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Biography, "aims VIII (pp 176-209)"

WARE MC14

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~~What, then,~~ During the nearly fifty years of his magisterial usefulness, ~~were~~ the aims that Professor Ware had in view and towards which he strove with untiring zest and interest *even as follows -*

First, to teach Architecture, in all its varied branches, with all the needful thoroughness that a patient and intelligent ingenuity could devise, seeking always to confirm or qualify his own opinion of the absolute value of the methods adopted by a constant consultation with the better educated architects in practice, and a comparison of notes with his own assistants and with the conductors of similar Architectural Schools. He was no believer in one-man power.

Secondly, his next concern was make sure that out of the several possible ways of imparting the needful instruction those methods should be adopted that *best* would minimize the narrowing effects of a purely technical training. He was ever on the alert to devise means of imparting instruction in a way to stimulate the mental curiosity of his students, encouraging them to a wider and more liberal cultivation of their intellectual powers. It shocked him to find in any of his *them* pupils a mental sluggishness and an unwillingness to advance, so far as brain-work was concerned, beyond the High-School standard, on the plea that the time had now come when they must devote their time and energy to the training of their hands and fingers. ^HThis belief in the everyday value of "liberal culture" was profound, and the phrase

in his eyes ^{was} no unmeaning shibboleth.

Thirdly, conscious at once of the advantages and disadvantages ^{of} the somewhat accidental alliance between a Department devoted to a Fine Art and Departments engaged in the teaching of Applied Science, he consistently and constantly strove to take advantage of the former while he spent even more energy on devising means ^{to} minimize ^{ing} the latter. To this end he sought to avoid the waste caused by obliging Architectural students to follow in full the courses in Mathematics, Physics and Mechanics suitable for Engineering students, and ^{to} substitute for them simplified courses suited to the needs of architects and conducted by his own men. His very full explanation on this head furnished, at request, to one of the Trustees of Columbia University, is interesting enough to quote at length.

Fourthly, the considerable body of Special Students who at the Massachusetts Institute of Technology were found to be a somewhat disturbing element, hardly serious in their attitude, seeming rather free to come and free to go at will, he sought to exchange for a more promising more serious type of Special Student through the simple process of regulating their admission to and stay in the School by raising the standard and using a greater watchfulness and strictness. The following extracts from divers reports show how this one-time detrimental in Boston were converted into benefactors in New York.

130 East 27th Street,

Jan, 11th, 1902.

My dear Mr. Mitchell:

You were asking last night how it had happened that the School of Architecture was so independent in respect of Mathematics and Engineering, and what was the reason and justification for so exceptional and even anomalous a state of things.

The ultimate reason is to be found in the exceptional character of the work, which differs in kind from that done in the other Schools of Applied Science. The anomaly lies in what is primarily a School of Art being reckoned among the Schools of applied science, at all, Abroad, schools of Architecture are associated with schools of Painting and Sculpture, or of Decorative Art, and it was only in the lack of a more congenial field that some of those in this country were planted in Scientific Schools. Those indeed at Cornell University, Syracuse University, and the University of Pennsylvania, have been organized as part of the Academic instruction, and the new Department of Architecture at Cambridge, though placed under the Faculty of the Lawrence Scientific School, is equally related to the work of the College. But the earliest of the American Schools, that of the Institute of Technology in Boston and also, I believe, that of the University of Illinois, are, like our own, established in schools of Science. Architectural schools were needed, and the simplest way to start them was to take advantage of the courses in Physics, Chemistry, Geology, Mathematics, and Civil Engineering already established. A single instructor in Architecture was all that was required to set the new branch of study upon its feet.

"But all these schools have found, what we were ourselves quick to discover, that the conditions which were so favorable to the starting of a School of Architecture were unfavorable to its growth and development. Schools of Architecture are first of all schools of Art, and in the somewhat sandy soil suitable to schools of Applied Science, they were in danger, like the seed sown among the rocks, of springing up quickly indeed, but of presently withering away because they had no richness of earth. All these schools accordingly, have from their inception endeavored to differentiate their work from that of the scientific departments, adding more humane studies, such as History, Aesthetics, and the languages, including our own, and teaching even scientific subjects in ways suited to their special needs. In this endeavor some of these schools have indeed met with but indifferent success. Some of my correspondents are still groaning, as they say, under the "iron heel of mathematics," and there is not one of them who does not look with envy, and some of them with feelings akin to despair, on the complete freedom of action which has here been vouchsafed to us. The organization of our own school is looked upon by our friends and rivals as something almost ideal, and if we are not ourselves altogether content with it, if we ourselves look for modifications which shall enable us, even more completely than we do now, to profit by our exceptionally favorable environment, the changes we look forward to are not of the nature of any backward step which should bring us into closer organic relations with our immediate neighbors. What we would hope for is a still greater differentiation from them and a still more complete development of our own individuality.

