustrate Type IV, because the first two years consist simply of the Freshman and Sophomore work of any sort of liberal college course, Classical, Scientific, or Modern Language, while the succeeding years are made up of special work in Economics and Business of more or less concentrated character.

The advantage of the type is obviously administrative. The whole vexing problem of insuring fairly wide cultivation along with opportunities for specialization is conveniently settled by giving general training, most of it remote from business work, for two years, after which the student is considered cultivated enough to withstand the blighting effect of specialization. But there are serious pedagogical objections to this arrangement which make the vertical plan seem preferable. A student coming from one of our constantly improving high schools of commerce is checked for two years and given time to forget all the bookkeeping and other commercial work which he has learned and on which advanced commercial instruction may be built, while he pursues an academic course. It would be far better to continue the modern languages, the mathematics, and natural sciences, along with business courses. Furthermore there is much to be done by educators in arranging such parallel sequences of subjects so that advantage may be taken of vocational interest to stimulate broad and deep study of related fundamentals. Considerable improvement could be made over Type III, but that type seems better than the one we have styled "horizontal."

In all these courses of study we quite properly find both the philosophical and analytical courses, those which are historical and descriptive and those of detailed practical technique; we find economic theory, industrial history, busi-

ness management, and practical accounting; we find theory of money and banking, history of banking in the United States, and practical banking; we find theory of international exchange, tariff history, and the technique of customs administration. Concerning methods of teaching particular subjects we shall speak later.

Seldom do we find curricula drawn up with the purely civic end in view, though many schools and associations throughout the country are agitating the question of organized training of men for public service. Strictly speaking, this kind of training is both professional and civic because it is designed to make men proficient in carrying on the business of the State. In New York City the municipal college conducts courses of this sort for persons in the city service, while private bureaus of municipal research conduct their own courses. So far in America no courses are yet accepted officially for entrance into public service or as the only qualification for advancement in the service. Nevertheless, progress is being made in this direction. The curricula offered include courses in Government and especially Municipal Government, Public Finance and Taxation, the practical organization and administration of various departments such as Police, Charities, Public Works, the establishment and maintenance of special systems of municipal accounts.

But the great civic benefit comes from general courses in business, for the business man who has a real grasp of his work and sees it in the light of general social welfare becomes a good citizen. Business education gives some sense of the interdependence of industry, personal ethics, and government. The broadly trained business man realizes that he is in a sense a servant of the community, that his property is wrapped up with the welfare of his fellow men, and that what he has is a trust which society grants to him to be conducted after the manner of a good steward. Such training reveals to him the *raison d'être* of labor legislation, factory laws, the various qualifications of the property right, the necessity for taxation, and the importance

of good government to all the citizens of the State both as coöperative agents in production and as consumers. Continued and improved business education will elevate the mind of the merchant and the manager so that its horizon is no longer the profit balance but the welfare of all society.

The cultural aim of business courses is consciously kept in mind by the makers of curricula for colleges of liberal arts and sciences which permit a rather free choice of electives in the department of Economics and Business or of Political Science, according to the departmental organization of the institution. Here, of course, we find Economics, which bears to practical business much the relation which Philosophy bears to active life in general. We find also courses in Money and Banking, usually offered from the historical and descriptive rather than the technical point of view. Recently, however, colleges have included in this field of election practical courses in Accountancy and Commercial Law. The tendency is in the direction of including more and more of the practical and technical courses, although the historical and philosophical courses are retained. Nevertheless the cultural value is undiminished, unless one were to maintain that nothing which is exact can be cultural.

Methods of teaching

The field of business is so wide and embraces so many subjects that the methods of teaching giving the best results will be varied and used in different combinations with different subjects. Those subjects which are practical and largely habit forming, such as stenography, typewriting, bookkeeping, and the manipulation of mechanical and labor-saving office devices, are of course taught by some method of training which will insure quick reaction. In these courses the object is to cultivate habits of manual dexterity and habits of orderliness and neatness. Here we find that exposition is reduced to a minimum, lectures are few, recitations do not exist to any great extent, but that practice,

1st, to secure proper form, and

2d, to secure speed,

is the controlling aim of the method. The teachers show their ingenuity in devising exercises which will give ac-

curacy of form and then develop speed without sacrifice of accuracy.

In colleges these courses are reduced to a minimum because they are usually cared for in lower schools, but for students who come directly to the commercial college without them, preparatory courses of this sort are often conducted.

