

UNITED STATES BUREAU OF EDUCATION.
CHAPTERS FROM THE REPORT OF THE COMMISSIONER OF EDUCATION
FOR 1893-94.

THE
PSYCHOLOGICAL REVIVAL.

EDUCATIONAL VALUES
OF THE
SEVERAL BRANCHES OF STUDIES.

WASHINGTON:
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PSYCHOLOGICAL REVIEW

SEVERAL BRANCHES OF STUDY

W. B. DUNN

CHAPTER X.

THE PSYCHOLOGICAL REVIVAL.¹

[For previous article on the subject see chapter on Child Study, Report 1892-93, vol. 1, pp. 357-391.]

TOPICAL OUTLINE.—*Chief events in the movement during the year 1893-94; societies formed; periodicals issued—Interdependence of the different methods of investigation—University equipment for psycho-physics and courses in child study—Results of the new psychology applicable to education—Addresses and citations from reports, articles, etc.*

Among the intellectual movements of the time none has greater importance for education than the revival of interest in psychology. During the year under review the agencies concerned in this movement have been increased by the formation of the American Psychological Association and the publication of the *Psychological Review*, whose first issue bears date January, 1894. Edited by Profs. J. Mark Baldwin, of Princeton University, and J. McKeen Cattell, of Columbia College, with the cooperation of a large body of distinguished specialists, the comprehensive and scholarly character of this periodical is assured.

The interest aroused and maintained by specialists in the leading universities has naturally extended to the great body of teachers, many of whom have pursued courses of psychology in the universities, and a still larger number similar courses in normal schools. As in the case of other movements affecting education, the strength of this, which had been silently developing for some time, was first signally manifested at Chicago. None of the department congresses held during the memorable summer of 1893 had larger or more enthusiastic audiences than the psychological. As regards numbers, at least, this was particularly true of the department congress of experimental psychology in education under the presidency of Dr. G. Stanley Hall. As to Dr. Hall, more than to anyone else, is due the credit of having aroused teachers to a sense of the value of this subject as a part of their professional equipment, it is natural that they should follow particularly the directions in which he has led. In one of these directions, namely, the systematic observation of children, the cooperation of teachers is

¹ Prepared by A. Tolman Smith.

helpful; indeed it may be said indispensable. By his efforts to secure this community of work, Dr. Hall has called into existence a national association for child study; this in turn has given rise to local or State societies, by means of which exact direction may be given to the work of individual observers or groups of observers.

In New York a division of child study has been created in the department of public instruction under the direction of Prof. Charles H. Thurber, A. M., of Colgate University. Blank forms are issued to teachers by the use of which systematic records may be kept of their observations upon children. Bulletins are also issued containing general directions and useful hints for the work, with accounts of individual studies, bibliographies, etc.

The Iowa society for child study was formed at the meeting of the State teachers' association held in Des Moines, December, 1894.

An account of the initial meeting of this society will be found among the papers appended.

The Illinois society for child study, formed this year (1894), has had phenomenal growth. Comprising as it does teachers, parents, kindergartners, physicians, specialists in neurology, psychology, and physiology, the society typifies the reciprocal relations of all those whose work concerns the welfare of children.

The Child Study Monthly, the first number of which has just appeared (May, 1895), will undoubtedly prove a valuable auxiliary to the work. It is edited by Dr. W. O. Krohn, assistant professor of psychology in the Illinois University.

Dr. Hall, whose interest in the subject never flags, has added to the many helpful suggestions for teachers and parents previously issued a series of syllabi for child study. These cover fifteen topics, including emotions, as anger, love of animals; emotional expression, crying, laughing, habits, experiences, etc. It is interesting to note in this connection that Dr. James Sully, of London, following the American precedent, asks the cooperation of parents and teachers in collecting facts that bear on the characteristics of the childish mind. What he especially desires is first-hand observations carried out on children during the first five or six years of life. The points to which observation is particularly directed are grouped under specific heads, as fancy, self-feeling, etc.

There are certain evils incident to an exaggerated interest in child psychology that have not escaped the attention of leaders of this movement. Childhood is but a fragment of a great whole; considered by itself, the incidental and unimportant may be unduly exaggerated, moreover adult life alone furnishes the interpretation of many phenomena of the developing mind. It is to be remembered, also, that the value of observation depends largely upon certain qualities in the observer that mark the specialist. These are not characteristic of the great body of teachers, and in so far as close observation tends to

the suppression of the personal element or "equation," to speak technically, it is not desirable that they should be. Free, spontaneous action of thought and feeling is a power in human intercourse and of great consequence when the purpose of the intercourse is the stimulation of thought and feeling. The observing attitude and the stimulating activity of mind are in a measure opposed to each other. It should be considered, also, that many of the investigations in progress require for their best results the use of instruments of precision; in other words, they belong to the laboratory. These considerations indicate the ultimate unity of all psychological study, whether its method be that of observation, of laboratory research, or of introspection. Only when the various results are correlated can their true value be determined. This idea of unity is emphasized by Dr. Alexander Bain in a discussion of the respective spheres and mutual helps of introspection and psycho-physical experiments in psychology. (Mind, January, 1893, 42-53.)

In the introduction he says:

The resources at our disposal in imparting to psychology a scientific character are now numerous. At the head must still remain introspection, or the self-consciousness of each individual working apart. This is the method principally employed since the first beginnings of the science in Greek philosophy. It does not exclude and never has excluded (as we see in Aristotle) references to objective facts and appearances, deriving from thence a great addition both of insight and of certainty.

In the enumeration of means now available for the study are included observations (and experiments) directed upon infants, upon abnormal and exceptional minds, upon animals, and upon the workings of society, or collective humanity. To these are added physiology, and, last but not least, psycho-physical experiments.

He concludes as follows:

By the nature of the case the initiative, in the more fruitful lines of inquiry, will be most frequently taken by introspection, which also, by its powers of analysis, will still open the path to the highest generalities of our science.

The mutual dependence of laboratory work and schoolroom observation is dwelt upon by Prof. W. L. Bryan, of the University of Indiana, in an article on "Child study, systematic and unsystematic," citations from which are given among the papers appended.

The most important contributions that the "new psychology" has made to our knowledge of mental phenomena have come from laboratory investigation into the structure and functionings of the nervous system. For this work our country has unsurpassed facilities, a feature which is dwelt upon in all foreign accounts of our university equipment. In many of the leading universities systematic studies in child life are also carried on *pari passu* with the laboratory work. The reputation of the professors who lead in this matter, not less than the appliances which are at their disposal, augurs well for the outcome. Particular instances will serve better than general statements to show the plane upon which this department of study is placed. For example,

at Columbia College Prof. J. M. Cattell conducts the department of experimental psychology. The catalogue for 1894-95 gives the following particulars as to the laboratory equipment:

The psychological laboratory is situated on the fourth floor of the building known as the president's house, and consists of a lecture room and general laboratory, and three smaller rooms for special research, including a dark room for work on vision. The small rooms allow students to work alone and without interruption at all hours during the day. The laboratory has windows to the north, east, south, and west, and is supplied with electric light for experimental purposes and electric power.

The collection of psychological apparatus is, perhaps, not surpassed by any in this country or in Europe. Three thousand five hundred dollars have recently been appropriated for this collection by the trustees of the college, and, in addition, apparatus which cost \$1,200 is in use. The apparatus has been secured with a view to a series of experiments such as is carried out by the students attending the introductory course, and with a view to special researches.

The exceptionally fine collection of apparatus belonging to the department of physiology is also available for the use of students in this department.

Students of education have opportunity for the personal observation of children in the Horace Mann School, maintained by the Teachers' College as a model practice school.

At Clark University the president, Dr. G. Stanley Hall, is also professor of psychology. He is ably seconded by the assistant professor, Dr. E. C. Sanford, and by the professor of physiology and neurology, Dr. C. F. Hodge. The fellowships in psychology bring to their aid a company of trained specialists. The course in education is kept in close relation with that in psychology and anthropology, and in part is based on them. It need hardly be added that child study is a prominent feature of this course.

At Yale University the subject of physiological and experimental psychology is in charge of Dr. E. W. Scripture. The course, which is very elaborate, includes on the educational side "Child study on a scientific basis." The similar department at Harvard is under the conduct of Dr. Hugo Münsterberg. The course in experimental psychology at the University of Pennsylvania, in charge of Prof. L. Witmer, includes—

	Hours per week,
1. Systematic course in experimental psychology.....	1½
2. Special topics for class experimentation.....	1½
3. Seminary for the study of child psychology.....	1½
4. Individual laboratory work, at least.....	2

At Princeton the course of mental philosophy includes experimental psychology. The laboratory for this class of investigations, founded at the beginning of the academic year 1893-94, is equipped "with the standard pieces of apparatus for demonstration and research, together with illustrative models and charts." The work is in charge of Dr. J. Mark Baldwin, whose contributions to the literature of psychology are well known.

The foundation of the Susan Linn Sage School of Philosophy secured to Cornell University ample facilities for psychological research. In

the instruction of this department all sides of philosophy are represented. Furthermore, as stated in the announcement of the school,

Every method of discovering truth—observation, experiment, historical investigation, reflection, and speculation—is welcomed within its appropriate domain.

The apparatus for the psychological laboratory was made in Germany under the personal supervision of the professor. There is already a full equipment in some of the most important lines, and additions will be continually made as required. All the philosophical journals published both at home and abroad are taken. The library is also well supplied with philosophical works, and books not on hand are ordered as soon as called for. In the new library building there is a large seminary room set apart for the exclusive use of advanced students in philosophy. This room contains complete sets of the more important philosophical journals—American, English, French, and German—and a carefully selected collection (which is being constantly enlarged) of books necessary for special study and independent research. Another room in the library building has been assigned to the school as an editorial room for *The Philosophical Review*. This Review marks another function of the school, namely, the publishing of the results of investigation. It appears once in two months, each number containing from 112 to 128 pages. A large part of the material of the Review is contributed by the professors, fellows, and graduates in the Sage School of Philosophy.

Dr. E. B. Titchener is professor of psychology, with direction of the laboratory.

The principal universities of the Western States are fully in line with this movement. At Michigan University, psychology, under Professor Mead, is kept in close relations with philosophy, under Dr. John Dewey.¹ At Illinois University elaborate courses in psychology are conducted by Prof. W. O. Krohn, Ph. D.; at Wisconsin University by Dr. Joseph Jastrow, whose researches have thrown great light upon the whole province of child study and of race psychology.

At the Indiana University Dr. W. L. Bryan, professor of philosophy, maintains also courses in psychology. The laboratory for experimental psychology, established in 1888, has recently been enlarged and supplied with new apparatus. Educational psychology forms a special feature of the department of pedagogics.

At the University of California a graduate seminary for the systematic study of child life is maintained in the department of pedagogy, under the immediate charge of Dr. E. E. Brown. Professor Bailey also lectures on the biological aspects of education.

The more recent foundations—i. e., University of Chicago and Leland Stanford Junior University—have also made large provision for psychology, both rational and experimental. At the latter institution a vigorous work in child study and anthropological psychology is maintained under the conduct of Prof. Earl Barnes.

In the colleges exclusively for women similar courses are offered. At Wellesley general and advanced courses are maintained by Dr. Miles and Prof. Mary W. Calkins. At Bryn Mawr psychology is coor-

¹ Dr. John Dewey having accepted a call to Chicago University, his relation with Michigan University ceased with the close of the scholastic year 1893-94.

minated with logic and philosophy under the direction of Dr. D. S. Miller. All the main divisions of psychology are treated "by lectures, illustrative demonstrations, reports of abnormal cases, and discussion." Randolph-Macon Woman's College announces courses of psychology, theoretical and experimental, in connection with pedagogy. The classification and scope of these university courses is very clearly set forth in a recent article by Dr. G. Stanley Hall, citations from which will be found among the appended papers.

Not the least important outcome of the present interest in psychology is the relation it has established between university professors, teachers of secondary and elementary schools, and school officials. Teachers and supervisors are not likely to lose sight of the practical bearings of the subject upon their professional work. On the other hand, university men will naturally keep in mind the wider relations of the subject. This relativeness is incidentally suggested in many of the inquiry schemes and study directions issued for the work, the bearing given being generally scientific rather than philosophical. Thus a scheme for the study of temperament gives hints of the theory current among anthropologists that the key to racial vigor is to be found in the skull formations (long heads versus broad heads). Some understanding of this theory,¹ of the arguments for and against it, would be helpful, if not indispensable, in the mere act of recording data. Thus the natural outcome of the teacher's interest in a specific line of observation would be a wider range of reading and clearer understanding of his own particular field of inquiry. It is noticeable that in university circles the new psychology is kept in close relation with the old; investigation into the effects of mental phenomena as manifested in the action of muscles and nerves redoubles interest in the introspective view. As a natural result the past few years have seen notable contributions to the literature of rational psychology.

The educational bearing of psychology has long been a fruitful subject of study in normal schools and in the pedagogical department of universities. The question now arises as to what practical results, what guiding principles applicable to school work have arisen from the new psychology. These questions are discussed directly or indirectly in the papers on this division of the subject appended. It may be well to note here a few principles that are distinctly recognized by those who lead in the matter.

Dr. Hall has repeatedly called attention to the periods of physical growth and their relation to mental growth or activity.

It has been found that children grow tall in spring and stocky in fall; further, that different parts of the body have different periods of best growth. Times of physical growth are also times of mental growth in acquisition, though children then are not able to systematize well. Hence, in time of great acquisition ease up the constraint of methods.

¹For a valuable discussion of the pros and cons of the theory referred to see *La Psychologie des Peuples et L'Anthropologie*, by Alfred Fouillée. *Revue des Deux Mondes*, March 15, 1895, pp. 365-396.

Dr. Hall warns us also against applying the methods suggested by the study of defective or abnormal children to the instruction of the average child. He would rather "let the bright children set the pace." He adds:

An experiment was made a few years ago in Paris which showed that methods adapted for bright children enabled a class of average boys to complete the six years, course of the lycée in a little over two and one-half years, although no extra time was given. By such means I am confident we can work twice as fast with the brighter half of our classes. This is not theory; I have tried it.

Dr. Hall, Dr. Burnham, of Clark University, and other investigators in this province lay stress on three principles derived from the observation of the formative development of the body. Says Dr. Burnham:

The first pedagogical principle settled beyond controversy by this broad study of children is that no development is possible without the functioning of the nervous system. * * * It follows that the laws which express the development and activity of the nervous mechanism must determine pedagogical principles.

Among these laws one of prime importance is the following: The fundamental is developed before the accessory. * * * This law of the child's nervous system is the basis of a most important educational principle. First the fundamental, then the accessory. This applies not only to the various forms of motor training, manual training, gymnastics, and the like, but, in general, first a strong healthy development of the fundamental nervous processes is necessary, then may follow more delicate and complex acquisitions. A reversal of this order, the imposition of delicate, subtle, and complex occupations in the kindergarten or primary schools, may please parents and committees, but it is contrary to a law written in the child's nerve centers.

Again, all parts of the body do not develop at the same time. Each organ has its peculiar nascent period. Moreover there is a close relation between the function of any organ and its development, and the highest degree of skill in the use of an organ can often be acquired only during the period of growth.

The acquisition of language, for example, is probably a case in point. If, during the period the vocal organs and the corresponding nerve centers in the brain are developing, attention is given to educating some other part which is not ready for training, twofold loss is likely to be the result—waste of energy or injury in case of the latter, loss of opportunity in case of the former. So, too, if manual training be neglected in early life, during the nascent period of the motor centers, great skill can seldom be attained afterwards.

Corresponding to the nascent periods of the motor organs are the periods of interest in the child's mental growth. This year your boy has the collecting mania; next year it will be baseball or the secret language; a third year it will be the debating society, or he may be hunting and stuffing birds and snakes. These interests are sacred. Some of them should be turned into new channels, others should be made permanent as a part of character. But in all cases the time of interest is the time of opportunity, and here opportunity seldom comes twice. Special studies have shown the sequence of children's interests.

The importance of a due understanding of the symptoms and effects of fatigue is generally recognized. Dr. W. O. Krohn states the matter concisely as follows:

Some of us know, and every teacher should know, that the degree of fatigue varies with the condition of mind and body. Thus the child tires sooner when the work is distasteful or when the organs are unhealthy or when poorly nourished, and the body seems wearied quicker when the mind is tired and the mind more quickly

when the body is tired. The child tires more easily at one season than at another. The condition of the atmosphere, the weather, the time of day, all these affect normal power of endurance. Also rapid growth diminishes one's power of endurance. The child that has grown up quickly tires easily. Fatigue causes the child's mind to be less sensitive to interest or novelty. Also one order of studies fatigues the child more than another order of studies would.