"A chief part of our time and thought and interest, and those of our students, is of course given to matters as far removed as possible from the

natural sciences, and the spirit and methods in which our studies are conducted have little in common with the atmosphere of a scientific school. The fifteen or twenty hours a week which in the other Departments are given to laboratory work or to Mechanical Drawing, our men give to artistic exercises with pencil or brush, in India Ink or in color, and to the study of Design in plan, elevation or detail, using the methods of free-hand drawing with mathematical instruments, and the methods of geometrical drawing with the free hand. These combinations are peculiar to Architectural draughtsmanship and are as characteristically different from those of schools of Engineering on the one hand as they are from those practiced in the schools of Drawing and Painting on the other.

"Of the sixty hours a week which the four classes devote to recitations and lectures, only a dozen are given to the scientific subjects, such as Mathematics, Engineering and Descriptive Geometry, the rest being occupied with the History of Architecture and of Ornament and with the Decorative Arts, Aesthetics, Criticism, Graphics, Modelling, and French and German Architectural Literature, and with the highly specialized subjects of Specifications and Building Materials.

"These indispensable topics leave little time for the mathematical and engineering work proper to a school of science and necessary in a School of Architecture, so little that it needs to be administered in ways specially suited to these limitations. But there are more important considerations than briefness of time which make it necessary for our men to pursue these subjects in a different way from that in which they are taken up in the other departments. The theoretical instruction in the schools of Civil, Mechanical and Mining Engineering, necessarily embraces a wide range, for practical work may presently bring their students into unfamiliar portions

of a most extensive field, where if they have not even a school-book knowledge of the subject they will be unable to attack the practical problems that come up. It is most essential that they should remember everything they have studied, it is not even necessary that they should have thoroughly understood it when at school. If they have once gone over the ground, however inadequately, it will suffice. These men spend their lives in the prosecution of applied science and all that schools need do for them is to start them well on the road.

"The Architect's relation to these studies is an entirely different one. In the first place only a small part of the field at all concerns him, that which relates to the statics of buildings. The theory and practice of Dynamics, Hydraulics, Enginery, Steam and Electricity are to him merely matters of intellectual curiosity. It is no more important for him than for any well-educated man thoroughly to understand them. Unlike the Engineer the Architect need extend his studies in Mathematics and Engineering over only an extremely limited field. But within that field he needs to be upon perfectly familiar terms with them, for he will have no chance of increasing his acquaintance with them after he leaves school. His time and attention and interest will be occupied by his own special work. Unlike the Engineer he will have little opportunity to keep up his acquaintance with them, much less to extend it. If he is ever to make any use of them it will be only by chance, at long intervals, and unless he knows what he knows of these matters by heart, unless he knows them so well that he can never forget them, he might as well, for practical purposes, not know them at all.

"Hence both in Mathematics and in Engineering, we follow quite a different method in these subjects from that pursued by our neighbors.

"In Mathematics our First Year men have but three hours a week, but in that time they become during the first term perfectly familiar with the small

part of Analytical Geometry which it concerns them to know. In the second half of the year they give these three hours a week to the Differential and Integral Calculus. This is much less time than these classes used to give to these subjects when they took them along with the College students, and of course they cover less ground. But they do the work with singular thoroughness and understanding of the subject, and this is helped by their doing a great amount of illustrative graphical work in the constructing of curves, a work which naturally comes easy to them, from their skill in drawing.

"In the Second year two hours a week are given to completing the work in the Integral Calculus and to the study of theoretical Mechanics. But by adjusting this work to the special requirements of the course in Applied Mechanics or Architectural Engineering which is to follow it in the third year, this small amount of time is made adequate to the purpose. It is by thus coordinating each branch of study with every other that we are able to get over the ground we have to cover in the limited time at our disposal. But this coordination would be impracticable unless we had all these branches in our own hands.

"For a long time after we had the elementary Mathematics in our own hands our men took their Engineering along with Mr. Trowbridge's classes. But just before he died Mr. Trowbridge came to me saying that the Architectural contingent had become so large that he must needs put my men into a division by themselves and get a new Tutor for them. In this case he proposed that I should myself provide the additional instructor and transfer the work in Architectural Engineering to my own Department. He said that neither he nor his men knew anything about Architecture and that they were entirely unfamiliar with the practical engineering problems which architectural construction presented. During the ten years, since that time the

the work has been carried on, upon strictly Architectural lines, in accordance with the general methods in use in the Section of Architecture in the 'École des Beaux' Arts, but with illustrations and examples derived from our own professional practice. This occupies five hours a week and is carried on in connection with the instruction in Building Materials and Specifications, which occupy four hours a week. Besides these lectures four or five hours a week are spent by the class in the draughting-room over practical exercises, illustrating both courses. These examples are largely taken from the current exercises in Design. This combination of theoretical and practical construction works admirably. But this again it would be impracticable to carry on if the instruction in Engineering were not in our own hands. Although all this is meant to be but a minimum course, designed to meet the needs of Architects who do not intend to do their own Engineering, it has proved more valuable than we expected, or indeed intended. I find that our men, whether in private offices or in the Department of Public Works, prove competent to do all the Engineering asked of them.

The Fourth Year offers two elective courses. It is optional for the students to pursue a course of advanced Architectural Design, or a course of advanced Architectural Engineering. In the course in Design the whole Day, the whole week indeed, is given up to drawing and design, with an almost total omission of lectures and recitations. This is a state of things unthinkable in a Scientific School, but well calculated to promote the serious and continuous personal endeavor which characterizes a School of Art.