Among the technical subjects the one which calls for the most practice is, of course, Accountancy, first for the single proprietor, next for the partnership, and finally for the corporation. Various methods of presenting Accountancy have been suggested. Very few teachers employ extensive recitation work in this field. It is found most desirable to have periods of at least two hours' duration, so that the teacher can give such exposition and lecture work at the beginning of the period as he may see fit, and the class may then take up practice. In some schools it is customary to have one course in theory, another course in practical accounting, and another course in problems of accounting. However, the tendency seems to be in the direction of making these three aspects of the work mutually helpful, and the course is offered as a course in Accounting, Theory, Practice, and Problems. The theory is set forth in a lecture, practice is given with typical situations in mind, and then related problems are taken up for solution. Many excellent texts are now appearing and can be used in the customary manner. Assignments in these books tend to make unnecessary many long or formal lectures, but there still remains the need for classroom talks and quizzes. As the course progresses, the problems become more and more difficult and complicated, and the final problem work is exceedingly difficult and calls for a considerable power of analysis, clarity of statement, and care in arrangement on the part of the student.

A complete course of this sort usually covers two and a half or three years. At the end of the first year of general accountancy, special subjects may be pursued parallel with the general course. The order in which these special-

ties are introduced is usually Cost Accounting, Auditing Systems, Judicial or Fiduciary Accounting, and then other special branches such as Brokers' Accounts, Public Utilities Accounting, Foreign Exchange Accounting, etc.

General Accounting is very important both as an instrument for the business man to use and as a training to insure the grasp of general business organization. It is the opinion of the writer that whether a business man expects to become an accountant or not, he should have a thorough and technical grasp of this subject. In these specialties it is necessary to depend upon lectures rather than textbooks, not only because textbooks here are few and other works are not well adapted to teaching use, but also because the subject matter must be kept up to date and in keeping with changing practice. The lecturers should be practical experts in each particular field as well as acceptable teachers.

Closely related to Accountancy is Commercial Law. Commercial Law should, of course, be understood by every business man, not because he expects to become a practitioner of law but because he wishes to avoid unnecessary disputes and to shape his course wisely from a legal standpoint in dealing with his employees, his business associates, and his customers.

There are various methods of teaching Commercial Law. The one which has been in vogue thus far has been the textbook method, in which the principles of law of interest to the business man are set forth. Lessons are assigned in the book, and recitations are held. The lecture method also is advocated. In some universities which have both law schools and schools of commerce, the commercial students receive lectures in the school of law in such subjects as contracts, agencies, insurance, etc. It seems to the writer that neither of these practices is desirable but that the proper way to teach Commercial Law to the commercial students is the case method, in which the principles of law of interest to the business man are developed from an examination of actual cases of business litigation. We may

very likely look forward to the publication of case books which can be used either alone or in conjunction with text-books on legal principles. Lectures on law to commercial students should be reduced to a minimum, and then they should confine themselves to very broad principles which need no lengthy exposition or to fields in which the students may be expected to have a general grasp but no very detailed knowledge. But such subjects as contracts, agency, bankruptcy, sales, insurance, negotiable instruments, and forms of business association should be taught thoroughly to the student in the classroom through the case method, in which each case is fully discussed by the class and from which discussion legal principles are evolved. It is interesting to note that the states which stand highest in the matter of Certified Public Accountancy licenses are requiring very thorough preparation in law. To meet such requirements a course in law covering at least three semesters, three hours a week, with a case method is certainly necessary.

The modern languages taught in schools of commerce should be by the direct method, and always with the vocational end clearly before the student. Actual business transactions, such as selling to a foreign customer in the foreign language, correspondence, newspapers, catalogues and other documents of business, should be the supplementary reading and exercise material of the class. Facility in conversation and writing should be developed as rapidly as possible, and the grasp of the methodical rules should follow. It would probably be presumptuous to take a strong position here on the question of teaching modern languages, but experience with commercial students has clearly indicated that greatest progress can be made if the language is taught by a conversation or direct method from the very start, and if paradigms and rules of syntax are evolved after some vocabulary has been developed and some facility in speech has been acquired. We may say here, incidentally, that it seems wise to teach the spoken language for a while before taking

up the problem of the written language, especially where the foreign language assigns different phonetic values to the printed symbols from those assigned in English.

While the various technical subjects offer different problems because of differences in their character, we may say in general that the aim of the school should always be to keep in touch with the actual practice in the business world; to have the lecturer use material which is up to the minute, and, where possible, to give the students the advantage of field work or at least to take them on tours of inspection in the different houses engaged in this or that line of business.

The curriculum of any good commercial college or university department of business includes courses in Economics, Commercial Geography, Industrial History, Business Management, and similar subjects. No doubt other chapters of this book discuss methods of teaching these subjects. But it may not be out of place here to indicate that the best approach to the study of Economics is through practical business courses in Accountancy, Commercial Law, and Practical Management. Economics is the Philosophy of Business, and it cannot be understood by one who is unfamiliar with the facts of business. Certainly it cannot be related to real business life by the academic student. It would seem, therefore, best to reserve the course in Economic Theory for the senior year of a business course and precede it with courses in Accounting, Law, Industrial History, and Management. Then, when it is taught, it should be presented through practical problems from which the general principles may, by induction, be derived.