It is obvious that whatever modifications are justified by the discoveries of the new psychology, they should not be left to hazard nor to the isolated action of individuals. The principles so far deduced have to do with pathology and neurology rather than with mental conditions in themselves considered; hence these principles reenforce the demand for the medical inspection of schools and school children. It is significant that this is exactly the result attained in Boston through the efforts of Dr. E. M. Hartwell, director of psychical training. Dr. Hartwell has approached the subject from the physiological standpoint, but with due appreciation of the psychical standpoint. In support of this statement, it is enough to refer to his discussions of the interrelation of mental, moral, and physical training in his report to the Boston school board for 1894. The report is a notable contribution to the vital statistics of the country, embodying the results of the most careful study that has yet been made as to the bearings of school life upon the health of school children. The extracts from this report included among the papers appended reiterate in an effective manner the very conclusions reached by specialists in psycho-physics.

Looking back over the history of the psychological awakening, it is perhaps no exaggeration to say that next to the initial impulse the most important incident of the movement is the recent return to the idea of unity.

The tendency in this direction is illustrated in the exercises at the annual meeting of the Massachusetts Schoolmasters' Club, the report of which is received just as this survey goes to press. The theme treated was psychology, and representative men had been invited to present their views on the relations of the old to the new psychology.

Dr. Larkin Dunton, of the Boston Normal School, presented briefly the conception of mind and of its operations with which the students of the old psychology are familiar and emphasized particularly their applications to the teacher's work. The addresses of Dr. Harris and Dr. Münsterberg which are given here in full covered the double aspect of the subject. Unfortunately Dr. Hall's contribution to the discussion was not reduced to writing and hence was only preserved in a very fragmentary form.

THE OLD PSYCHOLOGY v. THE NEW.

By W. T. HARRIS, LL. D., United States Commissioner of Education.

[Delivered at the Massachusetts Schoolmasters' Club, April 25, 1895.]

I understand it to be the intention of those who proposed this question for discussion to include under the term "new psychology" only two classes of investigation, namely, what is known as "physiological psychology," dating from the discovery of Broca in 1861, and what is known as "child study," including the researches of Professor Preyer and of Dr. Stanley Hall, their coworkers and disciples.

All other studies of mind, from ancient times to the present time, whether based on induction or deduction, whether a priori, as rational psychology, or a posteriori, as empirical psychology, should be called the "old psychology." It seems to me that both of those psychologies are of immense importance; that neither is a substitute for the other or to be neglected by the teacher who wishes to know scientifically the mind that he is supposed to educate. For I must hold that there is a constitution of the mind common to all rational beings—a rational nature which may be discovered by introspection and distinguished from the transient and variable characteristics which are determined in large manner by environment and conditions of development.

I would name as by far the most important knowledge from this source the distinction of the soul into several stages, as that manifested in plant life, called by Aristotle the nutritive or vegetable soul; the soul as active in sensation and locomotion, or the animal soul; the rational soul manifested in imagination, memory, reflection, and in pure thought. The distinctions of active and passive reason made by Aristotle in his famous treatise on the soul, and so often rediscovered or verified by profound thinkers in the history of philosophy, is the principle of this classification of soul-activities. On it is founded the philosophical doctrine of the immortality of the soul. In fact, not only the doctrine of immortality, but also the doctrines of theism and the freedom of the will are based on this rock of the old psychology, developed by Aristotle out of the hints of Plato or Socrates. God, freedom, and immortality are the three good gifts of philosophy, according to Novalis. They are all derived from the insight that finds in pure thought the independent self-activity of the soul and sees in it the only possible type of being for a first principle of the world—a Creator. The idea of self-activity is, moreover, the basal idea of free will.

The very concept of will is impossible on the basis of empirical thinking. For the understanding, as Coleridge defined it, deals with relations between objects, and finds causal relation everywhere, but not self-activity or will. It tries to explain each thing through its environment, and it never rests until it has traced the phenomena of an object to a ground in something else outside.

That the fundamental condition of introspection is the admission of this idea of self-activity is evident if we consider that the world of self-consciousness contains only feelings, volitions, and ideas. Each one of these is twofold, implying subject and object. There are two poles to each. Feeling is nothing unless it has a subject that feels and unless the self that feels is the object of the feeling. So volition implies a self that acts, and, moreover, a determination or limitation of the subject issuing in an objective deed; a volition has the twofold aspect of subject and object. So, too, an idea is always thought as a determination of the self which thinks it or defines it—it is conceived by the mind; it, too, involves subject and object.

Now, by no possibility can external observation discover any such twofold objects in space and time. All objects are dead results or in a process of becoming so through some external cause. If we discriminate dead objects from living objects, and recognize plants, animals, and men before us, we do it because we interpret the forms, shapes, and movements before us as indicative of a self-determining soul within the object. We transfer to the object by an act of inference an internality of life, feeling, volition, or thought such as we know directly only by introspection, and can only know thus.

To expand this theme, one would show the importance of these distinctions of Aristotle, Aquinas, and Leibnitz in making an account of the spiritual life of man, an inventorying the principles of his civilization and making clear and consistent his views of the world.

To live is one thing, but to give a rational and consistent account of one's life is a different and difficult matter. The old psychology succeeded in doing this by these fundamental distinctions, and all new attempts at psychology either prove abortive, or else soon fall into line with the old psychology, so far as these essentials are concerned—they end in affirming self-activity as more substantial than material things and in the admission of various grades of realization of this self-activity or soul.

Another very important step in this recognition of the contents of self-consciousness which the German thinkers have added to the old psychology is the recognition of the characteristic of universality and necessity as the criterion of what is in the constitution of mind itself, as contradistinguished from experience or empirical content. By this, time and space, the categories of quality and quantity, the laws of causality, identity, and excluded middle, the ideas of self-activity, moral responsibility, and religion, all transcend experience, and are formed by introspection.

It is their application which constitutes experience, and experience would be impossible unless the mind had in itself these powers a priori, for these powers make experience possible. If we could not furnish the intuitions of infinite space and time, we could not perceive objects of experience, nor, unless we could furnish the category of causality could we refer our sensations to objects as causes.

Universal and necessary ideas are furnished by the mind itself and not derived from experience, although our consciousness of them may date from our application of them to the content of experience.

Formal logic, with its judgments and syllogisms, its figures and moods, should be regarded also as a part of rational psychology in so far as it reveals to us the forms of action of thinking reason.

All these contributions of the old psychology are of priceless value, as giving us the means to understand the place we occupy in the universe with our ideals of civilization. They furnish us directive power, they give us the regulative ideals of education, religion, jurisprudence, politics, and the general conduct of life.

But if the old psychology has furnished these substantial things, it has not furnished all that is desirable.

There is a realm of conditions which must be understood before man can be made to realize his ideals. The product of nature is an animal and not a civilized man. How can man react upon nature; how can he ascend out of his own natural condition; how can he rise from the stage of sense perception to that of reflection; how from mere reflection to mere thought; how can he put off his state of slavery to the category of thing and environment and rise to the category of self-activity? This is to ask how he can ascend from a mechanical view of the world to an ethical view of it. Certainly he must know the bodily conditions that limit or enthrall the soul. He must be able to recognize what activity tends to fix the soul in lower order of thought and action and what exercises will tend to lift it to a higher order.

To enumerate some of these enthralling conditions through which the soul passes necessarily, if it ever comes to the highest, we must name the influences and attractions of one's habitat, its climate and soil, its outlook, its means of connection with the rest of the world. Then next there is the race and stock of which one comes, black, red, yellow, or white—northern or southern European—inheriting all the evil tendencies and all the good aspirations. Then the temperament and idiosyncrasy of the individual, as his natural talents or his genius—how deep these all lie as predetermining causes in his career. If he is alone the efficient cause or the free will—at least these conditions of habitat, race, and stock furnish the material that he is to quarry and build into the temple of his life—a parthenon, a pantheon, or only a mud hut or a snow house. Then come other natural elements to be regarded—those of sex—the seven ages from infancy to senility, the physical conditions that belong to sleep and dreams and the waking state, the health and disease of the body, the insane tendencies, the results of habits in hardening and fixing the life of the individual in some lower round of activity.

Of all these the laws of growth from infancy to mature age especially concern the educator.

There is for man, as contrasted with lower animals, a long period of helpless infancy. Prof. John Fiske has shown the importance of this fact to the theory of evolution as applied to man. Basing his theory on some hints of Wallace and Spencer, he has explained how the differentiation of the primitive savage man from the animal groups must have been accomplished. Where psychological life is complex there is not time for all capacities to become organized before birth. The prolongation of helpless infancy is required for the development of man's adaptations to the spiritual environment implied in the habits and arts and modes of behavior of the social community into which man is born. He is born first as an infant body. He must be born second as an ethical soul or else he can not become human. The conditions are of extreme complexity. This is the most important contribution of the doctrine of evolution to education. Dr. Nicholas Murray Butler has pointed out that the Greek philosopher Anaximander; more than two thousand years ago, spoke of the prolonged period of infancy as a reason for believing that in the beginning man had an origin from animals of a different species from himself. The Greek did not perceive the relation of this prolonged infancy to the adjustment of the complex physical and spiritual activities of the child to his environment.

In the light of this discovery we may see what an important bearing the results of child study and physiological psychology will have on education; for is it not evident that if the child is at any epoch of his long period of helplessness inured into any habit or fixed form of activity belonging to a lower stage of development the tendency will be to arrest growth at that standpoint and make it difficult or next to impossible to continue the growth of the child into higher and more civilized forms of soul activity? A severe drill in mechanical habits, of memorizing or calculating, any overcultivation of sense perception in tender years, may so arrest the development of the soul at a mechanical method of thinking and prevent the further growth into spiritual insight.

Especially on the second plane of thought, that which follows sense perception and the mechanical stage of thinking, namely, the stage of noticing mere relations and of classifying by mere likeness or difference, or even the search for causal relations, there is most danger of this arrested development. The absorption of the gaze upon adjustments within the machine prevents us from seeing the machine as a whole. The attention to details of coloring and drawing may prevent one from seeing the significance of the great work of art.

The habit of parsing every sentence that one sees may prevent one from enjoying a sonnet of Wordsworth. Too much counting and calculating may at a tender age set the mind in the mechanical habit of looking for mere numerical relations in whatever it sees. Certainly, the young savage who is taught to see in nature only the traces that

mark the passage of a wild animal, or perhaps of a warrior foe, has stopped his growth of observation at a point not very much above that of the hound that hunts by scent. And yet all these mechanical studies are necessary in the course of study. They can not be replaced except by others equally objectionable in the same aspect. The question is, then, where to stop and change to other and higher branches in time to preserve the full momentum of progress that the child has made.

Professor Woodward has pointed out that the educational effect of manual training is destroyed by having the pupils work for the market. It turns the attention toward the training in skill, and the educational effect which comes of first insight is afterwards neglected. The first machine made is an education to its maker; the second and subsequent machines made are only a matter of habit. To keep the intellect out of the abyss of habit, and to make the ethical behavior more and more a matter of unquestioning habit, seems to be the desideratum.

Child study will perhaps find its most profitable field of investigation in this matter of arrested development. If it can tell the teacher how far to push thoroughness to the borders of mechanical perfection, and where to stop just before induration and arrest sets in, it will reform all our methods of teaching. And it can and will do this. The new psychology, in its two phases of direct physiological study of brain and nerves and its observation of child development, will show us how to realize by education the ideals of the highest civilization. The prolonged infancy of man will be in less danger of curtailment through vicious school methods.

The orphaned and outcast child becomes precociously worldly. But the school can scarcely reclaim the gamin from the streets of Paris or New York. He has become as cunning and self-helpful as the water rat, but not in ethical or spiritual methods. He should have been held back from the bitter lessons of life by the shielding hand of the family. He would then have become a positive influence for civilization in its height and depth. As a gamin he can live a life only a little above that of the water rat, and is good only to feed the fires of revolution.

THE NEW PSYCHOLOGY.

By Prof. HUGO MÜNSTERBERG.

[Address before the Massachusetts Schoolmasters' Club.]

I wish to thank you heartily for the extreme kindness of your invitation; but the more I appreciate the honor of this opportunity to speak to you the more I am sorry that I can not offer you anything but a most informal talk, with most informal use of the English language, and, still worse, that every word of it must disappoint your pedagogical expectations. You asked me, as a psychologist, to tell you how important psychology is for the teacher; you ask me, as a physiological psychologist, to tell you how necessary the study of the brain and

of the nervous system is for the pedagogue; you asked me, as an experimental psychologist, to tell you how the educational future will depend upon experiments on children; and all that I have to say out of my deepest heart is simply, *I do not believe in it!*

I do not believe in it, and that overwhelming movement toward psychology among the elementary teachers seems to me a high tide of confusion and dilettanteism, and the only thing about which I am doubtful is which of the two necessary results is the worse—the results with the superficial teachers or the results with the earnest ones. The superficial teachers torture the poor children with experiments and deceive themselves with empty phrases about reaction times and psychophysics laws. The earnest and sincere teachers feel very soon that all those woodcuts of pyramidal ganglion cells and pendulum chronoscopes do not help them a bit, and they then become disappointed, lose their confidence in their own ability, and try and try again with the ganglion cells, till they are tired and till their natural teachers' instincts are scattered and ruined. Call me conservative, call me reactionary, call me ignorant, but I adhere to my belief, that the individual teacher, for his teaching methods, does not need any scientific psychology, and that tact and sympathy and interest are more important for him than all the twenty-seven psychological laboratories of this country.

Do I mean, therefore, that psychology is an unimportant study, or that the new psychology is wrong compared with the old one? I think it is not necessary for me to defend myself against the first supposition. I am the director of the large psychological laboratory of Harvard University. For twelve years I have spent the greatest part of my working time in psychological experiments, and most of my publications deal with them. Certainly I can not prove more clearly how deeply I, for one, believe in the importance of psychology. And with regard to the old and the new psychology, I do not recognize such a difference at all. Psychology is a careful observation, description, and explanation of mental phenomena. Will you say that this careful observation is a modern invention? Dear old Aristotle seems to be, then, more up to date than many contributors of the latest magazine. Or do you think that a careful observation is only possible by experimental methods? Are astronomy and geology not exact sciences because their objects can not become material for experiment? Of course, the methods of observation are steadily improving in psychology, just as in every other science, and so it was a great progress when, twenty years ago, the methods of observation became improved by the systematic introduction of the experiments. To be sure, the experimental method brings a degree of exactitude into the observation of mental facts, which is related to the observation without experiment, just as the microscopical study of plants is related to the observation of plants in walking through the fields and forests. And, above all, the artificial conditions of the experiment reduce the phenomena to simple schematic forms

which allow a much better understanding than the complicated processes of the daily life. The naturalist who wishes to study the movement of the water does not go to the ocean and look out for the waves, but he takes a little tank full of water and produces there simple movements; and if he wishes to study the electric discharges he does not wait for a thunderstorm, but produces in his laboratory electric sparks. So the psychologist to-day does not study the mental facts, if possible, in the chance events of his daily life, but he introduces artificial conditions to influence the mental facts, and gets in this way sensations and perceptions, attention and memory, space judgment and time sense, feelings and emotions, reflections and will, and so forth, in the simplest schematic form in his laboratory. Certainly that is a great step forward in the careful observation of mental phenomena but it is not at all a break with the past. Improvements in the methods of careful observation are brought out constantly; with the same right, you may call the psychology of last year the old one compared with that of to-day, which is the new one only till to-morrow's new improvements are proposed.

But you will say, perhaps, the old psychology was based on self-observation, the new one not. But just that is a mistake—an entire mistake. Our experimental work itself is based on self-observation, and even the interpretation of the physiological processes is guided by self-observation. The so-called old psychology was often enough in danger of having its self-observation overwhelmed by the claims of arbitrary definitions; the new psychology restored to self-observation its full rights. If I had to describe shortly our work in the Harvard laboratory, in which now two dozen young investigators devote their time to psychological experimental research, I should say: Self-observation! to be sure, self-observation under artificial conditions; but, above all, self-observation. All those psychological experiments in which self-observation is displaced by methods of indirect observation, as experiments with hypnotized persons, or with the insane, or with babies, or with animals, are excluded from our regular laboratory work, and are in any case only accessory parts of experimental psychology. All the equipment of our institutes and all the instruments for our investigations would be just as useless without self-observation as a microscope would be without an eye to look through it. Self-observation is, therefore, for the new psychology not less important than for the old.

But, finally, you may say: The old psychology was full of philosophical speculations about the soul; the modern keeps to the empirical facts only. Well, that is true; but that is only a question of names. Those speculations about the mind are still just as important and just as necessary to-day as in the old times, only we call them to-day philosophy, and reserve the name psychology for those problems of the older works which had to do with the empirical facts. There is plenty

of that, too, in the older works. The older works represented, therefore, under the title of psychology, after our modern terminology, psychology plus philosophy, while the modern is only psychology without philosophy, and, I am sorry to say, often enough psychology minus philosophy! The modern psychologist is indeed too often proud of the fact that the chief thing which he has added to the old psychology is that he has no philosophy. It reminds me of an educational experience I had in the West. I visited an extremely poor university, and asked the president why they called themselves so proudly a university, as the institute of the neighboring town was called only a college. "Oh," he answered, "we have much more than they have!" "What have you more?" I asked; "have you a graduate school?" "No!" "Have you a law school?" "No!" "Have you a medical school?" "No!" "But what have you, then, more than the others?" "We have no preparatory school!"