The alternative Fourth Year course in advanced Architectural Engineering is adapted to the needs of the men who propose to adopt Architectural Engineering as a profession. These men, though studying under our directions and advice, do ^{the} chief part of their work in the School of Civil Engineering. Our

independent position does not accordingly deprive our men of any service which that Department is better able to afford them than we are.

But though these present arrangements seem to be fully justified by their results, they are not entirely satisfactory, and we hope, presently to require, for admission to the School, some of the elementary Architectural work which now occupies our first year. But the time gained in this way we should devote not to more Mathematics, but to advanced studies in Physics, Chemistry and Electricity. This work, also would have to be highly specialized in order to meet our special needs, and so as to come into coordination and cooperation with the rest of our work. We could hardly expect to find courses in these subjects already established that would exactly fit our requirements. But it would probably be easy for each of these departments to delegate an assistant for this service who should closely follow a prescribed programme, and would give our men a maximum of pertinent information in a minimum number of lectures. Laboratory work in these subjects we could not expect to find time for.

But an equally desirable expansion of our work would lie in the direction not of more Science, which we can manage to get along without, but of more Art, which it is less easy to secure. Architects should be made familiar with the history and theory of Sculpture and Painting and with the Decorative Arts which illustrate the same principles of design that come into play in Architectural compositions. Moreover, as I pointed out to Mr, Barnard a dozen years ago, and to some of the Trustees who at that time showed and interest in the subject, our nearest of kin are neither the men of science nor the painters and Sculptors, but the craftsmen, the practitioners, of the other arts and Designs. The field of monumental decoration, which lies between Architecture on the one hand and Painting and Sculpture on the

other, is now almost entirely unoccupied. There is no school which undertakes to give to mural-painters or to Architectural sculptors the training they need in order to fashion their work in accordance with the requirements of the spaces it is to fill. We are ourselves in a favorable position to meet this want and we can anticipate, when we are ready to do so, the hearty cooperation not only of the Academy of Design and of the Art Student's League, but of the whole body of the younger artists, both in sculpture and in painting. Some of these have already been knocking at our door in search of training which the increasing employment of mural painting and Architectural sculpture requires, and which nobody else is in so good a position to afford.

"All this seems to illustrate Mr. Spencer's maxim that true progress consists in a change from a homogeneous organization to a heterogeneous one."

Fourthly, the considerable body of Special Students, who at the Massachusetts Institute of Technology were found to be a somewhat disturbing element, hardly serious in their attitude, seeming rather free to come and free to go at will, he sought to exchange for a more promising, more serious type of Special Student, through the simple process of regulating their admission to and stay in the School by raising the standard and using a greater watchfulness and strictness. The following extracts from divers reports show how ^{else} ~~this~~ one-time detrimental in Boston were converted into benefactors in New York.

(Jan. 30, '93)

[Special Students. Report on]

"The announcement of our University Course in History and Design, in the Spring of 1891, brought in last year, four students. Three of these had just graduated in this Department, and they received the degree of Master of Arts in due course at the last Commencement. The fourth was a Special Student who having spent three or four years in an Architect's office was considered qualified to pursue these studies.

"The success of his experiment was so marked, and the advantage both to the School and to the profession of opening our instruction to mature men of approved skill and capacity was so great that a lively interest was excited among this class of young men, and this year a dozen Special Students have presented themselves under these conditions, nine in the University Course of History and Design, three in the University Course of Construction and Practice. Work has been assigned to each according to his choice and his previous attainments, and they have largely profited by the permission given them to occupy such time as they could command in attending other exercises within the Department. They have, as might have been expected, shown great diligence and made rapid progress. The presence in the School of so large a body of men who have relinquished office-work in order to learn what offices cannot teach, cannot fail to give a more serious and manly tone to our whole Society.

"Under the title of Special Students in the University Course in History and Design, we have this year ventured to admit, also, three or four graduates of Colleges or Scientific Schools who have had no special architectural training but whose general education and personal

culture seem to qualify them to pursue it, thus meeting the requirements of the statutes. There has been no reason to regret this interpretation of the rules, and it will probably be best to follow this precedent, with discretion, in the future. These men have been among our most satisfactory students."

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MEMORANDUM, IN REGARD TO

[Report on SPECIAL STUDENTS.

April, 1893.]

"Of the four men who two years ago were admitted to the Course in Architecture as "Special Students," by vote of the Trustees, one gave only an interrupted attendance, his private affairs proving more exacting than he had expected. A second, a Civil and Sanitary Engineer, worked diligently through the year gaining just what he desired. The other two are still in the School. One of them, a physician, had already in the College of Physicians ^{and} Surgeons pursued the studies in Chemistry, Physics ^{and} Hygiene taken by our men, and in the two years since May, 1891 has, by working diligently through the two summer vacations, managed to do all the other work of the four years' course with credit and distinction. At the end of the present term he will have done all the work of the course and passed all the required examinations, and I shall ask the Faculty to recommend him to the Trustees for a degree, along with the men of the Fourth Year class with whom he has associated.

"The fourth ^{man} has in like manner distinguished himself, constantly standing first in the work he has undertaken. He has now made up all the work of the first three years of the course and proposes to join the Fourth Year class in October, as a Regular Student and to take his degree with the class in the following June.

