A PLAN FOR EXECUTIVE TRAINING.

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The plea I have to make is for a collateral preparation for practical things during student life as a part of the curriculum, which shall supplement the work in the classroom and laboratory and serve to adjust and balance, by enough practical responsibility to germinate the young man's judgment. I am persuaded that nothing can accomplish this except actual experience, but I am also persuaded that this actual experience can be had at the Institute of Technology with little loss of any valuable thing, and with an immense gain in the preparedness of the graduate to grasp the problems before him.

The idea of committee work in most of our larger and in many of our small industrial institutions is spreading rapidly because it has accomplished remarkable results when properly carried out. At the Institute The Tech, Technique, the Athletic Association, etc., are conducted by student committees, and are probably much better handled than if the Institute were responsible for them. These are called student activities; but is there any reason why student committees cannot be made useful, under competent direction, in conducting some of the material affairs of an educational institution, where the benefits would not only redound to the individual students, but also to the institution itself?

The men who become identified with these student activities gain something of the experience I have referred to, because they are dealing with real business problems, and they get some idea of the value of organization as well as some experience in management, of the greatest importance to them in after life. On the other hand, their view is confined to one particular direction, that in which they are immediately occupied, and these extra duties, which usually come in the Junior or Senior years, are almost too great to be undertaken in connection with their regular work.

What I would like to see accomplished is a consistent scheme of committee work which shall have a place on the tabular view, and which shall bring as large a number of men as possible within its influence, giving the students definite responsibility by placing the administration of the Institute's material affairs in the hands of a student democracy, the real control to be tactfully exercised by a resident engineer, who would thus be the head of one of the Institute's most important departments. The scheme I have to suggest may appear complex and somewhat revolutionary. When analyzed, however, it is nothing more than a division of details among committees, devoting a very small amount of time to a feature of education which will result in wonderfully broadening the men who come within its range and in giving every man in the student body a general idea of the value of business organization.

As I have indicated, the whole matter is to be in charge of a carefully selected resident engineer, in whom all responsibility and authority will be vested; the student body to be organized on the general plan of a large industrial corporation, with a Board of Directors chosen from the Junior and Senior Classes, and including the resident engineer. Under this executive body the administrative department will be headed by a general manager, either a Junior or a Senior, manager of buildings, manager of grounds, manager of athletics, manager of printing and publications, manager of student government, manager of operation and maintenance, etc. Under the manager of buildings will be manager of Building A, manager of Building B, etc., covering all the buildings within control of the Institute. There would also be sub-managers for each of the other departments, and an extension of the scheme to its limit would give the men some idea of general management, division of authority, relations of departments, theory of costs, inspection of material, and discipline. In fact, it would lead, more or less fully, into the various lines which are essential to the supplementary education of an engineer.

Although I have said that the real control would be vested in the head of the department, the resident engineer, I would have his guiding hand rest as lightly on the helm as possible. Inasmuch as all important matters would come before the Board of Directors of which he is a member, and as the deliberations are secret, it would be possible for him to direct diplomatically all action in that body as far as it was necessary for him to do so; but the student organization need not know how great or how little this influence is. The Board of Directors would stand for the centre of government, and the responsibilities of every unit in the organization would be real responsibilities. The less important positions would be given over to the Sophomores and perhaps some Freshmen. They would have a very limited amount of authority to do certain small things, and it would be obligatory upon them to see that these matters are attended to. Beyond a certain amount of expenditure or beyond a definite routine the manager of the department would be consulted. In cases more important the action of the General Manager would be necessary, and, where his authority was not sufficient, the Board of Directors would take action. Every order, however, would go through the resident engineer's office, so that the actions of each individual member of this body would be under his observation and control.

To carry out the matter still further and give more interest to the men, I would have two political parties, say the cardinals and the grays, the divisions to be made between courses or in some other way by the Board of Directors; each party to have caucuses and make nominations, say two or three nominations for each office to be filled, the Board of Directors to choose from these nominees, one candidate on each side for each position. In this case a Faculty Committee in connection with the resident engineer would probably make the real selection. It is understood, however, that the party divisions would change at each election period, so that no permanent competition would be established between particular courses or classes of students.