I think our modern nomenclature is right. Philosophy of the mind has nothing to do in text-books of psychology, just as philosophy of nature does not come into the text-books of physics. Physics and psychology confine themselves better to the physical and psychological special facts, and take for granted all those general presuppositions which are necessary for the belief in the existence of those facts. But all the more is it indispensable that another doctrine—we may call it philosophy or epistemology—should examine and criticise just these presuppositions. Physics has to presuppose that the physical facts go on in space and time and matter; philosophy has to study how far we have the right to take space and time and matter as real. And the same is true with the presuppositions of psychology. A philosophy of the mind is just as important a supplement of psychology to-day as it was in the past, and, therefore, here also there is no sharp limit between old and new.

But, old or new, what has psychology to do with the teacher? I think in three directions very much indeed. At first, and above all, a teacher is a man of broad interests, and, like every educated man, he ought to know about such an important side of human knowledge. As he is interested in plants, and stones, and stars, how much more must he be interested in the laws of mental life? Broad education has no more inspiring subject, and no subject which is more nearly connected with the theoretical understanding of the social world in which we live and of which we are a part. Secondly, the teacher ought to be able to teach psychology. I believe that the order and lawfulness of mental life can not be brought early enough before intelligent pupils. Of course, I do not mean the details of modern specialistic investigations, but the chief facts of seeing and hearing, attention and memory, perception and imagination, feeling and will, dreams and illusions, could become an extremely important and suggestive part of the school education, not as a special branch of the school curriculum, but sprin-

kled into the whole school work. The reading lesson and the drawing lesson, history and literature, physics and geometry offer endless opportunities for a good teacher. I wish that every boy who tries at home to-day his little electrical or chemical experiments would try in future, also, the elementary experiences of experimental psychology, perhaps tactual or acoustical experiments, or optical illusions or associations. And, thirdly, the teacher who is a careful observer may furnish to the psychologist valuable material by the continual observation of children. The extremely interesting and important collections of such material which my friend, President G. Stanley Hall, has brought together, give the best and most encouraging illustration of such cooperative work. The teacher has so many chances to see events in the child's mind which would escape the official psychologist if he could not rely on the teacher's help, just as the biologist collects the reports of hunters, who have chances for observation which the biologist in his laboratory never can have. In special cases the teacher may introduce even simple experiments to bring out more details about his material. But I add this with some hesitation, as I know how extremely difficult it is to bring out, especially with poor instruments, and in a schoolroom, really reliable material from experiments on children, and unreliable results are, of course, worse than no results at all, as they push forward misleading conclusions. Above all, it seems to me that the facts of the undeveloped mind which can be brought out by experiments do not throw so much light on the psychological processes and laws as the observation of the natural development itself and of the experiences under natural conditions. The development in the child of imitation, of language, of will, of emotions, of the idea of personality, etc., are, for the student of psychology, much more important than any results of experiments in classes which teachers could do. But, in any case, I repeat the teacher can supply the psychologist with valuable and interesting material.

To be sure, these three points I have mentioned are very important points of contact between the work of the psychologist and the functions of the teacher, but I can not see that point of contact which the world emphasizes: I can not see that the modern psychology can help the teacher in his teaching profession, and there is the point of my disagreement.

My first objection results from the necessary narrow limitation of the psychological knowledge which the average teacher can get. He gets bits and ends, and I am sure if he relies on them and transforms them into practical applications after his own prescription, the outcome must be harm and confusion. A physician who knows about one inner organ only, and treats it without regard to all the other parts of the organism, is a dangerous quack. But our mind is certainly still more a unity, and is not divided into chapters, like a text-book of psychology. Every special mental function exists in its isolation only as an abstraction;

the totality is the reality. And this situation becomes the more dangerous the greater the tendency is, under the influence of this newest fad for most modern psychology, to give the attention either to the emptiest generalities or to the most specialistic details which have not even an indirect bearing on that which could be important for the teacher. I see it again and again; the women come into my laboratory and ask, casually, either, "Doctor, do you think that we have a soul?" or they ask me to show them the electrical details of a chronoscope for measuring the time of mental acts in thousandths of a second. They may have seen a woodcut of it in the last Sunday paper, or have read of it in the last illustrated magazine, and as they wish to be "modern" teachers they must know all about it. They come and look around, listen to the rattling of some instruments, and go away after half an hour, assuring me that they have learned very much indeed, and, what is worse, they really believe it. If a scientific pedagogue takes as theoretical study the problem how to get from the modern psychology suggestions for the methods of teaching, all right; his results may be useful hints for the teacher, but the individual teacher who has picked up no more psychology than the few crumbs which have fallen from the table, and thinks that his own psychological studies can control his teaching, is misguided.

But I go further. Even for the scientific student of pedagogics, whose profession it is to look out for educational suggestions, even for him, the outcome of experimental and physiological psychology is relatively still small, because psychology itself knows still too little. It is often said that psychology is to-day in a state in which physics was in the sixteenth century. Does not that in itself suggest modesty? And the necessary characteristics of a science in so early a stage is the quick change of opinions. A famous physiologist said once that he got secretly the statistical result; that every important new physiological discovery has an average life of four years. It seems to me that the new discoveries in modern psychology have often an existence of only four months. That is no opprobrium; just the contrary. For the development of a science it is the most healthful state when many new ideas grow up as working hypotheses, with provisional character; they help to find new facts, but the new facts demand a change of the ideas, and so every discovery is only a new step, which is left as soon as possible for the next step. That is a splendid state for psychology, but it is no state in which practical conclusions from such new discoveries can upset the mature experience of good teachers.

But it seems to me, if I speak sincerely, that all arguments in opposition of this kind, the arguments of the narrow limitation of individual knowledge and of the narrow limitation of psychology itself, do not touch more than the surface of the problem. There is another and deeper point, which is to me far more important, and which is the real motive of my unmodern attitude. I can not hope to bring it out in a

convincing way in such a short talk, but I must show at least the direction in which it lies.

To be sure, all phenomena of the world are physical or psychical; the physical ones are described in physics and chemistry, the psychical ones in psychology, and there can not be a phenomenon which is, as such, not an object for physics or psychology. But it seems to me the mistake of our time—more than that, the disease of our time—to believe that the full reality can be understood as a phenomenon. The world is a series of physical and psychological phenomena, if we think of it as an object of perception, outer and inner perception; but the personality is not only a perceiving subject; it is, above all, a willing subject, and the object of this subject is, therefore, not only a world of phenomena, but a world of objects of the will; that is, a world of values, of appreciation, of duties. The world of phenomena is causal, the world of values is teleological; the one is atomistic, the other seeks the reality, not in the parts, but in the unity of the whole; the one is the world of physical and psychical laws, the other is a world of freedom; in the one everything exists for itself, in the other all reality is given by its relation to us. And this world of freedom is the primary, as it is a free act itself to think of the world as an unfree world in the categories of phenomena, and the world appears as existing phenomenon only if we think the objects of our will independent of our will, and cut loose from it. When I talk to you, to be sure, you can take it as a series of phenomena. Physical phenomena are the nervous processes in me, and the air vibrations which go to your ears, and the nervous processes in you; and the psychical phenomena are the psychical elements which are together in this moment in my consciousness and the contents of your consciousness; but if we describe all these physical and psychical phenomena, even in the most exact way, we describe the experience of this moment in terms which have nothing to do with that reality which really interests you and me. My words may interest the physicist and psychologist as phenomena; for you and me they do not belong to the world of phenomena, because we have not cut them loose in this moment from our will; a responsible free personality expresses its intentions and its convictions to other free personalities. We do not care how all this appears to a perceiving personality; we ask only what it is to willing personalities and what it is to them, is just as much reality, and even more than all that it is to the perceiving subject; that is, as phenomenon. When I speak I do not think about the phenomena which are going on in me, in you, in the air; I do not think of them, and the thought of them would not help me. If I should think of them I could not speak at all. I do not produce sounds and, indirectly, associations by psychophysic laws, but I express a meaning to judging personalities; organisms underlie the laws of physics and psychology; personalities obey the laws of logics and ethics, and the relation between teacher and pupils has not to be thought of as a relation of psychophysical organisms, but as a relation of free personalities.

To be sure, our time is full of that confusion everywhere. The ideas of law and responsibility get mixed with the psychophysical conceptions of anthropological criminology, the political and economical and social ideals are controlled by ideas about phenomena after the scheme of social physiology; we hear even that philosophy has to be looked on from an anthropological point of view, and now comes pedagogics and wishes to become a part of physiological psychology! Not one of you doubts that I have a serious interest in psychological observation and experiments. I have at home two little children, but I have never made a single experiment on them. Not because I think it harmful for them, not at all; I should not say anything against it if other psychologists should like to make little experiments on my children. More than that, I do not even observe them from a psychological point of view, which would be certainly harmless for them. I do not do it, and I may say freely I can not do it, because the reality of those two children is for me, not their existence as a series of psychological phenomena, and they are no phenomena for me, because I can not cut them loose from my will, from my attitude, from my personality. They are for me not phenomena, not objects of perception, but values; objects of my will, of my love, of my duty. You may artificially train yourself to fluctuate between the two attitudes, and observe in one moment what you loved in the moment before, but the one will always interfere with the other; to acknowledge the existence of a phenomenon means just to be convinced that it is independent of our attitude. I wish that the teachers may not give up so easily their attitude of willing subjects, and may not go over so easily to the position of perceiving subjects; that they may love their pupils instead of observing them, and that they may not hunt for bits and ends of psychology, and lose over it the responsible personality.

If I were a professor of chemistry or mineralogy, and an artist, a sculptor, came to me and told me that he wished to create a marble statue, and that he came to study chemistry and mineralogy because marble is a stone and a chemical substance, what would I tell him? I should say: "Dear friend, chemistry is an extremely important science, and you may study it as an educated man, but as an artist you have nothing to do with it. To be sure, you must have a general idea of the marble, and of its difference from clay or plaster, but a real, exact, chemical study of the marble as substance in the laboratory is not your business. If you wish to create your work of art, ask Phidias and Michael Angelo, and, above all, ask your own genius." I think the teacher is an artist, too, who has to create his ideal of an educated personality out of the material which the psychologist studies. But if he comes to me as a psychologist, I must say to him, too, psychology is a very important study, take part in it as a man of broad interests, but as a teacher let it go—it is not your business. If you wish to go to work, ask your Phidias, ask your Michael Angelos, and, above all, ask your own genius, ask your own conscience, ask your own heart.

PSYCHOLOGY IN UNIVERSITIES. *by G. Stanley Hall.*

[In his article on the new psychology as a basis of education, which appeared in the Forum for August, 1894, Dr. G. Stanley Hall, after sketching the development of logic, ethics, and the history of philosophy as subjects in the college course, gives the following account of the later development of courses in psychology.—Ed.]

The fourth and last movement began in this country at the Johns Hopkins University only thirteen years ago, when the first chair of experimental psychology was established. The beginning was extremely modest, and with a less bold and sagacious leadership of that university might perhaps to this day never have been made. The history of this departure shows, better than any other I know of, one of the best sides of our American institutions, viz, readiness to recognize a good thing when seen and to adopt it. Although the second American chair in this department has not been established ten years, an American association of between two and three score instructors is now nearly two years old. Instead of the first lack of text-books, there is now almost an excess of them; and transforming effects in this oldest and most conservative department are incalculable. Two journals, one founded in 1887, and the other in 1894, are devoted exclusively, and eight or ten others partially, to this work. A score of psycho-physic laboratories, with more men and apparatus than can be found in all Europe combined, and with a reputable output of original work, are now in operation. A glance at the chief fields, now cultivated by a complete university department of psychology, will show how transforming for other philosophical disciplines, how all-conditioning for education, and how full of promise for religion this regenerate "science of man" is now fast becoming.

I. First came the laboratory or experimental work. Perhaps in no department will a very little money do so much, as a few even of the normal schools have lately found out to their great benefit. Experiments on the senses, motion, time of psychic actions, fatigue, pain, rhythm, etc., now take most of the vital problems of perception, association, attention, and will, into the laboratory; they quadruple the power of introspection while obviating all its dangers; they shed new light in many dark corners, and they have already reconstructed many old doctrines. Dr. Sanford is embodying the results of this development in a course of about three hundred and fifty experiments hardly less valuable for logic than psychology.

In the modern laboratory conditions, whether of a bit of nerve fiber or cell of a normal human being, are varied indefinitely, and really enlarge human experience. Men sleep on balances with apparatus that records the slightest change of pulse, respiration, circulation, and heat; they test themselves with mild doses of narcotics and other nervines; they multiply or reduce air pressures over the entire dermal

surface; they select a square inch of skin, and with every known test educate it for months; they fatigue definite muscle groups; they measure the exact time and force of memory and will; they register diurnal and even monthly periodicities; they explore the hypnotic state; they apply the various forms of electricity, light, heat, and sound with chemicals for taste and smell.

Fruitful and important as all this is, it by no means covers the ground of the old college philosophy. It has little ethical power in it, and for the average student it is not, perhaps, always idealizing. Hence it is all the more to be regretted that a few of the new psychologists go no further, but are content only to make methods more exact and results more refined. Although they are hardly open to the charge of teaching "psychology without a soul," which is sometimes made, they certainly represent only a single section of the new psychology.

II. Another field is that of comparative psychology. The more we know of animal life, the vaster becomes our conception of instinct. How philosophy treats this, Schelling once said, is one of its best tests. Broadest and lowest are the instincts in the vegetable world, such as the movements by which a root penetrates the soil with sagacity as if its tip were a tiny brain; the tricks of carnivorous and climbing plants and fertilization; the movements of bacteria, infusoria, and from these up to earthworms, ants, bees, trapdoor spiders, and the higher mammals—all these studies shed light upon the nature, and often upon the genesis of what is *a priori* and innate in man. Neither the instinctive nor the conscious should be allowed to become the key or type by which to explain the other. The psychologist who can surround himself with every form of animal life until his sympathy and insight into its ways are as deep as that of Audubon, or White, of Selborne, and as reverent as that of St. Francis, can not fail of a deep religious feeling that the world is rational to the core. Instinct will seem larger and deeper though not so high as reason. The joy of finding traces of purpose and design beneath us will become a kind of atonement between consciousness in its unconscious basis. The boundless plasticity which fits every condition and fills full every possibility of life shows a wisdom beneath us which we can not escape if we would, and on which, when conscious purpose and endeavor droop, we can fall back with trust as on everlasting arms.

III. Anthropology, which is very lately coming into some of our American colleges, is never, in fact, so large as its name. In older and theological institutions it designated the processes in the fall and redemption of man. For some it is mainly anthropometry, the Benedict school having refined some hundred measurements of the skull alone. For others its means the study of primitive man, cave dwellers, and the like. The psychological side which interests us here is devoted to myth, custom, and belief. If psychology is truly historical, it goes back of all finished systems to their roots in the primary thoughts,

sensations, and feelings of early man, which grow more sacredly secret and hard to extract as tribes lose their ethnic originality. These must often be elaborated from words, folklore, rites, maxims, and social organizations. This higher anthropology seeks for such primeval notions as a naturalist seeks for new species, and it has a passion for "pooling" sentiments, opinions, and views.

When, in the development of a race, such material shoots together into cosmogonies, national epics, or ethnic bibles, the psychic basis for a period of culture is laid, a spiritual cosmos begins. Of this same mother-life, philosophy at its best is but a more elaborate organization. Thus constituted it labors to start from the common vulgar standpoint and to dignify homely commonplace things and duties as Socrates did. It is always saturated with local color; and, instead of being gaspingly thin and abstract, as it appears to those who in periods of strong discipleship and little originality study the great systems from the texts, ignoring the psychic environment whence they sprung, it always seems the most warm and condensed of all the manifold expressions of man's needs and ideals. With a different ethnic basis all systems would have been different. Thus, foreigners can never represent a philosophy that is indigenous, while the "exhaustion method" that works by thought possibility always has to have its work done over again.

Greece first ripened its traditions into philosophy which was freely determined by all the past, and was as homogeneous as the Greek blood. Plato combined the old philosophemes with a deeper insight of his own day, and sought moral regeneration by infecting men with a passion for his ideal. It was national, and it was literature at its highest and best, and became dogma only in its decline; and it was ethically inspired.

Here, too, belong the studies of childhood from the sentiment of love in the parents on to birth and up to maturity. The soul and body of the young child is freighted with potencies and reverberations from a past we know not how remote, and was, for Plato, of all things in the world, most worthy of love, reverence, and service. To Compayré it is "the most attractive of the new fields of study opened by modern science," and Le Conte says, "It is impossible to overestimate the importance of these studies;" while Garbini has just published a first study of the infant's voice. The first center of the child's psychic life, the mouth, toward which everything and every motion goes; the extraordinary sensitiveness of touch with all the organs of the adult skin concentrated on one-sixth the space; the slow development of the ego within, as distinct from the nonego, which includes all outside the bounding dermal surface; the slow development of the seeing power till it becomes a passion; the gradual coordination of the elements of speech and motion—all these are full of lessons for the psychologist. The centers for eye, ear, motion, seem to develop in relative independence, and plenty of play and even selfishness appear to be necessary in

order to associate these elements of the ego, or self, into a unity so complete that shock or even hypnotism can not decompose it. The first six years of childhood are marked by growth so amazing as to suggest the six days of creation, while such problems as personality, the origin of language, character, temperament, will probably never have any solution unless they are found in the study of infancy, the growth of which epitomizes under our eyes the history of the race, each day sometimes representing, perhaps, the race development of centuries. Other aspects of this topic I presented in *The Forum* for December, 1893.