"These results amply justify the course of the Trustees in granting to these men exceptional opportunities.

"The establishment of University Courses in Architecture, in May, 1891, opened the way for "Special Students" of an advanced type, graduates of Colleges or of Scientific Schools, or other persons qualified to pursue the prescribed University work in History, Design, Scientific Construction ~~and~~ and Practice. Three students presented themselves in October, 1891, for the

and

regular University Course in History & Design and took the degree of Master of Arts last June. Two others came as Special Students in the same course. One of them fell ill, and had to leave, but the other remained through the year, much to his satisfaction and to our own. Though not a College graduate he had had four or five years' experience in office-work and was fully qualified to pursue these advanced studies. This year a dozen others, besides the young man whose ill health interrupted his studies last year, have been received on the same footing, and three others have come as Special Students in the University Course in Construction and Practice now first organized. Of these sixteen men seven are college graduates, the others with one exception have had from three to five years training in the practical work of the profession.

"As was to be expected, these sixteen men have, without an exception, been serious and diligent workers. Most of them, whatever their practical accomplishments, proved to be extremely ⁿuniformed in the the things taught to our classes. But these were just the things they had felt the need of and had come to us to get, and they have made rapid progress in them, making the most of the privilege accorded them of occupying time not required for their special studies with anything else taught in the Department which they could take to advantage. Their own special work has varied, according to their special attainments.

"The provision that such students may attend the school for brief periods, of two months at a time, was intended to meet the case of skilful draughtsmen, temporarily unemployed, whose presence in our classes would be equally advantageous to them and to us. It is too soon to say whether any number of young men are likely to take advantage of this privilege. But as it occasions no special inconvenience and may be the means of bringing in a class of men whom it is very desirable to have in the School and to whom the School will be of unmistakeable benefit, it will be well to give this experiment a longer trial. ~~But the fee for each period of two months, which has~~

been set at twenty dollars seems too small, and in the draft of the new Circular of Attendance is set at thirty dollars, subject to the approval of the Trustees.

"The presence in the Department of older men who have already had a practical training in the profession, but have found that a practical training failed to give them what they most need to know, cannot fail to have a salutary effect upon the tone of the school, and their attendance is to be encouraged quite as much on our account as on their own. It is a recognition of the value of our work of the most practical and authoritative kind. Our men are apt to think that their historical and theoretical studies, however valuable and interesting in point of personal culture, are of but secondary importance compared with the lessons of practical life, to which they are impatiently looking forward. It is a wholesome corrective of these views to find men who have learned all that an office can teach turning the School to get what they find after all to be most essential.

"Five of them came from the city, four more from other parts of the State, two from Virginia, two from Ohio, and one each from Connecticut, Vermont, Illinois, Wisconsin & Maryland."

May 1, 1893

(v. April 1893)

[REPORT ON SPECIAL STUDENTS IN THE 1898]

SCHOOL OF ARCHITECTURE.

Feb. 15, 1898

"The scheme adopted in 1891 by which draughtsmen of three or four years' experience were admitted as University or Post Graduate Students in the Department of Architecture, on the same footing as graduates of Colleges and Scientific Schools, should I think now be modified ⁱⁿ ~~as~~ the light of these six years' experience.

"In the main, the scheme has worked well. Besides eighteen College Graduates, sixty-six professional draughtsmen have been in attendance for periods varying from two months to three years, most of them spending at least a year in the School, and nearly thirty staying two years. Six have finally joined the regular fourth-year class and taken their degree in due course. These Special Students have, for the most part, proved to be men of ability and experience, and I am convinced, as I took occasion to say in a paper on the subject published last summer in the School of Mines Quarterly, that it is a sound policy to encourage the attendance of such men. Their presence palpably raises the character of the School, and it is only in such students that we can hope to find the maturity of character and the professional skill and experience which are needed to enable men really to profit by the exceptional advantages of our position. At present the museums and libraries, and the buildings, public and private, by which we are surrounded, and which themselves constitute an Architectural Museum of priceless value, are of comparatively little service. Most of our students are not old enough nor far enough advanced to study them profitably,

"Moreover while most of our regular students come from this city and its immediate neighborhood, as is the case in the College and in the

other professional schools, sixty per cent of our Special Students come from other States, mostly in the West and South, as against thirty-three per cent in the Medical School, twenty per cent in the Law School, eleven per cent in the School of Applied Science, and eight per cent in the College. It is plain that our best chance of gathering students from the country at large is by encouraging the attendance of this class of men.

In some respects, however, things have not worked just as was expected. I had supposed that men of this maturity and experience would be able to take part without difficulty in the University Courses in History and Design, which are identical with the work of the Fourth Year, which is also of a Post-Graduate character. But though they have all taken part in the Historical studies, and have done so with profit, not a single man has presented himself, whatever his age and experience, who has been ready for our fourth-year work in Design. They have had to begin with the Third or Second year work, and even that, in many cases, only after some weeks' practice in the work of the First year.