The nominations being made, each party would have a mass meeting on different days. The men nominated for the higher positions would probably have served in minor offices by way of preparation. Their administration of these offices would be public, and the reasons for or against their election would be the subject of free and open discussion. It is reasonable to suppose that the men finally elected would be suitable representatives for the various positions.

If this plan is properly carried out, the division of work assigned to each student can be increased or diminished as he is able to take it on. There would not be the same burden that rests on the managing editor of The Tech or on other men now at the head of student activities. It would probably be well to include the Dean as a member of the Board of Directors, and before action is taken by the Board some of the propositions should be taken before a Faculty Committee by the Dean and the resident engineer.

It would be necessary for the Board of Directors to meet regularly, say once or twice a week. The General Manager should meet with his cabinet once a week. The managers of different departments should meet with their sub-managers once or twice a week. There would be a general meeting of the entire organization once a month, or perhaps oftener, and perhaps twice during the term there should be a general mass meeting, when the Board of Directors would make a report to its constituents.

The doing of the various officers would be chronicled in a daily bulletin, so that the work of the organization would be constantly before every student. This of itself would be something of an education.

The cost of running the institution would be a matter for first consideration. This would lead to the general study of costs, which is of vital importance and which does not appear to have sufficient consideration at the present time. Lectures on this subject by various experts in different lines would be welcomed and studied with enthusiasm. Prominent officials of large corporations would be glad to talk to appreciative students about the business in which they are interested. It would bring the men in direct touch with the active minds of the industrial world, and they would have an opportunity to study the latest development in this broad field.

It seems obvious that such a plan would enlist the interest of the alumni, and many valuable suggestions and much assistance would come from that source.

It would be useless to attempt to carry out this work without the hearty enthusiasm of the students themselves. That this would be insured I have no doubt, because of the nature of the competition and the variety of fields of attraction. It is also to be considered that the men who have shown skill and ability in the higher offices of this student democracy would be marked men, and after graduation they would be sought for by employers all over the country. This would create the highest incentive, and would be conducive to scholarship as well, because certain qualifications of scholarship would be essential in order to hold office. By this I do not mean that scholarship should be alone considered. Men should be chosen for their ability to administer affairs of the institution with success. Nevertheless, scholarship would be an important item, and I cannot see why the carrying out of this proposed plan would not be beneficial to scholarship.

Another feature of this plan would be the advertising which would naturally follow, because the experiment would be of public interest and would attempt to fill a lack which is universally recognized. It would enlist the interest of wealthy manufacturers and others who would be attracted by the plan, and who would not only willingly offer the benefit of their own experience, but would provide means for properly carrying it out. I further think that the carrying out of this plan would instill into the student body a sustaining enthusiasm that would spring from the very love of the work itself,—not the work of the student committees or any feature of it, but the work of the Institute itself as a grand, well-rounded whole.

ISAAC W. LITCHFIELD, 1885.

THE STANDARDS TO BE PLACED BEFORE THE YOUNG ENGINEER.

A major reason for the ineffectiveness of much of our public schooling is that teachers and pupils have their eyes and thoughts fixed, not upon the real purpose of education, but upon the examination of next week or the production of next June. The school and its processes become to them, therefore, ends in themselves. The petty lessons which they teach and learn obscure the broad objects of teaching and of learning, and the walls of the school-room limit their educational horizon. To neither such teachers nor such pupils is it ever revealed that schooling is but a minor means to the true end of education, which is, of course, physyical, mental, moral, and therefore social, efficiency.

The students in a school of applied science have a wider view than this; but in most cases it is an outlook far too narrow. They are aiming, it is true, towards the goal of a professional career; but they usually see in that future profession, not an opportunity for social usefulness, not the happiness which is reached through efficiency, not the unselfish devotion of (for example) the "born" physician: they anticipate, on the contrary, merely the power, the money and the ultimate ease which professional success may bring. Therefore, few undergraduates study the subjects in the curriculum because they care for them or because they grasp the relation between those topics and the social organism. They pursue them simply because those subjects must be overleaped —like obstacles in a hurdle race—by the irksome process called examination, in order to secure a degree. The degree itself they look upon as an end worth working for, since its possession means, usually, a renumerative "job," which will lead to others, bringing in, eventually, an income adequate to the multitudinous expenditures of modern life.