Adult psychology, which is chiefly taught, even to teachers, while it does not disqualify them for their work, is a very different thing from these practical yet scientific researches into the genesis of the human soul. Thus, it is not strange that so many recent associations, centers, and studies, almost by the score, upon nearly every aspect of child life and adolescence, now promise to make every stage of education more scientific than ever before.

IV. For the fourth field of the new psychology I know no better name than studies of decadents. Morel first treated insanity as a form of human degeneration; Strümpel first developed pedagogical pathology, and Lombroso the criminal types of decadents; while the study of idiots, paupers, tramps, blind, deaf, and other defective classes, and even monstrosities, is represented now by a vast and rapidly growing body of literature. Beginning with the more marked abnormalities, these studies proceeded to less marked cases—from idiots to dullards; from the deaf to cases of defective hearing; from insanity to slightly reduced mental responsibility—until now we have a growing body of criticism that applies the refined discriminations of normal and morbid to current tendencies in literature, art, education, religion, and even politics. Modern psychology is thus coming to utilize not only inmates of institutions, but institutions themselves, and the whole wide field of history and life, for clinical and diagnostic purposes; and the word "health" is again approaching its old and larger Biblical sense of holiness.

All human degeneracies, whether individual or inherited, are being substituted, in the world's great algebra of morals, for the almost unknown symbol, sin. Painstaking monographs on the morbidities of love show not only its dominance but its plasticity, and how every manifestation of it, divorced from its natural object in the other sex, may be evoked in the most literal and physical way toward almost any object or act. All the periodicities, so marked in many forms of lunacy, are traced up into normal life. Epilepsy shades down to hiccough; aphasia, to hesitation for a word; mania, to momentary excitement; so that disease almost shows us our normal life with each phenomenon and tendency magnified.

None of the many text-books yet combines these four standpoints; and I have found three years of daily work with advanced and select men not too much time to cover it. In every part it palpitates with

human interest. To teach it is a joy, nay, a passion. However laboriously or even well it may be done, there is always the bitter-sweet feeling that one is here staking out one of the world's great academic highways, and that a pioneer will soon be forgotten in the flood of larger life in which every scrap and detail will be mined and minted and soon become part of the circulating medium of the intellectual world. It may be that the relations of the new psychology to the old philosophy are to be somewhat as the latter were a century ago to theology; that psychology will never be a finished system, but a natural history of mind, dealing with the larger human logic in which all systems move. As is sometimes said of the two Testaments, so, perhaps, we may say of philosophy and psychology, "In the Old the New lay concealed, in the New the Old stands revealed." It is no crisis or revolution, but a slow and necessary growth.

Every stage of human development has been marked by its own special form of productiveness and creation. At one stage man's originating powers developed family and tribal life; later, perhaps, Max Müller's one hundred and twenty-one original Aryan roots were struck out; now, God's creative prophets go up to meet him above the region of eternal frost, and bring down his law from the wild elements and mysteries of nature "to the line of commercial value, leaving it there, knowing that the world will make it useful and profitable, while they go back to resume their original search." Just in proportion as evolutionary views prevail, all the fields it affects focus their interest and product upon man, and the older static views yield to the dynamic.

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The one chief and immediate field of application for all this work is its application to education, considered as the science of human nature and the art of developing it to its fullest maturity. It is especially opposed to low views of higher education, which are so prevalent often in higher places. It regards all the real history of the world, from protoplasm up, eliminating all stationary and retrograde movements, as educational. The philosophy of education, of history, and of life are one. Every institution, nation or period, subject, and man, is judged by its service to education in this large sense. Philosophy in our colleges has often gone into by and forbidden ways; its only justification is the service it can render to education. So far from this being an application of it to utilitarian ends, it is its highest consecration; for, when we say of anything that it is good, true, or beautiful in itself, we mean it is purely educational. It suggests a new development of ethics in some city of Hygeia on the basis of health which is already well begun and which can always be appealed to by all classes. It suggests that sociology must be based on biology and psychology as above described, or it will "ride so high a horse that it can not see the ground under it;" it will teach only the dynamics of selfishness unless it has understood the history of the world as a love story, somewhat in Drummond's sense, only more adequately treated.

SUGGESTIONS ON THE STUDY OF CHILDREN.

By WILLIAM L. BRYAN, Ph. D.

Common sense agrees with all the pedagogies that you should know as much as possible about the children you have in charge. The following suggestions are intended to help you do this. Do not expect too much from these suggestions. There is no magic in them to make you know anything of value. Do not suppose that these or any plans for child study can take the place of a common-sense use of what you already know of human nature. Do not suppose that any kind of systematic child study will make unnecessary an intimate personal acquaintance with the children you have in charge. On the contrary, the main value of such plans of study as are here proposed is to help you toward such an acquaintance. Do not suppose that you must choose between the direct observation of children and a study of textbooks on psychology. Rather will such observations and such reading valuably supplement each other, in proportion as both are well done. Above all, do not suppose that any good whatever can come to you from perfunctory study. Here, as everywhere, the conditions of getting good are the deeper interest which does not require to be entertained all the time by tin-rattle discoveries; patience to burrow for long times with little light; faith to wait undismayed in a seeming chaos of facts for a view of the order in them. Here, as everywhere, to get valuable insight means to become initiated through a long and devoted novitiate. Neither philosophy, nor art, nor ethics, nor any sort of science can get through you to the children in sealed packages. Truth must be reborn in you before it is school room wisdom. There is doubtless great advantage in joining with others in this work. By all means form clubs. Remember, however, that organization can easily become an excuse for real work. Remember, too, that a Gideon's army of people who are in earnest is only encumbered by a swarm of people who are not.

The purpose of these studies is not to secure scientific results. Trustworthy scientific results are as hard to get as they are precious. The purpose here is to help teachers, mothers, and children in the high interests they have in common. Nothing is here proposed which any one of good judgment may not hopefully undertake. No inaccessible apparatus is required. Nevertheless, all observations and records should be made with the highest possible fidelity. This is a condition of any good to yourself. Then you should come, if possible, into communication with a psychologist. Possibly your results may afford data of scientific value. After all, a fact is a fact whether or not it is discovered by a doctor. Finally, do not undertake too much. Begin only what you can thoroughly carry out.

I. HYGIENIC.

Assuming that you are not a physician or a specialist in any line affecting health, there are still some important things that you can do for the health of your pupils. In general, you can by careful attention, aided by such plans as those following, discover the existence of many forms of sensory, motor, and central defect.

Vision.—The vision of about 30,000 school children has been tested. It is claimed on the basis of these tests that defect of vision increases from grade to grade and with the increase of school requirements. It is practically impossible for an untrained observer to determine what is the matter with defective eyes, but it is possible for the fact of serious defect to be known. Get Snellen's or other test cards (they can be had doubtless from any firm dealing in optical supplies). The distance at which type of any size should be read is shown on the card. The E's in different positions may be used with persons who can not read. The radiating lines are used to detect astigmatism. Test each eye separately, holding a card before the eye which is not being tested. If you make no formal eye tests, note at any rate which, if any, of the pupils exhibit defective vision. Write a sentence on the board large enough to be read from the rear of the room. See which of the children can not do this. Note also whether any of the children seem to suffer pain from ordinary light.

(I am indebted to Dr. F. C. Heath, of Indianapolis, and to Mr. G. B. Harris, M. O., of Bloomington, Ind., for valuable suggestions on the testing of eyes by untrained persons.)

Hearing.—The hearing of about 20,000 school children has been tested. One investigator reports 2 per cent of defectives. Eleven others report 13 to 30 per cent of defectives. A watch or the whispered voice have usually been used. If you use the voice, place the pupil at a given distance, let the ear which is not being tested be kept closed by an assistant. Dictate sentences, or, perhaps better, numbers, and bid the pupil write. You have only then to take note of those pupils who demand a marked increase of loudness. If you use a watch, let the pupil be blindfolded and one ear closed as above. Note the distance at which the ticking can be heard when the watch is brought toward the pupil. The absolute distance will of course vary with the loudness of your watch. The relative distance will reveal the defectives.

Dermal sensibility.—Abnormal dermal sensibility may be the effect or the cause of central nervous defect. Refined tests are possible only with special apparatus and by trained observers. Marked abnormality may be detected by rough tests as follows: Bid the pupil close his eyes. Touch the back of his hand with a pencil. Bid him touch the same spot with a pencil. Note the error. Note the pupils that vary widely from the average. Press back of hand with point of bone crochet

needle. Note pupils that appear specially sensitive or callous to pain. Question pupils that vary considerably from the average in any of these tests for evidence of extreme dermal sensitiveness or callousness. Note whether these extremes are associated with differing emotional dispositions. If you can do none of these things, note at least the children who seem specially liable to colds and help save them from that.

Nose breathing.—Breathing through the nose is known to be important for physical and mental vigor, memory, power of attention, etc. A simple and obvious test will show which children can not breathe freely through the nose. Try the apparent defectives carefully several times to eliminate cases of temporary stoppage.

Motor ability.—Three classes of tests are proposed. First, general motor tests, to be tried on all pupils. Let all the pupils in your room write some character, say the figure 9, as rapidly as possible for ten seconds. Try once for practice. Then, after a rest, try with care and note results. Take particular note of the fastest third and the slowest third of a given age, particularly of the slowest. Examine the handwriting of all the pupils, taking note of the best and worst, particularly the latter. Are the slow ones in rate of writing the awkward ones in writing? Note especially those pupils who are poor by both tests. Special inability indicates at least retarded motor development.

Note, if present: Twitching of eyelids, rhythmical movement of eyeballs, dropping of eyelids, twitching of face, grinding of teeth, stuttering, tremors or twitching of hands, hyperextension of fingers, irregularities of gait, muscular restlessness, marked flightiness of attention.

Motor tests to be made upon children whom the foregoing tests indicate as abnormal.—Have child's eyes shielded from the light for a few moments; when the eyes are exposed to the light, note whether or not the pupil contracts. The absence of the iris reflex is an early symptom of nervous disease. Move your finger in a circle about the child's field of view, and note if eye movements in any direction are limited. Bid pupil put out his tongue. Note limited, twitching, or asymmetrical movements. Bid pupil extend arms above the head. Note sagging or twitching of either hand; premonitory symptom of chorea. Bid pupil close the eyes and touch his nose or stand on one foot. Inability to do these is symptom of motor incoordination. Can the pupil perform common tasks, as balance on his heels, skate, ride a bicycle, throw a ball straight, catch a ball, thread a needle, and the like? Have him stand quite still for one or two minutes and note twitching movement. In young children these will appear normally. In general, note whether the pupil plays much and skillfully at games requiring motor ability.

Central defect.—Defect in the central nervous system may give rise to such sensory and motor defects as these indicated above, or to mental defects of various sorts. Read the articles by Royce on "Mentally defective children in schools," Educational Review, October, Novem-

ber, and December, 1893. Note in particular any signs of overfatigue. In addition to sensory and motor defects as given above, note (Galton) flightiness of attention, weakening of memory, slowness and difficulty in reasoning about common-sense things, insistent ideas, indecision, etc.

When you have found defect in pupils, what can you do? (a) You will at least not blame the defectives for their inability, as you may now in ignorance be doing. (b) You will without doubt give special consideration to these children, such as common sense and common humanity may dictate. For example: In seating you will have consideration for those who are defective in vision, hearing, in liability to suffer from cold, or in liability to take cold. In the requirement of all school tasks you will make allowance for the defectives. You will specially beware of requiring long-continued stillness, long-continued stress of attention, or long-continued or precise use of the hand, eye, or vocal organs from young or nervous children, or, as Dr. Meyer suggests, from children just recovering from sickness. You will remember that, while fatigue is the normal accompaniment of mental or physical work, mental work exhausts one more rapidly than does physical work; that children become exhausted more readily than do adults; that the bad air of the schoolroom accelerates fatigue; that continuous overfatigue leads to chronic fatigue, and so to a long list of physical and mental ills; and you will consider whether anything which you have power to change is helping any child into chronic fatigue. Notice specially the nervous children, those entering the period of adolescence, and those competing for grades or prizes. Query: If grades and prizes stimulate only a few, and if these few are overworked and overexcited by the device—? Do you have pupils who should probably retire from school for awhile? (c) You will call the attention of parents to the fact of defect, and so in many cases secure for the child competent medical treatment. (d) Lastly, such observations by teachers may be instrumental in inducing school boards to institute expert physical examination of school children, and to provide compensatory instruction for defectives.

II. THE STUDY OF CHILDREN'S MINDS.

Most of the methods proposed for the systematic study of children's minds require that a very large number of children should be tested precisely in some way, and that the results should be treated by statistical methods. Such studies are extremely important, but as a rule teachers have neither time nor training to undertake them profitably. At any rate, such studies will not be proposed here, but only a very few lines of inquiry which may lead teachers to a better acquaintance with their own pupils. Unless teachers seek such acquaintance what are all the maxims from the psychology of apperception but useless pedantries?

(a) What do the children in my school know? What is their present stock of ideas? Read Hall's Contents of Children's Minds on Entering School.

The children make mistakes. Why? Because the task is not rightly presented to their senses? Because of sensory or motor defect? Or because of erroneous apperception? In any case, the source of the error should, if possible, be known, in order that it may be removed; especially so if a certain kind of errors, as often the case, is recurrent; for recurrent errors mean the establishment of vicious mental habits. Suppose, then, you take note of pupils specially addicted to blundering and keep a journal of their mistakes made in oral or written work. A keen study of this record in connection with your knowledge of the child will very likely enable you to discern the source of difficulty. You may find occasion to make a discreet and kindly use of the record to open the pupil's mind to a sense of his need of improvement. At the least, earnest following of this plan will cause you to grow in psychological insight. Finally, if you wish, send your record with an account of the outcome to some psychologist.

(b) What are the children of my grade most interested in? What are they not at all interested in? What do they assimilate, what reject, of my teaching? What do they remember and what forget? I bring them material in the several classes—reading, geography, etc. I require such and such tasks to be performed. What of this gets into the child and stays there? No questions can be more important. Can I get toward an answer to them? Can I do this with what time I have at my disposal? (See literature below for plans hitherto used.)

I have this plan to propose: Sound the children thoroughly as to what they remember of last year's work. That is good Hegelian and Herbartian pedagogy, and I hope also good common sense. First find out as thoroughly as possible just what work was given to your pupils last year in reading, geography, etc. Then have a series of language lessons, followed later by conversation on that work. The list of questions must be made with precise reference to the work which the children had, so I can only give examples:

How many "pieces" can you remember from the Third Reader, which you had last winter? Write the names of all you can remember.

What "pieces" did you like best? Why?

You had a story about a boy stopping the water in the dike. Write all you can remember of the story.

You had a selection on heroism. Write all you can remember about it.

I am sure that such questions could lead to the best sort of language work, as well as to a review of the things formerly learned, so that "no time would be lost." But if you read over the papers and then talk them over with the pupils with the purpose of finding out what sort of thing they are interested in, seize upon, assimilate, and remember, how can this fail to be of the greatest immediate value to you in the direction of this year's work?

I wish that some teachers would try the following modification of this plan: Get hold of the examination questions given to your pupils last year. Without warning, examine them again on the same ques-

tions. If possible compare the results with last year's papers. Besides the immediate value of such studies as this last, they might prove of wider value. These things that no child remembers for a year—what about teaching them for this year? If they must be known, how must we change our method to make them stay known? If they only give discipline, is it possible that something which the child seizes upon with more hunger will give even more discipline? But one must be cautious in making conclusions, still more cautions in making changes.

(c) Who are the leaders in my school? Who have most to do in determining the sentiment of the school as to school work, morals, industry, obedience, truthfulness, kindness, etc.? What is the tone of the school as to these things? I must know. What gives these leaders their influence? Is it physical force, speed, skill, intellectual superiority, friendliness, imperiousness—what? And the followers—let me note the way in which they imitate—in dress, games, carriage, speech, in attitude.

To get inside this matter is more important than anything else for the success of the school, its immediate superficial success and its deep and lasting success. In studying thus the interplay of leader and follower you are moreover studying embryonic human society. You can not go far without getting insight into the laws and forces that hold in history and politics.

(d) Dr. Bergström suggests the following: What appeal do you rely upon most to influence your pupils—fear, love for yourself, utility, politeness, duty, or what? What sort of appeal is the best for the pupil? For the purpose of finding out what influences will be most effective with each pupil, he suggests that teachers seek to become acquainted with the home life of the children, and especially with the tone and ideals which prevail there.

In all the foregoing work, remember that children are very suggestible. You may easily and unconsciously induce sayings and doings such as you are looking for. Again, you may read your own theories or expectations into what they do. Try always to get at the spontaneous activities of the children and write them down "without putting in any of your own."