Relations with the business world

It is important that commercial education should not grow academic and remote from the real world of affairs. Therefore schools of business should keep in close contact with merchants' associations, chambers of commerce, and such other bodies of business men as may be in the neighborhood of the school. Committees from such associations should have either a voice in the conduct of the school, or

at least have very strong advisory representation on committees. In France, Germany, and in fact most European countries, colleges of commerce were directly established by chambers of commerce and associations of merchants, and the work is to a large extent conducted under their direction. Whether the college of commerce in America be a private institution or one supported by the public, it should form some sympathetic contact with the leading business organizations. Of course certain business associations have their own technical schools of training. The American Bankers' Association conducts its own courses, drawing upon various universities for lecturers in some subjects and drawing upon experts in business for other kinds of technical work. So also various corporations have their corporation schools which seek to develop business executives by progressive courses of training for those in the lower ranks.

Nevertheless, the collegiate institutions offering organized courses in commerce will do well to keep in touch with business men. Another way in which such schools and colleges can keep abreast of the times is to employ lecturers who do not make teaching their main business of life but who are expert in certain particular fields. Indeed, it is almost impossible to teach certain of the very advanced and specialized courses without employing men of this sort. They are attracted to teaching not by the pay but by the honor of being connected with an institution of learning, and by sincere desire to contribute something to the development of the work in which they are interested. These men, of course, can be scheduled only for a relatively few hours a week, and sometimes they can be had only for evening lectures, but in any event they are very much worth while. Obviously the director of studies in the college should give these men all possible assistance of a pedagogical sort, so that their advantages as experts in business will not be offset by deficiencies as teachers.

Evening work in commercial courses

This brings us to another consideration which is very important. It seems to the writer that the ideal training for a student who has reached the stage of entrance to

college and who wishes to go into business is as follows:

He should enroll in the college course which is preparatory for business training and pursue his modern languages, Mathematics, English, and the Social Sciences, and also take up such accounting and technical work as he can have the first two years of his course. Then he should enter the world of business itself, be in a business house during the day, and continue his studies at night. It seems very desirable that this parallel progress, in organized theory and instruction, on the one hand, and in actual business with its difficulties which arise almost haphazard, should be carried on. The relationship is very helpful. Of course a substitute for this is the coöperative plan, in which the student spends a part of his time in college and a part of the time in a business house. Another alternative in institutions which have the three-term year is to put two terms in at college and one term in at business. The calendar arrangement of any institution will suggest variations of this suggested arrangement, the purpose of which will be to insure progressive development in business practice and also in collegiate instruction.

Recent developments

It is to be noticed that in the last few years business has become more and more intense. The developments are in two directions. The first direction is saving and efficiency through organization. This tends to keep down cost. The other direction is in the stimulation of the market and in perfecting advertising and selling methods. Naturally there have been developments in the recording, accounting, and clerical ends of the business, but scientific management in production on the one hand, and scientific selling on the other, are the two great developments. In both, engineering plays a prominent part and dictates a close correlation of the business and the engineering curricula of a college or university seeking to give most effective training either to the student of business or the student of engineering. On the selling side we are having the further developments which come with the growth of foreign trade.

In order to meet the demand for men competent to organize production wisely and from a business viewpoint, more courses will be given in what we may call production management or commercial engineering. Furthermore, the sales engineer must be trained. The curriculum of the course of collegiate grade should be made up somewhat as follows:

A two years' prescribed course in the general sciences and in general principles of business, followed by a two or three year curriculum in technical business management, on the one hand, including especially accounting, cost accounting, wage systems, employment management, and some branch of engineering on the other hand. The engineering course should be general but thorough. It should not go up into specialized fields of design, but it should include all the fundamental courses of engineering — of mechanical, electrical, and civil engineering. A combination course in engineering and business management is needed also to prepare men for places in banks as investment managers. The banks must advance funds to industrial concerns, and such loans cannot be made wisely save upon the advice of one who is thoroughly acquainted with plant management, equipment, and mechanical operations as well as costs of production and market possibilities. In addition, such a man must be well acquainted with systems of accounting and methods of preparing financial statements. In the field of salesmanship, engineering training is growing in importance. In short, the highly organized state of modern production and the tremendous part played by engineering in modern industry indicate the need for a close coördination of business and engineering education.

In conclusion we may say that business education is now at the stage where it has its own technology, is in close touch with other fields of technology, and is making its contribution to the general fund of modern culture. Texts and scientific treatises in the field of business are increasing, the pedagogy of the various included subjects is receiving satisfactory attention, and schools of collegiate and

university grade are keeping abreast of the demands of the business world for adequate general and specific training in business.

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