Were this the attitude of mind of technological students alone, it might justify—or at least explain—the sometimes supercilious attitude of the college of "liberal arts," and might support its contention that its atmosphere is broadly cultural, while that of the college of science is narrowly utilitarian. Under modern conditions, however, the outlook of all collegians is practically the same; for, however fondly the older institutions may cling to outworn forms and terms, however prominently the "humanities" may stand out in their prospectuses, they also are, in truth, colleges of modern science and of application of science to commercial and industrial life. The cloistered student wrapped in love of ancient learning is still to be found; but he is engulfed in the host of youth who, when they do not go to college simply for sociability and prestige, regard higher education as a kind of trump card in the game of money-making.

More or less unconsciously, colleges of arts and colleges of science alike foster this student attitude of mind by devoting an undue share of the academic year to examinations, by overloading the curriculum with examinable subjects, and by permitting the several schools or departments to emphasize the utilitarian by specializing and intensifying too much. As a result, the secondary purpose of a college—that of instilling information—too often bulks largest in the eyes of all concerned, and obscures or even eclipses the leading aims of all collegiate education.

Those major aims should be, in the order of their importance: (1) to develop manhood out of boyhood; (2) to make the men thus developed broad-gauged, mentally quick and receptive, intellectually catholic, tolerant and modest; (3) to train good citizens, in the fullest meaning of that term; and (4) to equip for industrial and professional efficiency. To accomplish the last is what the technological school is paid especially to do; but, unless that professional training is given in such a way as to supplement and strengthen in the highest degree all the other social forces which are making for manhood, breadth and citizenship, the school has defrauded the undergraduate, has failed of his duty as a social agent and has sealed its own doom.

Even though they be nineteen or twenty years of age, most youths come to a college mere boys in their childish attitude of mind, their undeveloped sense of personal responsibility, their hazy outlook upon life and their distorted perspective of themselves in the community. They ought to be graduated, however, with their minds ripened and their vision cleared. Indeed, the years of their college life will have been largely wasted unless, in those years, they have acquired a mental and moral seriousness far greater than that of the less well-educated man.

Limiting ourselves to the school of applied science, perhaps its paramount duty and opportunity is to impress upon a youth as he enters manhood the fact that living, instead of being a game of pleasure or of chance, or a haphazard acceptance of what comes along, is an actual profession,—is, indeed, the leading vocation of every man,—a profession to be studied, perfected and strategically planned with interested thoroughness and far-seeing care. This right view of life can be instilled, not only by giving the college youth ever wider choice of work, initiative in working and responsibility for the quality of his work (while holding him to a rational and ordered sequence of development), but also by teaching him such things and in such a way as to make him increasingly aware of a man's power over circumstance, and of the multiform opportunity which every individual has to shape his own career.

Another chief use of the education given in a scientific school should be to expand a young man's vision, to teach him the difference between the small and the great things of life, to train him to see the world from a clear mountain peak of intellectual tolerance rather than from a foggy valley of personal prejudice. This breadth and catholicity can be inspired by building all his professional and technical training upon basic truths and principles; by framing his courses of study upon those fundamental historical, philosophical and linguistic subjects which (quite too exclusively) made up the college course of half a century ago; and, most of all, by seeking every opportunity to impress upon each student the fact that what makes for leadership and power in professional life is not familiarity with technical details and an extraordinary memory for formulas, but ability to view questions in a large way, to deal with new problems, to handle subordinates easily and justily, to meet equals and superiors tactfully and upon the broad platform of many human as well as professional interests.

A student will not have secured seriousness and breadth, however, if on graduation he believes that his professional training is to be used wholly to satisfy his personal—and very proper—ambition for power and for wealth. He must also have been made to realize that, being an extraordinary debtor to society, he owes an immense debt of future service to the community. He should also have learned that the main business of an educated man is to grow into wide usefulness by practising the "gregarious" virtues, by placing his abilities as far as possible at the service of his neighborhood and State, by increasing the five talents of his collegiate training into the many times ten talents of personal and social power. To this end his technical and his non-technical teaching should have emphasized those subtle, unselfish, moral qualities which lie at the foundation of profes-

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