existing conditions, we shall get for all who study it the best possible *teaching* of physics in the brief time allotted to this subject. This is not an easy problem, since it involves the reorganization of a large body of subject matter on a new basis—instead of being a logical system, it must be a teachable system. The emphasis must be shifted, so that it falls less heavily on the traits assigned above to Section B and more heavily on those ascribed to Section L.

The solution of this problem will take a long time and require much experimenting and much scientific study. It involves a careful study of how we obtain clear notions of physical principles—what part do our motor reactions and what part does our reason play in this process? We certainly do not come to understand a subject like acceleration by learning definitions and formulæ and solving never so many unreal numerical problems. In Germany much attention has been given recently to the experimental solution of this problem by Frey, Seyfert, Verworn, Remus[1] and others, not to mention their celebrated Unterrichtskommission. But in America nothing has as yet been done in this direction. America showed Germany the necessity of having laboratories for high schools; must we learn from her how to use them for the best educational results? Are we not competent to study this problem on our own account, and to solve it for ourselves in a way that will suit our own peculiar conditions?

Therefore, the partnership that has been started between B and L is an auspicious event, because both are parts of a scientific organization where all problems are solved in a scientific way. Certain it is that as suggestions for change are tried out in practise, as hypotheses are tested and submitted to scientific scrutiny and criticism, and as educational theories are verified by experiment, the points of view of the two sections will gradually approach each other. Who knows but that they may some day coincide?

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[1] Frey, O., "Arbeits unterricht," Leipzig, Wunderlich, 1907. Seyfert, R., "Die Arbeitskunde," Leipzig, 1902. Verworn, M., "Beiträge zur Frage des naturwissenschäftlichen Unterrichts an den höheren Schulen," Leipzig, Teubner, 1906. Remus, K., "Der Dynamologische Lehrgang," Leipzig, Teubner, 1906.

PROFESSORIAL ETHICS

WHEN I was at a university as an undergraduate—I will not say how many years ago—I received one morning a visit from a friend who was an upper classman; for, as I remember it, I was a freshman at the time. My friend brought a petition and wished to interest me in the case of a tutor or assistant professor, a great favorite with the college boys, who was about to be summarily dismissed. There were, to be sure, vague charges against him of incompetence and insubordination; but of the basis of these charges his partizans knew little. They only felt that one of the bright spots in undergraduate life surrounded this same tutor; they liked him and they valued his teaching. I remember no more about this episode, nor do I even remember whether I signed the petition or not. The only thing I very clearly recall is the outcome: the tutor was dismissed.

Twice or thrice again during my undergraduate life did the same thing happen—a flurry among the students, a remonstrance much too late, against a deed of apparent injustice, a cry in the night, and then silence. Now had I known more about the world I should have understood that these nocturnal disturbances were signs of the times, that what we had heard in all these cases was the operation of the

guillotine which exists in every American institution of learning, and runs fast or slow according to the progress of the times. The thing that a little astonished the undergraduate at the time was that in almost every case of summary decapitation the victim was an educated gentleman. And this was not because no other kind of man could be found in the faculty. It seemed as if some whimsical fatality hung over the professorial career of any ingenuous gentleman who was by nature a scholar of the charming old-fashioned kind.

Youth grieves not long over mysterious injustice, and it never occurred to me till many years afterwards that there was any logical connection between one and another of all these judicial murders which used to claim a passing tear from the undergraduates when I was in college. It is only since giving some thought to recent educational conditions in America that I have understood what was then happening, and why it was that a scholar could hardly live in an American university.

In America, society has been reorganized since 1870; old universities have been totally changed and many new ones founded. The money to do this has come from the business world. The men chosen to do the work have been chosen by the business world. Of a truth, it must needs be that offenses come; but woe be unto him through whom the offense cometh. As the boss has been the tool of business men in politics, so the college president has been his agent in education. The colleges during this epoch have each had a "policy" and a directorate. They have been manned and commissioned for a certain kind of service as you might man a fishing-smack to catch herring. There has been so much necessary business—the business of expanding and planning, of adopting and remodeling—that there has been no time for education. Some big deal has always been pending in each college—some consolidation of departments, some annexation of a new world—something so momentous as to make private opinion a nuisance. In this regard the colleges resembled everything else in America. The colleges have simply not been different from the rest of American life. Let a man express an opinion at a party caucus, or at a railroad directors' meeting, or at a college faculty meeting, and he will find that he is speaking against a predetermined force. What shall we do with such a fellow? Well, if he is old and distinguished, you may suffer him to have his say and then over-ride him. But if he is young, energetic and likely to give more trouble, you must eject him with as little fuss as the circumstances will permit.