"But there is no time to do such things as are suggested in this circular. Teachers are overworked already. Teachers can not do everything." Even so. Teachers can not do everything. They are overworked already. The programme must be carried out. The examinations must be held. The grades must be made out. The "ground must be covered." There is no time for culture teaching. There is no time to get acquainted with the children.

EXTRACTS FROM CHILD STUDY—SYSTEMATIC AND UNSYSTEMATIC.

By WILLIAM L. BRYAN, Ph. D.

In this article Professor Bryan says:

I have come especially to urge the more general recognition of two kinds of masters who study human nature—one of them by systematic research and one by personal acquaintance and insight. I wish to show, if I can, by an illustration, that nothing else can take the place of either of these, and that neither of these can take the place of the other.

My illustration is the problem of adolescence. How shall we find out what we need to know in order to help the youth most in this critical period of their lives? What is it that we know of this period from common observation? We know that it is a time of great change, physical and mental. We know that it is a time of critical importance for the establishment of health and habits and other such generalities.

Now come a large body of scientific men, representing many special departments of science, and say that they will help fill out our knowledge. They must do this in their own way. They must take their own time. They can not be hurried. They can not promise every whipstitch a new discovery. They can not promise that each bit of their work will by itself illustrate some general educational law or supply some schoolroom recipe. What is it they will do that takes so long?

(1) They will measure hundreds of thousands of children in every way in which children show measurable change as they grow; the dimensions of the body as a whole and by parts; the weight of the body as a whole and by parts (e. g., Donaldson's measurement of brain weights at different ages); the motor ability in every aspect, as the strength, endurance, speed, and precision of various muscles under various conditions; the sensory discriminative ability for all the senses; the tenacity and span of memory; the precision, speed, and endurance of the mind in various measurable tasks; the apperceptive capital and the spontaneous interests; the character and amount of sickness and the death rate, and still other determinations already made and yet to be made.

(2) When any one of these determinations is made on a sufficiently large number of children, the results are treated by mathematical methods which show not only the average measure of children for a certain age, but also the individual distribution. For example, Professor Bowditch's tables show that 5 per cent of the children of a certain age are below a certain height, 10 per cent below a certain height, 15 per cent below a certain height, etc. A comparison of the results for successive ages shows the so-called curve of growth; that is, the absolute amount and the rate of growth from year to year. From this curve we can see the periods of accelerated and retarded growth. In like manner each set of measurements mentioned is treated by the methods found appropriate to each. And in like manner, accordingly, we find for each measurable function the curve of its growth, the time of life when it grows fast, the time when it grows slowly, and the time when it reaches its full development.

(3) As soon as a few studies like this are made, there begins a comparative study of the several functions that have been measured. What are the exact relations between these several phases of human development? Which of these functions fluctuate up and down together, and which, if any, in contrary directions?

(4) Finally, each and every part of this work must be reviewed in the light of the facts contributed by general biology, physiology, neurology, psychiatry, and related sciences. (The Child-Study Monthly, May, 1895.)

INITIAL MEASURES IN THE ORGANIZATION OF THE DEPARTMENT OF
THE IOWA SOCIETY FOR CHILD STUDY.

[The society was organized at Des Moines, December 27, 1894. The following officers were then elected: President, Supt. H. E. Kratz, Sioux City; secretary, Supt. O. C. Scott, Oskaloosa; treasurer, Supt. C. P. Rogers, Marshalltown.]

THE INAUGURATION.

During the year 1894 a few of the school men of the State were in correspondence on the subject of child study, and intimated that they were pursuing lines of study and investigation in their respective schools. A suggestion of one to have a meeting for conference during the session of the State Teachers' Association produced the following circular letter, which was sent to the school men and women of the State—necessarily, however, to a limited number:

PRELIMINARY MEETING FOR CHILD STUDY.

The undersigned, believing that well-organized, systematic child study will lead to a better understanding of child nature, more intelligent teaching, and place education on a more scientific basis, desire that a preliminary meeting be held at Des Moines, Wednesday, December 26, at 9 a. m., in some convenient room in the Hotel Savery, for the purpose of forming an organization and laying plans for the prosecution of such study. The following topics are suggested as a basis of discussion for the preliminary meeting:

- Value of child study in general.
- Brief reports of investigations made.
- Most helpful lines of investigation.
- Plans of work and organization of club.

It is deemed wise to limit the number of participants in this preliminary meeting. You are cordially invited to be present. Please promptly acknowledge the receipt of this invitation, and state definitely whether or not you will be present. Send reply to

H. E. KRATZ, *Sioux City.*

Signed: O. C. Scott, city superintendent, Oskaloosa; G. T. W. Patrick, professor State University, Iowa City; C. E. Shelton, city superintendent, Burlington; G. I. Miller, city superintendent, Boone; F. B. Cooper, city superintendent, Des Moines; Henry Sabin, State superintendent of public instruction; H. E. Kratz, city superintendent, Sioux City.

The meetings were held as called in the letter.

The entire forenoon of December 26 was occupied in interesting lines of study, and in expressions of opinion on organization and plans of work. A committee then appointed to report at a meeting the evening of the following day did work which was approved and resulted in organization and the election of officers.

ORGANIZATION AND CONSTITUTION.

REPORT OF COMMITTEE ON ORGANIZATION FOR CHILD STUDY AS ADOPTED.

GENTLEMEN: Your committee on organization and plans for the carrying forward the work of child study respectfully submit the following report:

Believing that an organization for child study will greatly advance our educational work and help to place it on a scientific basis, your committee recommends:

1. That a society for such study be formed, to be called the Iowa society for child study.

2. That the officers shall be a president, secretary, and treasurer, who shall perform the usual duties of such officers, and who shall constitute an executive committee to appoint leaders to carry on the work of each line of investigation agreed upon, and to have general management of the work of the society.

3. That all persons who are interested in child study and contribute 50 cents annually shall be considered members. All other persons who will aid in carrying on the investigations of the society shall be constituted associate members. Both members and associate members shall be entitled to receive the reports of the society.

In addition we respectfully recommend that a circular be issued promptly by the executive committee, setting forth the general course and purpose of child study, and suggesting the leading lines of investigation which may be made.

4. That for the present chief attention be given to the three following lines of investigation:

- (1) Visualization, or eye mindedness and ear mindedness.
- (2) Tests of sight and hearing.
- (3) Determination of age, weight, and height of respective grades.

We also suggest the advisability of affiliation with the National Association for Child Study.

The executive committee was instructed to take steps to have this society recognized in the programme of the State Teachers' Association as a round table or department.

On the lines of investigation, the first topic, "Eye mindedness and ear mindedness," was assigned to Mr. O. M. Harvey, of Burlington, as leader; the second topic, "Tests of sight and hearing," to Supt. O. P. Bostwick, of Clinton, leader; and the third topic, "Precocity," or "Determination of age, weight, and height of respective grades," to Prof. C. C. Stover, Oskaloosa.

[Extracts from report (1894) of Dr. E. M. Hartwell, director of physical training, Boston public schools.]

INTERRELATION OF MENTAL, MORAL, AND PHYSICAL TRAINING.

Moral, mental, and physical training, each and all, aim at developing the faculty or power of action—of acting in accordance with a rule of right and wrong, of acting intelligently, so that action and the ends of action shall be adapted to each other; of acting easily or with the greatest economy of force—i. e., so that energy shall not be wasted in purposeless, irrelevant, roundabout, or self-defeating movements. This suggests closer relations and interrelations between physical, mental, and moral training than are usually recognized by teachers, or the trainers and governors of teachers. Since physical training aims at perfecting the body as an instrument and at rendering it the willing, prompt, and efficient servant of an intelligent mind and a sensitive and enlightened soul, it can not be gainsaid that physical training lies at the foundation of mental and moral training, or that it enters and must enter as a more or less prominent and necessary factor into the greater number of our educational procedures. The full success or failure of physical training, therefore, does not relate simply to the

size or strength of the red meat we call muscles, but is measured in part by our achievements in the domain of mind and the domain of conduct. In other words, we judge of the mental and moral worth of a man by the purpose, number, consecutiveness, and skillfulness of his ordinary and extraordinary acts, which acts, when viewed objectively and concretely, are reducible to the contractions of muscular fibers. * * *

THE HYGIENIC AND EDUCATIONAL ENDS OF EXERCISE.

The ends of exercise may be characterized, in a general way, as, first, the promotion of health, and, second, the formation of proper habits of action. The one is a hygienic end, while the other is a distinctively educational end. It matters not whether we consider a single muscle, which admits of only a single limited motion, or a group of muscles, or a complicated system of muscular organs, like the organs of speech, or the communal structure we call the body, or a class of school children, or a football team, or a regiment of soldiers, the ends of exercise are practically identical in each case, and can only be attained through a combination of hygienic and educational measures.

The main field of education is the nervous system, and the principles of all forms of education into which physical training enters as a factor are based upon the power of the nervous system to receive impressions and to register them or their effects; in other words, upon its ability to memorize the part it has played in acquired movements and on occasion to revive and repeat such movements. The student of nervous disorders notes carefully the peculiarities of his patient's movements in order to determine the seat of his injury or weakness and the nature and extent of his disease. It is equally necessary that the practical teacher should apprehend the significance of the spontaneous and acquired muscular movements of his pupils, be those movements coarse or fine, since those movements constitute an index of the action of the brain which it is the teacher's business to develop and train and also serve to measure the success and test the character of the teacher's efforts at instruction. This is true not only of instruction in football, military drill, gymnastics, sloyd, shoemaking, and sewing, but of instruction in drawing, singing, and the three R's as well. Genuine success in any of the departments of instruction mentioned above is conditioned on the intelligence and skill of the instructor in selecting and teaching such forms of neuro-muscular action as are adapted to the sex, age, and capacity of his pupils.

The motor element in education is so large and of such vital importance that we hazard little in predicting that the systematic study of movements is destined to play a much more prominent part than has been accorded it hitherto in the professional training of all classes of teachers. "It can scarcely be too often reiterated," says Mercier, an English alienist, in his *Nervous System and the Mind*, "that the study of movements is the only means by which we can gain any insight whatever into the working of the nervous system." * * *

THE EVOLUTION OF THE NERVOUS SYSTEM.

In the evolution of the race and of the individual the more general functions and organs are formed and developed earlier than the special functions and their organs; e. g., the circulatory and alimentary organs develop earlier than the vocal organs and the hands and feet. The same law obtains likewise in the growth and development of the nervous system, both as to its massive and its minute parts. The nervous mechanisms concerned in central movements are at once older and more lowly placed than the mechanisms concerned in peripheral movements. To those parts of the nervous system in man which are formed earliest and are practically completed and fully organized at birth the late Dr. Ross, a leading English neurologist, gave the name "fundamental," while he designated as "accessory" those parts which are rudimentary at birth and comparatively late in their growth and development. Broadly speaking, central movements are represented by low-level, fundamental centers, and peripheral movements by high-level, accessory centers. If, as has been stated, the nervous system is the field of education, education to be natural, safe, and effectual should defer the training of the accessory parts of the nervous system until the development of its fundamental portions has been secured by appropriate forms of general training.

HOW PHYSICAL TRAINING STRENGTHENS THE NERVOUS SYSTEM.

As is well known, city children as a class present more cases of nervous instability than do country children as a class. I therefore venture to quote at length Dr. Ross's views as to the part which physical training should play in the education of children with tendencies to nervous instability:

The children of parents who manifest a predisposition to severe nervous disease, as hysteria and epilepsy, are frequently not merely quick in their perceptive faculties, but are also often possessed of great intellectual powers, and much of their future happiness depends upon judicious mental training in youth. The children of such families ought not to be subjected to any severe mental strain during the period of bodily development, or be allowed to enter into competition with other children in the mental gymnastics which are so fashionable in our public schools. On the other hand, regular, graduated, and systematic exercise in the form of walking, riding, gymnastics, and calisthenics does a great deal of good by strengthening both the muscular and nervous systems. Everything which tends to develop the muscles of the lower extremities and trunk, and indeed all muscles engaged in executing the movements common to both man and the lower animals, tends also to develop the fundamental part of the nervous system, and a good, sound development of the fundamental is the first prerequisite to a well-balanced development of the accessory portion.

The order of the development of the nervous system in the race has been from the fundamental to the accessory portions; and no one can reverse this process with impunity in that further development of the individual which constitutes education in its widest sense. Yet until a few years ago the natural order of development

was reversed in the education of youth, and especially in female education, so far as this could be accomplished by human contrivance and ingenuity. The natural order of development was indeed observed so far as to allow the child to acquire the power of walking prior to that of other accomplishments; but the care of the infant had not yet been transferred to the professional trainer. No sooner, however, had what is technically called education begun than the professional trainer began to exercise the small muscles of vocalization and articulation so as to acquire the art of reading, the small muscles of the hand so as to acquire the art of writing, and in the case of young ladies the still more complicated movements necessary in running over the keyboard of a piano; while little attention was paid to the development of the larger muscles of the trunk and lower extremities, upon the full development of which the future comfort of the individual depends.

In the education of youth in the present day the laws of development and physiology are not so openly violated and defied as they were a few years ago; but much remains to be done in this respect, and especially in the education of children of families who manifest a neuropathic tendency. In the children of such families the greatest possible care should be taken to develop carefully the fundamental actions, inasmuch as a sound development of these involves a stable construction of the fundamental part of the nervous system, a process which makes the latter to offer a greater specific resistance to the paroxysmal discharges from the later-evolved centers of the accessory portions which underlie hysteria, epilepsy, and even many of the psychoses. The process of educating the accessory system, and especially the higher centers of that system, should be regular and systematic; habits of mental scrutiny and self-examination, which, unfortunately, too many religious teachers deem necessary for the welfare of the soul, ought to be discouraged. In one word, education should be made as concrete and objective as possible.

THE LAWS OF DEVELOPMENT AND THEIR BEARING ON EDUCATION.

If this be true—and who shall gainsay it—is it not evident that educational measures of every kind should be selected and coordinated so as to conform to the order and rate of growth and development of the fundamental and accessory neuromuscular mechanisms of the child and the adolescent? Is it too much to ask that educationists should recognize, ponder upon, and be guided by, the laws of development which determine the health and power of the brain centers, and the health and efficiency of the servants and ministers of those centers, namely, the skeletal muscles? It is true, doubtless, that the laws of development are recognized in a way in the conventional division of schools into elementary, secondary, and superior; but it is no less true that the bodily and mental characteristics which differentiate children from youth, and both from adults, are deserving of more careful study and much fuller recognition than they have received hitherto from teachers as a class or from those charged with the appointment and control of teachers.

THE SCOPE OF PSYCHO-PHYSIOLOGY.

[For the information of teachers who are constantly making inquiries into the limits of the several branches of experimental psychology, the following extracts are given from an article by Prof. C. Lloyd Morgan, of University College, Bristol, England. In this article Professor Lloyd gives a very clear outline of the province of psycho-physics and inci-

dentally shows the dearth of equipment for this work in English colleges.—Ed.]

Under the title of psycho-physiology may be comprised these investigations in psychology which have explicit or tacit reference to the concomitant physiological processes and which are characterized by the application of the experiment method. The boundaries of the subject are somewhat ill-defined, since it shades off into physiology on the one hand and into introspective psychology on the other. I shall endeavor in this article to indicate the scope of such experimental investigations.

A chick, not many hours old, will peck with fair but not complete accuracy at any small object which catches its eye. Here we have a reflex and responsive action. A stimulus is received in a sense organ; an impulse is carried centripetally along ingoing or afferent nerve fibers; certain nerve centers are thrown into activity, and an outgoing impulse is carried by efferent nerve fibers to muscles which are thus thrown into coordinated activity. It is probable that on the first occurrence of such an action it is purely automatic and is performed in virtue of the possession by the chick of an inherited organic mechanism. It is accompanied by, but not guided by, consciousness. Such guidance, however, soon becomes evident. Throw to a chick two or three days old half a dozen caterpillars, some of them common "loopers," others yellow and black "cinnabars." In the absence of previous experience they will be equally seized. But the loopers will be swallowed, while the cinnabars will be dropped. Repeat the experiment next day. The loopers will be gobbled up at once. The cinnabars will remain almost, if not quite, untouched. An association has been formed between the sight and taste in the two cases. Consciousness is no longer merely an accompaniment of the action. It controls, enforcing the action in one case, inhibiting or restraining it in another. It is probable that in the higher parts of the brain there are special centers, the physiological functioning of which is associated with this conscious control. Such activities of the chick, first those which are merely responsive and automatic, secondly those which are under conscious control, exemplify a wide range of activities both in animals and man.

Let us note the scope of the experimental work that they suggest. First, there is the nature and range of stimulation of the nerve endings in the sense organ. Secondly, there is the nature and rate of transmission of the impulses along the nerve fibers afferent and efferent. Thirdly, there are the nature and localization of the activities of the automatic centers, and the time occupied by their peculiar functioning. Fourthly, there is the physiological and psychological investigation of the nature and mode of origin of the consciousness which accompanies the movements of parts of the body during response. Fifthly, there are the conditions, psychological and physiological, of association. And

sixthly, there is the mode of application of the control and the localization of specialized control centers, together with the estimation of the time element in control.