As it has thus become plain that the country does not, at present, furnish students for really post-graduate work, so that the present requirements can, accordingly, be only half met, I would propose that these students be hereafter received not as University Students but on the footing of the Special Students who, as the Circular of Information says, may be received for reasons of weight, and that three or four years' of professional experience shall be held to be a sufficiently weighty reason in each case.

The Statutes require that such students shall pay Fifteen dollars a year for every hour during the week spent in the lecture or recitation rooms, and twenty-five dollars for the use of the Drawing Academy, with the provision

that the total fee for men not candidates for a degree shall not exceed One hundred and fifty dollars for any one year.

The provision that our Special Students may attend for briefer periods than one term, coming for two months at a time, has proved a beneficial one and should be continued. The position of a professional draughtsman at the beginning of his career is a precarious one, depending upon the condition of business, and the less well trained among them are constantly liable to find themselves with several months of enforced leisure on their hands. It is a great advantage to such men, and it is no inconvenience to us, for them to join our classes in Design for two or four months at a time, taking up the current problems and doing such other work as they may be qualified to take part in, thus turning their misfortune to serious profit.

If the fee for such period of two months were set at six dollars for the use of the drawing academy and four dollars for each hour a week of recitation or lectures, it would be conformable to the rules established for Special Students in the other courses.

This arrangement would preserve all the advantages of the present scheme while avoiding its more exceptional features, and would conform to the general rule laid down for Special Students in the other departments except in authorizing briefer periods of attendance and in defining the qualifications for admission.

It is an interesting circumstance, as I have elsewhere pointed out, that the existence of these men in the school side by side with the regular students enables us to try the experiment of conducting, along with our present curriculum, a freer system of study. These special students, like

the students in a European University, study whatever subjects they wish in whatever order they are prepared to take them up, the only requirement being that they shall be qualified to pursue them to advantage and shall take the regular examinations at the conclusion of the study. The two methods go on harmoniously together and each ~~is~~ ^{is} contributing in a somewhat different field towards the growth and development of our undertakings.

Of the fourteen Special Students now in the Department, four are taking twelve hours a week, besides the time spent in the Drawing Academy, and the others, eleven, ten, nine, eight and seven, as against fourteen hours taken by the Regular Students."

Feb, 15, 1898.

These men, under the regulations now proposed, would pay, for a whole year, \$200. \$184. \$168. \$152. \$138., respectively, instead of \$120. as at present,

(1901) Columbia) [From Report, 1901]

"It is now twenty years since the School was founded, the first class graduating in 1884. There have been altogether 203 graduates and 83 of whom are now in independent practice of their profession. About 200 other have been in the School for a shorter time, of whom, 80 have been Special Students. These are not young men, such as sometimes go by this name, who take partial work because they are too ignorant to pass the extreme examinations, but men of such ages and experience that they can be admitted upon the strength of their professional record to take such studies as they are found qualified to pursue."

Finally, looking solely to the best and permanent interest of the architectural profession and advancement of the Art of Architecture, he aimed to bring about the establishment somewhere -- preferably at New York or Cambridge -- of a Post-graduate School of Architecture, whose primacy in the educational field should be acknowledged by the other Schools which, without slackening in their own efforts at advancement, should be content to act as feeders to such higher institution. The Post-graduate School in its turn would be able to advance its work to higher and higher reaches, according as it found itself justified in raising the standard of admission, because of gains already made by some, or all, of these feeding schools.

Milton, August 29th, 1897.

My Dear Aldrich:-

"I have been thinking that you must be at home by this time and have only been waiting for authentic information to drop you a line, and arrange for your visit. Though this has unhappily become impossible I hope that somehow, somewhere, I may be able to see you. It is not only to see you and, I should hope, see what you have been doing, but I should like to have a quiet hour to talk over with you the things that are occupying my mind and upon which your experience and observation may perhaps throw some light. As the work of the School grows, in stature and in favor, it becomes more difficult instead of easier. The obvious and superficial difficulties disappear only to reveal the underlying problems. As obstacles are removed, so that one is free to do what he chooses the responsibility of the choice becomes more oppressive.

"Meanwhile we have done not so much what we would as what we could, and have thus fallen into ways which have at least the advantage of being adjusted to the situation, of being native and not borrowed. After a dozen years we find ourselves in possession of a body of customs and traditions of our own. These have grown up without conscious theorizing or doctrinaire purpose. When we come to examine them now, to criticize and improve them, and see how far they can be justified to ourselves and others, we find naturally that we have really been pursuing tolerably consistent lines of thought ^{which} are somewhat at variance with those of our neighbors, and that to vindicate our procedure we have to formulate theories which are more or less open to debate. But our methods have as I said the prima facie justification that they have sprung from the soil, and if the results are not yet all that might be desired there is at least an even chance that the shortcomings are due

not
 shortcomings are due, to the faults of the system but to the imperfect way in which we administer it. At any rate I am myself disposed to take the ground that since we find ourselves embarked in what is really a novel enterprise, and as it has shown some practical efficiency and is not without a show of rationality, our proper course is to give the experiment a fair trial, pushing our methods promptly to their legitimate issue.

"But this is to substitute for a tentative, "opportunity" policy a definite programme formulated upon speculative considerations, which is a pretty serious matter. If one is going to lay down "principles", and follow them out, he is bound to define them clearly and to justify them, at least to himself.