The educated man has been the grain of sand in the college machine. He has a horizon of what "ought to be," and he could not help putting in a word and an idea in the wrong place; and so he was thrown out of education in America exactly as he was thrown out of politics in America. I am here speaking about the great general trend of influences since 1870, influences which have been checked in recent years, checked in politics, checked in education, but which it is necessary to understand if we would understand present conditions in education. The men who, during this era, have been chosen to become college presidents have, as a rule, begun life with the ambition of scholars; but their talents for affairs have been developed at the expense of their taste for learning, and they have become hard men. As towards their faculties they have been autocrats, because the age has demanded autocracy here; as toward the millionaire they have been sycophants, because the age has demanded sycophancy here. Mean-

while these same college presidents represent learning to the imagination of the millionaire and to the imagination of the great public. The ignorant millionaire must trust somebody; and whom he trusts he rules. Now if we go one step further in the reasoning and discover that the millionaire himself has a somewhat exaggerated reverence for the opinions of the great public, we shall see that this whole matter is a coil of influence emanating from the great public and winding up—and generally winding up very tight—about the necks of our college faculties and of our professional scholars. The millionaire and the college president are simply middle men, who transmit the pressure from the average citizen to the learned classes. What the average citizen desires to have done in education gets itself accomplished, though the process should involve the extinction of the race of educated gentlemen. The problem before us in America is the unwinding of this "knot intrinsicate" into which our education has become tied, the unwinding of this boa-constrictor of ignorant public opinion which has been strangling and, to some extent, is still strangling our scholars.

I have no categorical solution of the problem, nor do I, to tell the truth, put an absolute faith in any analysis of social forces, even of my own. If I point out one of the strands in the knot as the best strand to begin work on, it is with the consciousness that there are no doubt other effectual ways of working, and other ways of feeling about the matter that are more profound.

The natural custodians of education in any age are the learned men of the land, including the professors and schoolmasters. Now these men have, at the present time, in America no conception of their responsibility. They are docile under the rule of the promoting college president, and they have a theory of their own function which debars them from militant activity. The average professor in an American college will look on at an act of injustice done to a brother professor by their college president with the same unconcern as the rabbit who is not attacked watches the ferret pursue his brother up and down through the warren to predestinate and horrible death. We know, of course, that it would cost the non-attacked rabbit his place to express sympathy for the martyr; and the non-attacked is poor, and has offspring, and hopes of advancement. The non-attacked rabbit would, of course, become a suspect, and a marked man the moment he lifted up his voice in defense of rabbit-rights. Such personal sacrifice seems to be the price paid in this world for doing good of any kind. I am not, however, here raising the question of general ethics; I refer to the philosophical belief, to the special theory of *professorial* ethics which forbids a professor to protect his colleague. I invite controversy on this subject; for I should like to know what the professors of the country have to say on it. It seems to me that there exists a special prohibitory code, which prevents the college professor from using his reason and his pen as actively as he ought in protecting himself, in pushing his interests and in enlightening the community about our educational abuses. The professor in America seems to think that self-respect requires silence and discretion on his part. He thinks that by nursing this gigantic reverence for the idea of professordom, such reverence will, somehow, be extended all over society, till the professor becomes a creature of power, of public notoriety, of independent reputation as he is in Germany. In the meantime, the professor is trampled upon, his interests are ignored, he is over-worked and

underpaid, he is of small social consequence, he is kept at menial employments and the leisure to do good work is denied him. A change is certainly needed in all of these aspects of the American professors' life. My own opinion is that this change can only come about through the enlightenment of the great public. The public must be appealed to by the professor himself in all ways and upon all occasions. The professor must teach the nation to respect learning; he must make the nation understand the function and the rights of the learned classes. He must do this through a willingness to speak and to fight for himself. In Germany there is a great public of highly educated, nay of deeply and variously learned people whose very existence secures pay, protection and reverence for the scholar. The same is true in France, England and Italy.