All these have been made the subject of careful and systematic inquiry by the method of experiment. In all cases such experimental investigation has led, if not to brilliant positive results, at all events to salutary acknowledgment of ignorance. Difficulties of interpretation abound. Nowhere are these difficulties greater than in the investigation of the physiology and psychology of color vision. Take a dozen individuals and get them successively to indicate by means of the cross fibers of the spectroscope how far they can see along the spectrum, first in the direction of the extreme red, then in the direction of the extreme violet. You will find marked differences. Perhaps one will show a quite unusual amount of variation, and you will probably find by other tests that he is color-blind. Is this variation in the retina, or in the visual center of the brain? It is well known that the psychophysiology of vision is still a matter under discussion. One of the difficulties seems to arise from the fact that what is physiologically complex is psychologically simple. Purple gives a simple psychological sensation; but it is due to a combination of physiological impulses, the coalescence or synthesis of which is, so to speak, below the threshold of consciousness. One can not, or I can not, psychologically analyze purple into its constituents, as one can analyze a musical chord. There is still a wide field for research in the psychophysiology of sensation.

An important line of investigation which has now been followed up for many years deals, not with differences of kind or of quality in sensation, but with variations in intensity. Given a stimulus which excites sensation; now diminish it on the one hand until it ceases to excite sensation, and increase it on the other hand until it reaches a maximum of sensation. Then formulate the law which shall express the relation which increase of stimulation bears to the increase of sensation. The results of Weber's researches went to show that we must look not to the absolute but to the relative increments of stimulus; and Fechner, extending and generalizing Weber's results, formulated the law of the relations thus: When the stimuli increase in geometrical progression, the sensations increase in arithmetical progression, or the sensation is proportional to the logarithm of its stimulus. Concerning this law and its philosophical *raison d'être* there has been much animated discussion, into which I do not propose here to enter. Suffice it to say that if we represent by a curve the rise of sensation from the threshold where it first dawns to its maximum, the law seems to hold good only for the mid-region. Various methods of experimentation are employed. Weber and Fechner employed chiefly the method of tabulating the just discernible differences in sensation—of increasing, that is to say, the intensity of the stimulus, and noting when this increment is just perceptible. Others, using larger intervals, have

employed the method of estimating equal increments. Others, again, have constantly doubled the stimulus and noted the change in sensation. In all cases it must be remembered that what we are really dealing with is the perception of the relations between certain given sensations. This is a fact too often lost sight of. We have to infer from these relations the intensity curve in sensation.

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Researches on the rate of transmission of impulses along the afferent and efferent nerves may be regarded as mainly physiological. Suffice it to say that the rate is about 120 feet per second for ingoing impulses, and about 110 feet per second for outgoing impulses. Transmission in the spinal cord appears to be less rapid. The results of experimental investigations on the localization of function in the brain appear to justify the hypothesis that the automatic centers—or the centers concerned in merely organic response—are quite distinct from the control centers, which are probably restricted to the cerebral cortex. It is a good working hypothesis that the centers which minister to control are the seat of those molecular disturbances which are concomitant with consciousness. Consciousness apart from control would be a mere epiphenomenon of no practical use to the organism. It is scarcely necessary for me to do more than remind the reader of the conspicuous success which has crowned the efforts of those who have patiently and systematically applied the experimental method to the localization of the centers of motor control. The motor regions of the hemispheres have now been mapped out with considerable exactitude. * * * In all this field of research, as in the transmission of impulses, we are experimenting more on the physiological than on the psychological side of psycho-physiology.

When we come to association, very little that is exact and assured is known of the physiological aspect. It is said that association tracts—that is, groups of fibers connecting together the several centers in the cerebral cortex—are almost, if not quite, absent at birth, and are established during the development of experience, which may well enough be so; but what may be the physiological conditions of their development we can at present only guess. On the psychological side much has been written on association, and in recent times Mr. Francis Galton, followed by Trautscholdt and others, has carried out experiments with the object of estimating the time that elapses between the reception of a simple impression and the occurrence of a simple idea suggested thereby. Such time would seem to be about three-quarters of a second.

Much attention has been paid to what is termed “reaction time”; that is, the time which elapses between a given simple stimulation and the resulting responsive motion. This was found by Lange to vary according as the person who is being tested directs his attention to the expected sense-impression or the anticipated motor response. In the

case of a simple response to a visual stimulus, the reaction time in the former case is rather more than one-fourth of a second, but in the latter case only about one-sixth of a second. Practice tends to shorten the time, while fatigue lengthens it. A premonitory signal just before the stimulation markedly shortens it. Other experiments have been conducted with a view to ascertaining the time taken in simple cases of discrimination. This, too, varies very much with practice, and it is questionable whether the shorter time-values measure an act of discrimination properly so called. This part of the subject is full of difficulties in the interpretation of the results obtained.

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Enough has now been said to indicate the kind of work on experimental lines which is being done in psychophysiology. In England, while valuable researches have been prosecuted in cerebral localization, comparatively little has been done on the lines which are followed up in the German and American psychological laboratories, though Mr. Francis Galton's valuable psychometric observations have been based on somewhat similar methods. * * * Is it too much to hope that the time is not far distant when there shall be established in England chairs of zoological and experimental psychology, the occupants of which shall have the direction of adequately equipped laboratories, wherein systematic observations, on the lines I have above indicated, may be conducted? (Nature, March 20, 1894, pp. 504, 505.)

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CHAPTER XV.

EDUCATIONAL VALUES.

[The following article on educational values I reprint from the report of the St. Louis schools for the year 1872-73. It contains a somewhat fuller discussion of some of the points relative to the educative value of the several studies in elementary and secondary schools, and in this way may be useful in explaining points that are left obscure in the report of the subcommittee on correlation of studies.]

The educator is called upon especially to scrutinize the character of his elementary work. He must see from afar the effects of the trifling things with which he makes his beginnings. It is the feeling of this duty that has in late years drawn so much attention to Froebel's theories of the kindergarten and to primary education generally. It is all essential that the foundation should be sufficient for the superstructure. Of late, therefore, much thought has been expended on the question of adapting the course of study in the common schools to the actual demands upon the citizen in after life. The same zeal which has challenged the methods and subjects of the common schools has with still more emphasis challenged the higher education in our colleges and universities. It has demanded the substitution of more practical studies for the traditional disciplinary course. It has asked for more science and less Latin or Greek and for a radical extension of the elective system of making up a course of study for each individual. Much has been accomplished by this movement toward gaining its points. Meanwhile a vigorous reaction has set in, and the old finds its defenders and apologists. The discussion widens its scope and extends to many other phases not originally called into question, not only the proper course of study for the public schools, but their right to exist on appropriations from the public treasury; especially with reference to the public high school the discussion is a warm one. Teachers and directors of public-school systems have become suddenly aware that there may be an "irrepressible conflict" between the system of public and that of private instruction. It is somewhat startling to learn that there are two systems firmly established in our land confronting each other with radically different theories as to a proper course of study. Such hos-

¹ By W. T. Harris, superintendent.

tility could not but develop sooner or later into an open contest. Now that the general attention is directed to education as an element of national and social strength, we can no longer avoid a discussion of these differences and of the theories on which they are based. The peaceful victories of industry at Paris, London, and Vienna and the colossal victories of Prussian arms at Sadowa and Sedan have aroused statesmen and political economists to the study of public education as essential to national strength in productive industry and in the field of battle as well. What this education should be, how far it should be carried, whether compulsory or not, whether there should be different courses of education, adapted to the supposed destinies of the pupils—these and other kindred questions must be discussed in the light of fundamental principles. On the one hand it is contended, in the interest of productive industry, that the public schools, being for the masses who are destined to fill the ranks of common laborers, should give a semitechnical education and avoid the purely disciplinary studies. The latter should be reserved for private academies and preparatory schools founded by private enterprise and open to such of the community as can afford to patronize them. The higher education in this country conducted in its colleges and universities should, according to this view, have no organic relation whatever to the public school system, but only to the system of preparatory schools and academies supported by private wealth. That the effect of such a state of affairs is to injure the cause of education in general, who can doubt, when he reflects that such isolation must have the effect of arraying the supporters of public schools and those who have received the primary education given in them against the supporters of higher education and against the class of citizens who have received it? For it will result that those who receive a higher education will have been, during their whole course in a system of schools founded on a basis different from the public schools, having a different course of study and supported in a radically different manner. That the graduates of higher institutions should under those circumstances be in sympathy with public school education is impossible. The public schools would necessarily be the schools of a caste—of the proletariat—the class whose chief organ is the hand, and whose brains are educated solely to serve the hand better. The very persons themselves are called “hands” very appropriately.

In this country, with its boundless possibilities, living as we do largely upon our hopes, conscious of a rapid development in the past and of great prospects in the future, with a national history whose biographical side is the story of “self-made” men, aspiration is the leading characteristic of the people, and the poorest immigrant here soon kindles with its impulse, and while he endeavors by thrift to accumulate a fortune, he prepares for its perpetuity by educating his children.

There is nothing more favorable to the character of the foreigner newly arrived on our shores than this, that he is everywhere eager to

avail himself of the school privileges. To the self-respect born of aspiration, what greater shock can be offered than the establishment of caste schools—public schools founded especially for the industrial class, to the end that its children being born from “hands” shall be “hands” still, and shall not mingle with the children of the wealthy, nor with those of the liberally educated. Such discrimination leads the laborer to refuse all school education unless he can afford to pay for it in the private school.

The complete degradation of the public school results. On the one hand those who have received higher education have been nurtured in an atmosphere of contempt for the free schools of the laboring classes. On the other hand the laboring classes themselves despise the symbol of their inferiority and the institution designed to make their inferiority hereditary.

But it may be that a higher education demands a primary education specially designed as preparation and introduction to it. It is possible that an education, to be completed in three or five years, ought to be on an entirely different plan from that intended to cover ten or fifteen years. If such were found to be the case, our only remedy might be a twofold course in the public schools—a so-called “general course” and a “classical course.” Where this were not feasible we might lament the fate of the public school, but could not remove its necessary evils. It would inevitably become the school of the proletariat, and the flourishing private school would draw away the children of wealth and competence and furnish them a different course of study.

This question touches most vitally our whole public school system, and especially the course of study in the high school. Let us inquire, therefore, what are the current standards of education, as set up by the public and private schools.

According to the theory on which college education rests, the preparatory schools should confine their work almost entirely to the disciplinary studies. The mathematics and Latin and Greek are the main requisites for admission. Not only is this the case, but for two years after admission there is very little deviation from this course. Harvard, by raising the standard for admission by at least a year's work, now makes Latin, Greek, and mathematics elective after freshman year, and requires physics, rhetoric, history, and elementary French as the regular studies of sophomore year. By this it will be seen that if public schools are to fit their pupils for the colleges they must adopt the same course as the academies and special preparatory schools and make thoroughness in collateral or information branches unessential for promotion. By the college system these collateral branches shall be reached only after the disciplinary course is finished. Even Harvard's recent and noteworthy changes consist in demanding another year's work in the preparatory school on Latin, Greek, and the mathematics. A small departure from this looks also in the direction of allowing previous work in French and other studies as an equivalent

for required work. The natural sciences are to be included in the preparatory work at some future time.

It does not appear that any college has made so great a departure as to require for admission just what a public high school would consider a proper requirement for a diploma.

The public schools have generally adopted a course of study resting on a different theory from the one on which that of the colleges is based. The course of study in the public schools assumes the principle that it is best to unite disciplinary studies with collateral studies intended to supply information and insight. This union of discipline and knowledge must begin in the primary school and continue through the high school.

The amount of actual culture (including under this term both discipline and knowledge) represented by the public high school course is almost equal to that attained by the students who have completed sophomore year in most colleges—that is to say, a graduate of a city high school is as able to pursue independent investigations into the various branches of science and literature, native and foreign, as the college student of two years' standing. What he has been obliged to do thoroughly in history, United States and European; in geography, descriptive and physical; in English literature and the grammars of English, Latin, and French, or German; rhetoricals, writing, spelling, and reading; in physics, chemistry, or natural history; in mathematics; in mental and moral philosophy—what he has done in these studies is an equivalent for the Latin, Greek, and mathematics of freshman and sophomore years, together with the preparatory studies actually required.

Now, what are the facts as to admission to the colleges? The graduate of the high school is placed on the same basis as the specially prepared student who is really two years his junior in general culture. This injustice prevents the high-school graduate from resorting to the regular course in our colleges.

The question is narrowed down to this, Which is the correct system, that of the colleges which separates, or that of the public schools which unites discipline and knowledge? If the latter, then the colleges of the land ought to be reconstructed and adapted to the prevailing system of education here well established. If the former is right, then our public school system ought to be purged of the collateral work in its course of study. Finally, if both are right and necessary, each in its own sphere, then it is evident that there is required a system of private or public schools which occupy the place that the academy system in New England and New York occupies. Into these must be sent those pupils who expect to fit for a higher education. This latter alternative does not furnish a solution of the difficulty. There still remains, as has been stated at length, an irreconcilable conflict between the public school system and the system pursued in these preparatory schools.

The conflict lies between the systems as now established, and not between the systems as they ought to be. It seems to me that the public school system is substantially the correct one, and that the higher education of the country should adapt itself to it. This will appear evident if I can demonstrate that the best course of study for a short school period is a section of the best course of study for a long period, and that conversely the long course of study can to best advantage take up for its preparatory studies just what the common school should teach. In brief, if the course of study is one for culture and for business or the professions, so that, whatever section of it be cut off from the beginning furnishes the best course up to that point, whether regarded as preparatory to a continuation of the course of study or a completed course—then it will be conceded that higher education and common school education should both adopt that course, and thus become mutually complementary. Then the academies and classical schools, private institutions supported as special feeders for the colleges, must perforce adopt the same course as the common schools.

That this is plausible I shall undertake to prove by a brief review of the causes that have led to the differences shown to exist, and that it is rational I shall endeavor to show by a survey of the psychological principles that should determine the selection of a course of study.

In all times nations have recognized the necessity of educating their directive intelligence. Those who are to rule are carefully educated for this purpose. Public money has never been grudged for the education of the governing classes. So soon as the State has found that its national strength depended on the education of a special class, that class has at once been provided for. The immense sums recently expended in the various countries of Europe for industrial education show that statesmanship has at last found out that political prosperity depends upon the prosperity of the civil community. In our comparatively new experiment of a "government of the people, by the people, and for the people," to educate the ruling class means to educate all the people. But in the earlier days of our history the system of education was definitely shaped toward providing a learned few to look after the highest interests, the clergy, the physicians, the lawyers. The three R's, reading, writing, and arithmetic, were for all. To these essentials the candidates for the profession added Latin, Greek, and higher mathematics, and then entered professional schools to study their specialties. A liberal education included the classics and mathematics, the common school education included only the three R's. But the newspaper and magazine, together with rapid transportation, have opened up so great possibilities to the one who possesses a common education that he continues his theoretic education after school life almost inevitably. The former standard of a liberal education is attained by the average of the community. The development and rapid growth of the sciences and of modern literature have added such immense provinces to the domain

set apart for a liberal education that it now bears little resemblance to its first shape and magnitude. Hence, it happens that while our higher education demands only disciplinary studies as preparatory to it, and then proceeds to add at least two years more of disciplinary studies, the growth of realized intelligence, in the shape of science and literature, has introduced changes that have destroyed its symmetry and adaptation. In the common school the three R's have been so expanded by the contents they have received from literature and the sciences of nature, and of man, that they furnish much more than is required by the colleges, and much more than is used as a foundation for the superstructure there built. Moreover, the same causes that have operated to expand and fill up the common school course have likewise influenced the college course, but not in the same way. Their influence in the common school course is felt throughout its entire extent; in the college course its presence is recognized by an expansion during the last part of it. After discipline is obtained, then the student is prepared to apply himself to the rich contents of the modern world. Science, art, and history may then be explored. Short excursions are accordingly made into those realms, chiefly, however, by means of the oral lectures of the professor, who gives fine summaries of what has been accomplished in this or that special province. To such students as have no familiar acquaintance with a considerable number of the primitive facts and details, the generalizations of the professor are vague and meaningless. The ideal of the course of study in our higher education finds thus its type in the palm tree, which climbs nearly to its full height branchless and then expands suddenly into full foliage. If the plan which the public schools have unconsciously and undesigningly adopted were followed, its type would be a tree that expands into foliage from below up to the top. What serious obstacle is there in the way of adopting for the college course a curriculum involving a central axis of discipline studies and a complement of accessory branches yielding information and insight? To the severe disciplines of Latin, Greek, and the mathematics, add the sciences—both natural and social-political—and literature and civil history. The preparation for college should then demand the rudiments of science, literature, and history. This change would adapt the college to the public school course.