"When I ask myself what the ideas are upon which we are virtually proceeding, I find three tolerably distinct notions which we seem to have taken up with, more or less consistently.

I. — In the first place we must needs embody in our work the idea that underlies all modern instruction, both in the practical arts and in the learned professions. Within a generation or two the apprenticeship system has almost everywhere broken down and been replaced by systematic instruction. Much has been lost by the change, the wholesome contact with work and materials and the almost instinctive sense of the situation that comes from familiar acquaintance with them; the vital comprehension that comes from being told, by word of mouth, just what one needs to know at the moment he needs it, so that he needs to be told it only once and never forgets it; the stimulating personal influence and inspiration that comes from thus being brought into touch with the master-workman, -- all this very much disappears. This natural method, by which things are learned incidentally as occasion presents them, and even accidentally, so that it seems a mere chance whether many things are learned at all, was of course slow and cumbersome,

wasteful of time and uncertain in its results. One can easily understand that it should have been found unsuitable to modern modes of thinking and working. But it had the prime advantage of starting with facts, and developing the feelings and judgments that come from acquaintance with things themselves. But in the practice of the arts skill is more a matter of feelings than of comprehension, of familiar acquaintance than of understanding, that is, as they say in France, of connaitre rather than of savoir. Ideas about things, and understanding of their relations, the "laws of the facts", may be left to come later, if at all.

"But systematic instruction in schools and by classes must needs begin at the other end. It has its roots in analysis and in a scientific understanding of the relations of things, a sort of knowledge that may be obtained without much acquaintance with the things themselves, as even a blind man may study the theory of colors. It tends to a purely intellectual activity, to make the student know all about his subject rather than to acquaint him with its essential qualities. But this is the business of the connoisseur and the historian or philosopher, not of the workman or the artist. To begin with the principles and to deduce from them practical maxims and methods of procedure is likely to make an intelligent and quick-witted performer, but there is danger that his feelings and sympathies may remain undeveloped, and that his artistic instincts may be replaced by consideration of "logique" and "principe."

"The method of instruction by classes being nevertheless imposed upon us by our situation, and these disadvantages being imposed along with its advantages by this method, the only practical question for us is how to reap all the benefits of system, efficiency, thoroughness and intellectual discipline, and at the same time to bring out whatever capacity for the

appreciation or the creation of excellence, for its artistic perception or invention, our students may be endowed withal.

"The first idea that governs and controls us being then the idea that we must accept frankly, with its advantages and its drawbacks our intellectual and scientific machinery, the next point is to frame a scheme of instruction which, while aiming at the exact knowledge and full understanding of things in all their relations that mark the well instructed scholar, shall in the imparting of this information train the active as well as the merely passive faculties of mind, exercise the creative and inventive as well as the receptive powers, and if possible enable the student to regard the masterpieces of art rather from the point of view of the artist who conceived them than from that of the historian, critic or connoisseur.

"But before proceeding to develop this point and answer this question, it is worth while to say that our position, as thus defined, seems to be intrinsically different from that occupied by the 'Ecole des Beaux-Arts' as indeed the difference of environment and of historical conditions would naturally make it. The 'Ecole is, as I conceive, the outgrowth and ideal development of the apprenticeship system, of which it is the perfect flower. Its ateliers, as their name implies, reproduce under the most favorable conditions the essential educational features of the work-shops of old. The newcomer is thrown in among his elders and betters to pick-up what he can, as fast as he can, according as opportunity may offer, turning his hand to whatever service he is competent to perform and getting taught how to do this or that, as this or that, in his own work or that of his fellows, needs to be taught him. "This is the way to do this, that is the way to do that, you will find out why, if you want to know, by-and-by. "First comes acquaintance with the facts and skill in meeting them. Reasons and principles

and an understanding of the relations of things come later.

"This seems to indicate an essential and inevitable difference between schools founded in our days and those founded a couple of hundred years ago.

"II.— But how to develop the inventive, creative, artistic and appreciative temper under a system which is primarily formal, intellectual, literary and scientific is as difficult a problem as is perhaps the converse problem, yet unsolved, of cultivating the intellect in Schools of Art. The way we ourselves go about it involves the second of the three ideas with which, as I said in the beginning, we have taken up, for better or worse, and which we are inclined to hold on to until we have proved by experiment how much, or how little there is in them. What this notion is I have already explained at length in the paper on the teaching of Architectural History, which I sent you a year ago. The later paper on the teaching of Drawing still further develops it.

"This is of course only the familiar notion that it is better for a student to discover things for himself than to be told them. He understands them better. Yet it is so much easier to be told them than to discover them for oneself, and it is so much easier and quicker for the instructor to tell about them than to wait until the student has found them out, that this principle,-- except perhaps in kindergartens,-- seems to find little practical recognition. We try to bring it to bear, however, in all our work, for it is as serviceable in the sciences as in the arts. In Mathematics and Mechanics it is an enormous gain in the interest and efficiency of teaching, to substitute problems for theorems, wherever it is practicable to do so, tolling the student along, from one discovery to another, and making the results of

one problem serve as data for the next. Mr. Spencer's "Inventional Geometry" was a somewhat crude essay in this same direction. Of course no boy, nor man, can work his way all by himself from the "Pons Asinorum" to the theory of bridges. But with assistance and guidance he can cover a good part of the road on his own feet, and reap the profit and satisfaction of so doing. What we aim to do is to give all the help that is needed and none that is not. This brings into whatever is done an element of independence, if not of originality, which being exercised habitually in small and easy things finally puts men in training to attack problems of novelty and difficulty. Even those who fail to solve a problem and have to have it explained to them after all, are better off than if they had been told things at first. The explanation is more intelligible, coming to a mind thus prepared to receive it, and is more welcome, coming as the solution of a difficulty.

"In the History work I am hoping to employ these methods more systematically than hitherto and thus, even if we cannot abridge the time given to History, to make the results better worth the time they cost. But even at present we believe, and we think our graduates agree with us, that the History is well worth the sacrifices we make to secure it.

"But in Design the gain lies not only in this discipline. Composition is the rearrangement in a decorative manner of material already familiar, -- lines, geometrical figures, structural and ornamental details, architectural features, -- forms that have been tested by experience and approved by custom as well as justified by good taste and the nature of things. This familiarity can come only by study and there is danger, in acquiring it, not only that habits of acquisition shall starve out the capacity for invention, and that the accumulative resources of the scholar shall suffice to meet all demands, and so seem to render invention unnecessary,

but that all of this wealth of tradition shall become matter of a merely scientific interest. The learned architect runs the risk of becoming an archæological purist. It is the prime advantage of studying ~~the~~ the sequence of historical forms as a series of problems that one makes their acquaintance from the inside, so to speak, not merely superficially, that is to say, as I have already said, from the point of view of the artist who devised them, not from that of the critic who classifies and defines them, and whose point of view is likely to be ^a personal one, and is sure to be a modern one.

"These methods of work we have so far taken up only experimentally and sporadically, as opportunity has offered, not by system. But so far as we have carried them they have worked well, and, now that we come to reflect upon them they seem to be so well justified in reason, that I am inclined to push them for all they are worth. Time will soon show whether there is as much in them as I fancy. If they work on a larger scale as well as they seem to work now, they will justify still further the prominence we give to historical studies. These have so far been developed somewhat at the expense of the study of original design, which is a real sacrifice. But if we can shape the historical work itself into a series of problems in Design, we shall gain all that we have hitherto gained, without losing what we have hitherto lost.

"But here again we have the methods of a school, as organized and systematic procedure, not the chances of apprenticeship. If our traditions should finally shape themselves upon these lines, their divergence from the traditions of the 'Ecole would be the more marked.

"The complaint is sometimes made, in comparing American with European methods, that the fixed curriculum and definite term of years that

obtain in our colleges afford the student less freedom of conduct in his studies than he finds abroad, where he can take up any subjects in any order. This difference is perhaps more apparent than real, since the French Lycées, the German Gymnasia^a and the English Public Schools, all of which are fairly to be classed with many of our Colleges, have definite courses of study, and in our best Universities almost as great liberty of choice is found as in those of Europe. In our own case at any rate, as I have pointed out in a paper I have just printed in the July number of the School of Mines Quarterly, while the younger men follow a curriculum, the University Students and the Special Students,-- who together are coming to form an important element in the School,-- are free to study what they will, ^{and} as they will.

" But what is more important than freedom of conduct is freedom of mind, and here the methods of class-instruction in a school seem to offer opportunities for independent thinking which, as I have shown, we are trying to make the most of. The apprenticeship system naturally proceeds by prescription and dictation, inspiring a glad obedience by means of personal influence. It ^uth^us achieves an immediate success. The results perfectly meet the requirements and the accepted standards of the day. The student is swept along with a rapidity which surprises and delights him.

" The strong currents of the atmosphere which envelopes him bear him along to triumphs for which he is hardly responsible and which he sometimes finds it hard to repeat when left to his own resources in the coldness and calm of his native climate. In class-work we are obliged to rely less upon personal inspiration and more upon such ideas as we can embody in methods and systems, hoping as I have said to make up for what we lose by encouraging independence of mind. The immediate results may be less brilliant. But we look to the ultimate end, believing that courage and self-reliance are

here as elsewhere men's chief dependence. In the pursuit of these we prefer, as you have heard me say before, to proceed by ^enegative rather than by positive precepts. We prefer to buoy the rocks, and ^{then} let the inexperienced navigator sail freely where he will, shaping his own course, rather than, *through* buoying the channel, to restrict ^the range and deprive him of this larger sufficient compensation. (*experience, for which the assurance of a safe and speedy passage is no*)

"This is, indeed, only to prefer self-direction to implicit obedience. It is the Protestant way as opposed to the Catholic, the English rather than the Continental, the American rather than the European, the democratic rather than the imperial, the Greek rather than the Roman.