I do not ignore here the important consideration—once far more important than now—which goes to justify the present college course. I allude to the principle that education must involve a period of estrangement from the common and familiar. The pupil must be led out of his immediateness and separated in spirit from his naturalness, in order that he may be able to return from his self-estrangement to the world that lies nearest to him and consciously seize and master it. Without such self-alienation that which lies nearest to man and deepest in his nature does not become objective to him at all, but remains merely instinctive and implicit. Therefore there is a deep-lying ground for taking the student out of the familiar modern world and requiring

him to breathe the atmosphere of the far-off and distant world of antiquity for several years of his life. When he again approaches his own world he is vividly conscious of it by reason of its obvious differences from the classic world, with which he has become familiar. Further reasons to strengthen this position will also be found in a consideration of the specific psychological import of the study of the classics, a consideration which it is necessary to undertake as a preliminary to the thorough investigation of the principles of a course of study. I will anticipate here, however, the final grounds of decision against the present system by saying that the expansion of the modern world of realized intelligence is so great that it leads the student quite irresistibly into the self-estrangement spoken of above. Its art and literature portray the widest and deepest collisions of the problem of life; its science enumerates the whole range of existences, whether corporeal, like the mineral, plant, or animal, or incorporeal, like human institutions and generalizations. Besides this, the proper mastery over any province of knowledge involves three stages, and these must be separated in time long enough to allow of complete assimilation. The perceptive, the reflective, and the stage of insight can not be simultaneous. This points to the principle which requires the course of study to be exhaustive at each of its epochs—including all the representative provinces in some one of their types at all stages of progress. The mind should grow with all its windows open from the beginning. What it acquires in its early stages will be rudimentary, but will furnish a rich native store for future thought when the period of reflection sets in stronger and stronger. The roots of the sciences and literature and history should go down deep into the earliest years, so that the unconscious influence derived thence shall assist in molding the taste, will, and intellect during the most plastic period of growth. Without this thorough assimilation with the whole intellectual being—the unconscious molding of one's view of the world (*Weltvorstellung*, as the Germans call it)—a growth of years—later scientific and literary studies are likely to be barren, lacking a fruitful soil in the disposition (*Gemüth*) and phantasy. Almost everything great in the world of reason has a slow gestation, first gathering force in the disposition and then in the phantasy, coming gradually into shape and definiteness through a series of monstrous forms before it sees the light of conscious reason.

THE STUDY OF THE CLASSICS. .

No one who considers carefully the psychological results of classic study can help feeling some degree of dismay at the treatment such study receives at the hands of a majority of our so-called "prominent educators."

The cause of the public schools is indeed greatly injured by unwise zeal. Much of the alienation discoverable toward public schools on the part of those who conduct higher education is traceable to that

feeling of distrust engendered by the tirades of naive, unconscious men, who find themselves face to face with a question that has two antithetic extremes, whose mediation reaches far down into the mysteries. With the cant of progress and reform on their tongues and a polemical flourish of the epithet "old fogey," they challenge whatever they can not justify on immediate, simple, and therefore shallow grounds. Hence they are sure to challenge pretty much all that is deep and rational. Nor are they the ones to blame. For there is little adequate justification proffered on the part of the installed professors who would seem called upon to defend their province of activity by showing its rationality.

This is partly due, again, to the isolation of higher education from common school education. Those who have prepared for college have conquered their prejudices and yielded to the demands of the higher course. Training has obliterated the traces of protest which might some time have burst forth. Hence the justification of the college curriculum is not undertaken, but left a tenet of blind faith. It is true, a few traditional grounds are stated in a somewhat mechanical manner. Discipline, culture, accuracy of thought, and expression—these are the stock arguments in favor of classical study.

With a view to a more thorough examination of these points I have ventured to discuss them here in their psychological bearings. It is essentially a psychological question. What influence on the mind have these studies? What peculiar influence arises from the study of Latin and Greek that the modern languages do not exert upon the scholar? What is the definite meaning of the words "discipline," "culture," "exactness of thought," "refining influence," when applied to the results of classical study, or what is the ground on which these languages are called "perfect"?

The Latin and Greek languages are spoken of as being "perfect" in the sense of completeness as regards further growth, or as regards etymological inflections, or as regards syntactical organism, or, finally, as regards capability of expression, whether artistic, scientific, or historical. This latter designation ("perfect") does not seem to recommend itself as a substantial reason for the prominent place Latin and Greek hold in education. In the first sense, as complete in respect to growth, they would have no advantage over the Anglo-Saxon, the old Norse, the Zend, the Sanscrit, or any other dead language. Nor is it obvious at first glance why such completeness is an advantage. Why should we not rather study a living, organic growth, wherein we can trace a process actually going on? Laws are manifested only in transitions from one stage to another. Again, if inflections are considered, what thoughtful man will assert that inflections are a mark of perfection? Is the Sanscrit more perfect than the Latin or Greek because it inflects twice as much as the latter? Does not maturity of spiritual development do away with inflections? Could the syntax of Greek or

Latin do any more wonderful things than the syntax of Milton or Shakespeare? Could the language of Cicero express what that of Burke could not, or that of Plato and Aristotle express what Hegel and Schelling found German inadequate to do? It is doubtful if any of these questions could be answered in such a way as to defend Latin and Greek on the ground of a superior degree of perfection over all other languages.

But there are better grounds for the support of classical study. As subsidiary reason for the study of Latin one may name its importance to the English-speaking people on account of the fact that it furnishes the root words to that part of our vocabulary which is more especially the language of thought and reflection, while the Teutonic or Gothic groundwork is the language of the sensuous experience and of common life. Hence it happens that even a little study of Latin makes a great difference in the grasp of the mind as regards generalization and principles. Without Latin the trope and metaphor underlying the abstract terms necessary to express all elevated sentiment or thought in English, and more specifically all scientific results—whether moral, legal, spiritual, or natural—is not perceived nor felt. Such trope or metaphor is the basis of abstract terms, and hence the latter have been called “fossil poetry.” To gain command of the resources of a language one must revivify this poetic element, must acquire a feeling of the trope and metaphor which it contains.

This argument for the study of Latin by English-speaking people holds good in a greater or less degree for the Romanic nations of modern times. But it is not so convincing when applied to the Germanic, Norse, and Slavonic peoples. It is when we come to look the question earnestly in the face, as applied to all European culture, that we begin to see its truer and deeper psychological bearing.

I have already quoted the remark of Schopenhauer that—

A man who does not understand Latin is like one who walks through a beautiful region in a fog; his horizon is very close to him. He sees only the nearest things clearly, and a few steps away from him the outlines of everything become indistinct or wholly lost. But the horizon of the Latin scholar extends far and wide through the centuries of modern history, the middle ages, and antiquity.

Here we have the essential kernel of the matter hinted at under a figure of speech.

The object of education in the school should be to clear up the mind and give substance and discipline to its powers. To attain to clearness there is but one way—the student, engrossed in his little world of opinions and caprices, must learn the presuppositions of his being and activity. The individual looks out from his narrow environs in the now and here and sees that he is what he is mostly through conventionality. He does this or that because others do it; he acquired the habit when a child and has never questioned its rationality. His family and immediate circle of acquaintances have given him his habits of

thinking and acting. He looks further and sees that the community in which he lives is governed likewise by use and wont. Tradition is the chief factor; accidental modifications of time and place enter as a less important factor; another factor in the result is the law of development or evolution, wherein he sees a gradual change ensuing from internal growth. Through observation of this latter fact—that of evolution—he is carried at once beyond his community and beyond all contemporary communities. He begins to trace the historic evolution of his own civilization out of the past. Out of the formless void of his consciousness there begin to arise some intimations of his whereabouts, and whence and whither.

Even the most materialistic science of our time hastens to caution us that we should never seek to know the individual by isolating him from his conditions. To know an individual thing scientifically, we must study it in its history. It is a part of a process. Its presuppositions are needed to make it intelligible. Only in the perspective of its history can we see it so as to comprehend it as a whole.

If a man does not know nor feel his existence, he can not be said to live it as an independent existence. The humblest piece of dirt beneath our feet pulsates with vibrations that have traveled hither from the farthest star. But the clod does not know nor feel its community with the universe of matter. That universe does not exist for the clod; consequently the clod does not exist for itself. When we learn to know our entire being it exists for us, and therein we come to exist for ourselves. It is conscious communion with one's existence that makes it one's own. The more complete the consciousness the higher and more personal the being. The man who does not know his history nor the history of his civilization, does not consciously possess himself. His existence, as involved in those presuppositions, is not for him, is hence unassimilated, and therefore exists as his fate and not as his freedom. The first requisite for directive power is knowledge. Directive intelligence, knowledge itself, may ceaselessly modify the effects of its presuppositions as it finds them on itself, and by successive acts of the will may determine itself in accordance with its pure ideal. This is freedom.

When the scholar learns his presuppositions and sees the evolution afar off of the elements that have come down to him and entered his being—elements that form his life and make the conditions which surround him and furnish the instrumentalities which he must wield—then he begins to know how much his being involves, and in the consciousness of this he begins to be somebody in real earnest. He begins to find himself. The empty consciousness fills with substance—with its own proper substance; it subsumes its particular being under the general self which it finds to be its true being; it "stands under" itself; rises from a particular special form of being to a generic, universal form thereof, which may be called culture.

Thus for ages the mind of youth has been trained in the schools on the two "dead languages," Latin and Greek. For the evolution of the civilization in which we live and move and have our being issued through Greece and Rome on its way to us. We kindled the torches of our institutions—of the watchfires of our civilization—at their sacred flames. The organism of the State, the invention of the forms in which man may live in a civil community and enjoy municipal and personal rights—these trace their descent in a direct line from Rome and were indigenous to the people that spoke Latin. In our civil and political forms we live Roman life to-day. That side or phase of the complex organism of modern civilization is Roman. Our scientific and æsthetic forms come from beyond Rome; they speak the language of their Greek home to this very day, just as much as jurisprudence and legislation pronounce their edicts in Roman words. Religion points through Greece and Rome to a beyond in Judea for a still deeper spiritual presupposition.

To assimilate this antecedent stage of existence it is not sufficient to form an acquaintance with it by reading its history or literature in translations. The thorough assimilation of it in consciousness demands such an immediate contact with it as one gets by learning the languages of those people—the clothing of their inmost spiritual selves. We must don the garb in which they thought and spoke in order to fully realize in ourselves these embryonic stages of our civilization. For we know truly what we have lived through. We must live it in our dispositions or feelings, then realize the forms which it takes on in the phantasy, i. e., its art forms, and finally seize it in the abstract conceptions of the understanding and grasp its highest syntheses in the principles of the reason. The earlier stages, that of feeling and that of phantasy, can be reached best through the natural symbolism of the word. Each national spirit reveals itself to itself in its own way by its language. Translation loses this peculiar element of feeling, although it retains the higher rational element. But in the present instance it is essential to retain precisely the immediate, naive, germinal "cell growth" of those national spirits whose results we have assimilated.

From the modern scientific idea of method—even that called Darwinism—we see the absolute necessity of mastering our history in order to know ourselves. We must take up into our consciousness our presupposition before we can be in a condition to achieve practical freedom. Just as the uncultivated person feels and knows his narrow circle of sensations, desires, appetites, and volitions as his personal existence, his "ego," so the man of culture recognizes his identity with the vast complex of civilization, with the long travail of human history:

"He omnipresent is,
All round himself he lies,
Osiris spread abroad,
Upstaring in all eyes."

For he looks at himself through the eyes of mankind and sees himself in mankind. History is the revelation of what is potentially in each man.

We may now inquire what aspect the question of the substitution of a modern language—say German or French—for Latin or Greek has. Is it not clear that a modern language stands to English in the relation of coordination and not in any sense in that of a presupposition? As immediate facts, German and French stand in need of explanation through evolution, just as much as the English does. Their civilizations are not embryonic stages of English civilization, but rather repetitions of it. To suggest a study of German or French as a substitute for Latin or Greek would be paralleled in the science of zoology by suggesting a study of snakes instead of tadpoles in the embryology of the frog.

Greece and Rome stand at the entrance to the modern world or the occidental phase in world history. Greece introduces the idea of individuality into history in place of the oriental idea of substance. Rome deepens the idea of individuality to that of legal person. Both nations conquered the Orient. First, Greece, under Alexander, avenged its wrongs, long suffered at the hand of Persia, by subduing Asia Minor, Syria, Egypt, Persia proper, Bactria, and western India. The Greek kingdoms in Asia Minor and Egypt were for centuries the seats of science. The Greek kingdoms in Syria and Bactria—no one knows how much the East Indians and Chinese owe to them in the way of scraps of science and art.

Then Rome brought under her yoke the western and northern barbarians, rooted out Carthage, and extended her sway to the east over Greece and the Greek empires temporarily. The great modern States were born in the Roman colonies of the west, and were nurtured under her civil code of laws and with such Greek refinement as followed in the wake of Roman wealth and might. Finally, Christianity, sheltered under the Roman eagle, found its way to all lands that were destined to enter modern civilization, and under the threefold nurture of Roman laws, Greek science, and Christianity the long education went on toward national independence and a humanitarian civilization.

Discipline, culture, exactness of thought, refining influence are, in a special sense, results of classical study, inasmuch as it alone furnishes a direct road to the conscious possession of the conventionalities of our civilization. Greek gives the presuppositions of the theoretical intelligence; Latin that of the practical (or will side) of the intelligence. Mere disciplined ability to give attention to a subject connectedly is not adequate to give culture or exactness of thought. Mathematical drill suffices for that sort of discipline, but it is accompanied with the mental habit of abstracting from and ignoring quality or the concrete relations of the most important of subjects—human life.

Why the argument in favor of Latin and Greek in education does not apply to oriental presuppositions beyond them may be asked. The reply is twofold. The most important of the presuppositions mentioned, the theoretical and practical, are indigenous with those two peoples—the former with Greece, the latter with Rome. Oriental presupposition appears in Greece as the basis of myths and of the religious mysteries. The myths represent the overthrow of the doctrine of substance by spiritual might—the Titans by the gods of Olympus—Asiatic fate by European free personality.

The Roman presupposition appears still less to be derived from the Orient. It is not in any proper sense to be regarded as a reaction against the Orient, although Greece is such a reaction. The presupposition of Christianity is, however, found in the Orient, in Judaism, and this fact is sufficiently emphasized in that part of our education which is left to the church. The spiritual elements embodied in religion are far more subtle than those we have just considered. But their discussion does not belong here.

With this hasty survey of the most important and most hotly contested question in higher education, let us approach the theme whose discussion is to throw light on the true relation of colleges and universities to the public schools.

THE COURSE OF STUDY.

To discover precisely what the pupil gets from studying a particular branch—what he adds to his mental structure in the way of discipline and knowledge—is one of the problems of educational psychology. Without determining accurately the value of a given study by ascertaining what the pupil is to gain from it in the way of information that shall make clear his view of life or in the way of discipline that shall increase his strength to grapple with other problems, the educator is not in a condition to decide where it belongs in the course of study or how much time it demands. Indeed, it may be said that the want of such preliminary investigation has injured our educational system and is injuring it fully as much as all other causes combined. It is owing to the lack of psychological insight that we have so many changes in theories and systems, so much advocacy of one-sided extremes. Caprice and arbitrariness determine the choice of this or that study. The likes and dislikes of the teacher settle the course of the pupil; the whim of the parent is allowed to do the same thing.

We have just seen some of the psychological grounds for the large place classical study holds in the curriculum of our higher education. When Latin was the language of the learned, its paramount importance in education was not questioned. It is at first somewhat surprising to discover that it is still the language of the learned who speak English, for the reason that the vocabulary of science, of refined culture, and of abstract thought or generalization, is nearly all of Latin

derivation. But more important than this is the subtle spiritual gain derived from the increase of mental strength to analyze and combine the elements of human interests—still more important, the clearing up of the view of human life, the certainty of conviction obtained by the contemplation of human nature in its evolution through long intervals of time.

Our inquiry will lead us to investigate the twofold division of branches in the course of study into disciplinary and information-giving ones. We shall find both classes of studies in the elementary branches taught in common schools, and likewise in the more advanced studies of the high school and college. What psychology teaches us in regard to the elementary branches must be seen first. In its light we can then discuss the continuation of the same by the high school and college. We can also decide the extent to which the desire of discipline or information should lead us in selecting the branches to be pursued. The "elementary branches" alluded to are—

- I. Reading and writing—the mastery of letters.
- II. Arithmetic—the mastery of number.
- III. Geography—the mastery over place.
- IV. Grammar—the mastery over the word.
- V. History—the mastery over time.

In order to show the exhaustiveness with which these studies occupy the field, both subjectively and objectively, let us reclassify these studies under a new order.

The theoretic survey of the world (and intellectual education must undertake to give this) reaches into two realms—the world of matter or nature, the world of humanity or spirit. Theoretically considered, nature falls into inorganic or organic, and the sciences corresponding to these are physics and natural history. Physics (including chemistry) treats of the inorganic phases of nature, all of which may be treated mathematically or quantitatively. Natural history treats nature's organic phases: meteorology, geology, botany, zoology, and ethnology. Meteorology can not strictly be called organic, neither can geology. But the former is a circular movement, a process which moves in cycles. Moreover, it conditions all organic life through its cycles, and is therefore studied in connection with the latter in physical geography. Geology may be called the "Earth organism" (the Germans thus name it), and it treats of the organic process of the globe—using organic as more general than the term "living." Mathematics determines the abstract a priori laws of time and space. Time and space are the abstract logical conditions of nature. Mathematics is the general preliminary science of nature, which fixes and defines the conditions of nature in the abstract. Mathematics, physics, and (organics or) natural history form the theory of nature, the first and second (mathematics and physics) treating nature analytically or by elements; the third treating nature synthetically, as exhibited in organic forms or cyclical processes.