" III.—The analytic and formal methods of class instruction have thus in our economy necessarily replaced looser and more personal methods, and we are disposed ^lsedulously to profit by the opportunities they offer to foster independence of character, even at the cost of immediate success. These two ideas of class instruction and individual freedom are already working together to establish and fix habits and traditions which may ultimately become characteristic of the School. ^{*} We adopt Mr. Webster's Motto:— "Liberty and Union, — one and inseparable." A third characteristic which, if persisted in, may become an equally important element in determining the spirit and temper of the place, we have drifted into very much by accident, and now find, rather to our surprise, that there is a conspicuous absence of an element that other people in other places have esteemed a chief factor in their work. We perceive that we are making singularly little use of the incentives which, in Paris and London, seem to be considered indispensable auxiliaries. We have neither the money-prizes which are so numerous in England, nor the series of medals, mentions and other personal distinctions which play so conspicuous a part in France. It is not at all

clear as yet whether we gain or lose the most by this abstention. The gains and losses are so different in kind that it is not easy to balance them against ~~each~~ ^{one an} other. The losses are obvious. Our men lose the excitement and entertainment of the race-course and those of them at any rate who are in the running lose an incentive to do their best. They can hardly be expected to show their paces on the common road. Yet it may be said that roadsters are really the most useful animals, that they have a more wholesome training, and that the best of them show a very pretty pace. The best work of our best men is something that neither they nor we need be ashamed of. Moreover, the the work of the next best men, and so away down to the foot of the class, is singularly near it in excellence, and it may be doubted whether a prize to the winner, though it might incite the favorites to greater exertion, would not equally discourage the men who had no hope of securing it. Any such discouragement is greatly to be deprecated in the earlier years of study. Many of the best men develop slowly, others suffer unduly from the lack of early advantages. Such men ought not to be disparaged or disheartened by comparison with their more fortunate or quicker-witted companions. Competition, I know, is the life of trade and men never can tell how they really stand until measured against their fellows. But two-year-olds had better be kept off the race-track, until things are in position, where they "stand" ^S ~~is~~ a meaningless inquiry.

"I question too whether even for the men who most profit by it, the men who are spurred to a supreme effort, the experience is altogether a wholesome one. Stimulants are apt to create an appetite for stimulants. Its a bad thing not to be able to do one's best,-- "to do one'sself justice"-- except under artificial conditions. Schools certainly, one of whose main duties is to foster good habits, should appeal to the permanent motives of

conduct and train men to successes that they can match any day, in the ordinary condition of their powers. We certainly, if anybody, can afford to dispense with drams. Architecture is about the most entertaining and interesting study in the world. At any rate nobody who doesn't so consider it has any business to undertake it, for it promises little other satisfaction to its practitioners.

"It has accordingly given me the most sincere satisfaction to find the men of our graduating classes, year by year, putting in two or three months of solid work over their Theses, day and evening, weekdays and Saturdays, just for the sake of doing what they have undertaken to do as well as they could do it, with no external incentive whatever. They knew that any half dozen respectable drawings that they could make would be ~~be~~ accepted, and they would get their degrees, and that that was all that would happen whatever they did. There were no prizes, no academic honors, no personal distinctions of any sort. Nevertheless the whole class, the men near the foot as well as the men near the head, laid themselves out flat, as the saying is, and not only one class but half a dozen in succession, following the example that your own class set, so that it has become the custom and tradition of the School to strive to do the most that is in them. This has seemed to me a fine sight for the beholders, and to the performers a most wholesome and manly experience.

"I am glad, too, that our society should escape the disturbing influence of the rivalries, jealousies and suspicions, which however unreasonable, at least in this country. In France, where people are more used to this sort of thing, it may work better, and in the E.D.B.-A the rivalry of the different ateliers serves, I suppose, to prevent the personal antagonism and animosities that might otherwise even ~~there~~ disturb the peace. Our own

and unnecessary seem to be almost inseparable from such contentions

conditions are less favorable and I shrink from the trial. We have hitherto by good fortune managed to maintain a tolerably equal temper and the calm of our atmosphere has seldom been broken by personal jealousies. This is a sound and wholesome state of things, and I think that many of our graduates would be as sorry as I should be to disturb the tradition.

"Here again there would seem to be a marked difference between the situation here and that abroad, though I suspect it is more apparent than real. I suspect that in Paris what really keeps them a-going is not the constant award of prizes and honors, conspicuous as these things are, but the intrinsic interest of the subject in hand and the serious concern of the best men to do their best, so that in placing our main reliance upon this we are really at one with serious workers everywhere. If in renouncingⁿ the aid of these questionable auxiliaries, we can really make the School more fit for grown men, we need not regret it, nor will our students.

"These differences seem to promise to make our manners and customs as well as our rules and regulation distinctively unlike those which have become traditional in the 'École. If we add to this that the whole Paris System rests upon the existance of the Anciens, ^{that these} exist only in virtue of the Prix de Rome and the Villa Medici, and that these owe their value to the patronage of the Government after the ^{naires'} Pensionaries' return, -- and that we in this country lack all these things, -- it would seem as if the E.D.B.-A, admirably as it is suited to its own environment, was too unlike our own scheme, in its nature and conditions, to serve as a model for any close imitation. The ^{more} we can learn from it in regard to the art itself and its principles, the better. But in respect to organization and administration, it seems to me that we must work out the problem for ourselves, and that ~~at~~ any attempt to accommodate our methods to ^{theirs} ~~those~~ is presumably a mistaken one.