The world of humanity or spirit is distinguished from that of nature by means of this mark or characteristic: It everywhere is self-determined by a conscious purpose, while mere nature obeys laws unconsciously. Spirit is an end to itself. Nature's forms are ruled and swayed by external ends. By "external" ends I mean purposes, designs, or objects which are not consciously formed in thought—not self-proposed by the being whose end and aim they express. Man can form for himself a purpose. He can think his own final cause, and he alone can think out and discover the final cause of a merely natural being, an unconscious being.

The theory of man includes three phases: (1) Theory of man as a practical being, a will power, a moral being acting socially and politically, a history maker. (2) Theory of man as a theoretical being, a thinking power, a rational being, giving an account to itself of the world and itself—in short, a science maker. (3) Theory of man as an artist, or as a being that represents or portrays himself, embodies his ideal in real forms, makes the visible world into his own image—in short, as the producer of art and literature. (A fourth sphere—that of religion, the obverse of art, a realm wherein man strives to elevate himself above all visible forms to the absolute ideal through devotion and worship—will occur to the thoughtful classifier. It is so important that it belongs to an education apart from the rest, a sacred education to be found within the church, and not side by side with other branches in secular education.)

To tabulate our results, we find for the total theoretic survey of the world the following:

Nature	}	I. <i>Inorganic</i>	}	Mathematics. Physics (and chemistry).
		II. <i>Organic</i>		Natural history.*
Man or spirit.....	}	III. <i>Theoretical or thinking power.</i>	}	Logic, philosophy, philology.
		IV. <i>Practical or will power.</i>		Civil history, social and political sciences.
		V. <i>Æsthetic or art power</i>		Literature and art.

The two worlds—the macrocosm and the microcosm—here fall under five general divisions, as seen in the above general review.

Our elementary branches distribute according to this general survey as follows:

- I. Nature inorganic—arithmetic.
- II. Nature organic—geography.
- III. Man—theoretical—grammar.
- IV. Man—practical—history.
- V. Man—æsthetic—reading (literature).

* Including whatever is a circular movement or cyclical process; hence the stars, meteorological process, geological structure, the plant and animal.

That these branches lie at the basis, and open first and directly out of the mind upon the world, will be evident upon a little consideration. It will also become clear that these are the only branches which lie directly at the door of the uncultivated mind.

I. Arithmetic quantifies. By its mastery, man to a great degree obtains theoretical dominion over time and space, and by it he can formulate the entire inorganic world. The Pythagoreans valued its disciplinary significance in that it is the first elevation above what is merely sensuous—an elevation through abstraction from particular quality. The mastery over number opens the window of the mind upon the world of quantity, giving one power to a certain extent to recognize and fix theoretically all quantity. From this study branch out the higher mathematics and physics.

II. Geography localizes. By its mastery man comes to realize his spatial relation to the rest of the world. As civilized man the supply of his wants of food, clothing, and shelter is a perpetual geographical process realized through the division of labor and commercial exchange. By this geographical relation each individual becomes participant in the entire production of the globe and in turn contributes to all. In geography the child learns this fact of interdependence and community, which is, even when known particularly and not generalized by him, of the greatest possible importance as a category in his thinking or view of the world. It is the second window of the mind. Through it he learns the organic world and its relations to the human race and to himself individually. Climate (meteorology), surface (geology), plants (botany), animals (zoology), man (ethnology, sociology, political and religious forms to some extent) are the topics to which he is introduced, and these are general categories or "tools of thought" whose mastery give him great vantage ground; think of him as not possessed of these distinctions in his mind and see what imbecility in dealing with the world would result. Shut up the geographical window of the soul and what darkness ensues! From this study branch out in higher education the special organic sciences indicated in the parentheses above used.

III. Grammar fixes and defines speech. By its mastery man obtains the first mastery over his mind as an instrument. To grammar belong reading and writing considered as orthography. And grammar in this aspect is the first study in school and the most powerful lever for all development of what is human. It is the key to all that is spiritual. By the arts of reading and writing or orthography man issues forth from the circumscribed life of the senses in which he is confined to his own immediate experience and to that of his small circle of acquaintances. He issues forth into the world revealed through the printed page—a world extending as wide as the human race and deep into time, as deep as the earliest hieroglyphics will lead him. The library opens to him and he can now use all the senses of all mankind, for their

observations have been reported; he can use their thoughts and feelings, for these also have been reported. His own five senses, used unaided, would take him but little way in beholding the spectacle of the universe. But by means of this auxiliary of orthography he can supplement his finite being by the human race and he thereby comes into an infinite heritage. Grammar as etymology and syntax initiates the pupil into the general forms of thought itself. Thus there branch out logic, psychology, and metaphysics, as well as the various phases of philosophy. Has it not been said indeed that the father of logic discovered its forms through grammar. Under a thin veil the pupil deals with pure thought when he studies syntax.

IV. History deals with human progress and process. By its mastery the child learns to recognize his presuppositions—his existence as continued into the past. The precedent conditions are a part and parcel of his existence, just as the distant spatial conditions belong to his aggregate social conditions, as he learns in geography. As family and a nation, his existence is spread out in time; as a social being, it is spread out in space. History opens the fourth important window of the soul. It looks upon deeds and events, chiefly the former. Man, as a will power, unfolds his nature in successive deeds, and thence in time, and hence in history. From history branch out the practical or will sciences—jurisprudence, politics, and sociology, in the latter sharing with descriptive geography the same theme.

V. Reading, when carried beyond orthography, wherein it is a department of grammar, includes the mastery of literature, which is the highest realm of æsthetics. Poetry, the drama, and prose fiction lead into all art realms. Art portrays, in one shape or another, the collisions which the individual encounters in solving the problem of life; the collision with the ethical and moral and religious, and the collision of the ethical against the moral and religious, as when the edict of the state and moral or religious conviction collide; or, finally, when the inclination of the individual (love, hate, etc.), collides with fate or circumstances.

These five elementary branches are exhaustive, so far as including an initiation into every phase of nature and spirit. No one would leave out any of these from the common school curriculum. It remains, therefore, for us, in carrying up this education to its higher spheres, to retain its exhaustiveness, and not suffer any sphere to drop away unrepresented. In the high school course, these five departments are continued and reinforced in the following manner:

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|----------------------|---|--------------------------------|
| I. Inorganic nature. | { | (a) Algebra. |
| | | (b) Geometry and trigonometry. |
| | | (c) Analytical geometry. |
| | | (d) Natural philosophy. |
| | | (e) Chemistry. |

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|------------------------|---|---------------------------------------------------|
| | | { (a) Physical geography. |
| | | { (b) Astronomy. |
| II. Organic nature.. | { | (c) Botany. |
| | | (d) Physiology. |
| | | (e) Zoology. |
| III. Theoretical man.. | { | (a) Philology, Latin and Greek, French or German. |
| | | (b) Mental and moral philosophy. |
| IV. Practical man.... | { | (a) Universal history. |
| | | (b) Constitution of United States. |
| V. Æsthetical man.. | { | (a) History of English literature. |
| | | (b) Shakespeare (or some special author). |
| | | (c) Rhetoricals (declamation and composition). |
| | | (d) Drawing. |

With so extended a curriculum for the high school, each one of the five departments of human culture being filled with what belongs to it most directly, it is impossible in its four years' course to accomplish as much in the departments of Latin and Greek as is required of those preparatory schools which concentrate their whole energies on the classics even to the neglect of higher mathematics. But in the mathematics greater advance will be made than is required for admission to college at present. So in natural sciences the general compends—(1) natural philosophy, including an outline of the sciences of inorganic nature; (2) physical geography, including an outline of the sciences of organic nature and of cyclical nature—these general compends will be mastered, and with them the general technics and the general ideas of all natural science. Some special sciences, like botany, zoology, or physiology, may be studied for the further investigation of methods. English literature, in its history and examples, will be studied to good purpose, and the special study of Shakespeare, the greatest of literary men, will serve to give the pupil insight into the nature of artistic work. History of the United States is studied in the district school. The outline of universal history is completed in the high school. The Constitution of the United States is the best discipline for the initiation of the pupil into the legal style and into the constitutional form for political organisms. The triune form, which there has its best example, is the type of state organisms, of municipal organisms, and to some extent even of corporate organisms. In a country where every person, without exception, is necessarily brought into relation with various forms of its realization, and is likely to be called upon to assist in organizing such, it is highly important that all should be taught thoroughly this archetype of our governmental forms. Accordingly, in the district schools, he studies its outlines with special reference to the coordination of its three separate functions. In the high school he studies it in its details and practical functions, and with it studies also parliamentary law. Some time is given to the outlines of philosophy, moral and mental, and their history, in the high school.

What is the course of study for the succeeding four years which the college and university occupy? The high school furnishes its pupils with less preparation in the classics, and considerably more preparation in all other branches. The college course that should adapt itself to the public school system must demand less preparation in the classics, but require one modern language; about the same in mathematics (i. e., all of algebra, geometry, and trigonometry); more in natural science, history, and literature. It would then be able to begin mathematics, in freshman year, with analytical geometry, and require all to take the differential and integral calculus in the regular course, leaving to the list of elective studies the remaining mathematics. In natural science there should be a continuation of the study of inorganic nature by special branches, and a more thorough application of mathematics to the same; organic nature also should be taught by special branches. The ordinary course in Greek and Latin for two years must be strictly followed, and, after that, made elective; comparative philology should be made a required study for a year. Logic, history of speculative philosophy, and the thorough study of the system of one of the greatest philosophers, together with a criticism of the latest philosophic movements of the day should belong to the required course, leaving further studies of this class to the elective list. Lectures on the philosophy of history, of literature, art, science, etc., should begin early and continue throughout the course—not frequently, but at intervals. The practice of crowding into the senior year all of this matter does not find the students prepared by growth for philosophical generalization, nor acquainted with its technique. Advance views can not be communicated or acquired unless the basis of quiet assimilation has been prepared. Time is indispensable for the growth of the deep thinker. To use two or three years of the college course in learning Latin, Greek, and mathematics without attempting any generalization of the results does not prepare the pupil to enter into such generalizations, but rather confirms in him a doubt as to their possibility. No wonder that so many students graduate unable to refute the shallow sophisms with which the air is filled by thinkers of the second stage of culture in thought, when they ought to have mastered the third stage of thinking in college, or at least to have learned that there is such a stage and that all the greatest names in philosophy, from Aristotle down, have worked in it, and, more than all this, that on the third stage alone are found all positive justifications of institutions and all insight into their nature. The study of literature, art, social science, politics, law, ethnology, philology, universal history, and psychology should be conducted through lectures on their philosophy, and accompanied by recitation work in special provinces for the sake of illustration of practical method in investigation.

How much should be elective in the college course and what should be required of all? Those studies which have a direct bearing on the

discipline and insight of the scholar should not be placed on the list of electives. At least, if it is necessary to establish the institution on a basis that permits one to choose any or all of the branches, it is very important to include all the branches essential to discipline and insight in the list required for a degree. I am in favor of excluding elective studies from the high school altogether. The "classical course," so called, is adopted in order to meet the requirements of the college in preparatory work. A "general course" is made out side by side with the "classical" course, and neither course is in harmony with the public school system nor with sound psychological principles.

Those who are to "finish their education" with the high school course are the very ones who need a share of classical study. Classical study is not merely a preparation for higher study, as Latin might have been when it was studied in order to learn how to read the "language of the learned," who wrote all their books in it. If a pupil were to remain only one year in the high school he ought, by all means, to study Latin during that time; it will come the nearest of all his studies to endowing him with a new faculty—with a new power of insight.

In the district school course each of the branches named is essential to the culture of the child, and it does not matter whether his course is to be one year or three years or ten years or twenty years. If he attends one year he learns to read and write and count—nothing else so important as these arts to him, for they open the doors of the spiritual universe to him and the keys can never be taken away from him. In three years he perfects himself in reading, writing, the elements of arithmetic, and learns the outlines of geography. What other branch can be compared with one of these at this period? Botany? Drawing? What is botany to the boy who can not read or write or count, or who knows not his relation to the earth on which he lives? What is the art of drawing compared with the art of writing? The degree of universality is the test to apply in settling such questions. But botany and drawing need not be wholly banished from even the primary school. The branches being divided into disciplinary, insight giving, information giving, and technical-skill giving, the two former are to be regarded as essentials, and perhaps four-fifths of the time in school devoted to them; the latter deserve their place, and if one-fifth of the time be given them they reenforce their place, and in St. Louis natural science is taught in oral lessons one hour a week—the lesson being given on Wednesday afternoon. The pupils are not required to prepare their lessons; they are only to listen attentively and participate actively when called upon by the teacher for their experience. They are to be interested, and no constraint is to be exercised except to secure respectful attention. I have found that the information obtained in these lessons makes its appearance especially in the geography lessons. The one lesson of the week that is devoid of constraint and contains a range of topics and explanations suited to gratify childish curi-

osity I believe to be very valuable—at least far more valuable than the same time devoted to arithmetic or reading. I can not say that two hours per week used in this way would be as valuable as one hour, while its inroads on the other studies would be felt to their injury. Confined to one lesson, it aids the others by reaction, while the information gradually amassed is of immediate value and of still greater indirect value in preparing the mind for the exhaustive comprehension of nature in the high school or college. It is the active feeling and phantasy of the child that does most; his senses and reflection are roused by those unconscious movements of his soul. Hence, what he can tell directly about the subjects of his lessons may not be very much or very coherent, yet his spirit of investigation and the conviction that all natural phenomena can be explained is of great consequence to his after life. Drawing, again, is the only study tending directly to cultivate the hand and eye—a sort of universal skill-developing study. A short time each day can be spent on drawing better than not, for it is a rest from the discipline studies.

In the high school and in the college the course of study should still be carried on in certain studies with a view to discipline the mind severely, and in others to give the first initiatory course, laying the foundation for what must grow several years before the teacher can venture to unfold the highest significance of it. It must be allowed to “soak” for its time. The philosophy of history, art, and literature can not be taught at once. Perhaps the first course is fortunate if it leaves a conscious conviction in the mind of the pupil that it is possible to have a philosophy of such things, the pupil not being able to give any rational account as yet of any piece of such philosophy. The descriptive phases of the sciences can be learned early. We have three cyclical movements in our natural-science course, each traversing the same round and covering the whole field, gradually increasing in minuteness and scientific precision. The course in the high school ought to prove more interesting and fruitful for the previous preparation, and it probably will when the present pupils in our lower grades reach that school.

Is not the highest problem of education how to liberate the genius of the pupil? If genius can not be created or developed it certainly needs liberation. It seems to me that a course of study which plants first in the feeling and phantasy and then gradually brings out through the reflection and reason the ideas of its contents will come nearest to the liberation of genius.

In conclusion I will present a diagram showing the order of unfolding the main topics in the course of study in the district schools, high schools, and colleges:

General course of study.

Class of school.	Topics relating to nature.		Topics relating to man, or "The humanities."		
	Inorganic.	Organic or cyclic.	Theoretical. (Intellect.)	Practical. (Will.)	Æsthetic. (Feeling and phantasy.)
District or "common."	Arithmetic. Oral lessons in natural philosophy.	Geography. Oral lessons in natural history.	Grammar. (Reading, writing, parsing, and analyzing.)	History (of United States).	Reading selections from English and American literature. Drawing.
High school.	Algebra. Geometry. Plane trigonometry. Analytical geometry. Natural philosophy. Chemistry.	Physical geography. Astronomy (descriptive). Botany or zoology. Physiology.	Latin. Greek. French or German. Mental and moral philosophy.	History (Universal). Constitution of the United States.	History of English literature. Shakespeare or some standard author (one or more whole works read). Rhetoricals (declamation and composition). Drawing.
College or university.	Analytical geometry. Spherical trigonometry. Differential and integral calculus. Physics. Chemistry. Astronomy. (Etc., elective.)	Anatomy and physiology. Botany. Zoology. Meteorology. Geology. Ethnology. (Etc., elective.)	Latin. Greek. French or German. Comparative philology. Logic. History of philosophy. Plato or Aristotle. Kant or Hegel.	Philosophy of History. Political economy and sociology. Civil and common law. Constitutional history. Natural theology and philosophy of religion.	Philosophy of art. History of literature. Rhetoric. The great masters compared in some of their greatest works: Homer, Sophocles, Dante, Shakespeare, Goethe, Phidias, Praxiteles, Skopas, Michael Angelo, Raphael, Mozart, Beethoven, etc.

REMARK.—It is understood that many topics named in the above can be replaced by other topics, which have the same psychological rank as studies.