It is the public that protects the professor in Europe. The public alone can protect the professor in America. The proof of this is that any individual learned man in America who becomes known to the public through his books or his discoveries, or through his activity in any field of learning or research is comparatively safe from the guillotine. His position has at least some security, his word some authority. This man has educated the public that trusts him, and he can now protect his more defenseless brethren if he will. I have often wondered, when listening to the sickening tale of some brutality done by a practical college president to a young instructor, how it had been possible for the eminent men upon the faculty, to sit through the operation without a protest. A word from any one of them would have stopped the sacrifice and protected learning from the oppressor. But no, these eminent men harbored ethical conceptions which kept them from interfering with the practical running of the college. Merciful heavens! who is to run a college if not learned men? Our colleges have been handled by men whose ideals were as remote from scholarship as the ideals of the New York theatrical managers are remote from poetry. In the meanwhile, the scholars have been dumb and reticent.

At the back of all these phenomena we have, as I have said, the general atmospheric ignorance of the great public in America. We are so used to this public, so immersed in it, so much a part of it ourselves, that we are hardly able to gain any conception of what that atmospheric ignorance is like. I will give an illustration which would perhaps never have occurred to my mind except through the accident of actual experience. If you desire a clue to the American character in the matter of the higher education, you may find one in becoming a school trustee in any country district where the children taught are the children of farmers. The contract with any country school-teacher provides that he shall teach for so many weeks upon such and such conditions. Now let us suppose a teacher of genius to obtain the post. He not only teaches admirably, but he institutes school gardens for the children; he takes long walks with the boys and gives them the rudiments of geology. He is in himself an uplifting moral influence and introduces the children into a whole new world of idea and of feeling. The parents are pleased. I will not say that they are grateful; but they are not ungrateful. It is true that they secretly believe all this botany and moral influence to be rubbish; but they tolerate it. Now, let us suppose that before the year is out the teacher falls sick, and loses two weeks of school time through absence. You will find that the trustees insist upon his making up this lost time: the contract calls for it. This seems

like a mean and petty exaction for these parents to impose upon a saint who has blessed their children unto the third and fourth generation by his presence among them. But let us not judge hastily. This strange exaction does not result so much from the meanness of the parents as from their intellectual limitations. To these parents the hours passed in school are schooling; the rest does not count. The rest may be pleasant and valuable, but it is not education.

In the same way, the professional and business classes in America do not see any point in paying salaries to professors who are to make researches or write books, or think beautiful thoughts. The influence which an eminent man sheds about him by his very existence, the change in tone that comes over a rude person through his once seeing the face of a scholar, the illumination of a young character through contact with its own ideals—such things are beyond the ken of the average American citizen to-day. To him, they are fables, to him they are foolishness. The parent of our college lad is a farmer compared to the parent of the European lad.

The parent regards himself as an enlightened being—yet he has not, in these matters, an inkling of what enlightenment is. Now, the intelligence of that parent must be reached; and the learned classes must do the work of reaching it. The fathers of the christian church made war with book and speech on paganism. The leaders of the reformation went out among the people and made converts. The patriots of the American revolution—nay, the fathers of modern science, Tyndall, Huxley, Louis Agassiz, Helmholtz—wrote popular books and sought to interest and educate the public by direct contact. Then let the later-coming followers in learning imitate this popular activity of the old leaders; we need a host of battlers for the cause.

For whom do these universities exist, after all? Is it not for the people at large? Are not the people the ultimate beneficiaries? Then why should the people not be immediately instructed in such manner as will lead to their supporting true universities? It is hard to say why our professors are so timid. Perhaps too great a specialization in their own education has left them helpless as all-around fighters. But the deeper reason seems to be a moral one; they think such activity is beneath them. It is not beneath them. Whatever be a man's calling, it is not beneath him to make a fight for the truth. As for a professor's belonging to a mystic guild, no man's spiritual force is either increased or diminished by the name he calls his profession. Learning is their cause, and every honest means to promote learning should be within their duty. Nor does duty alone make this call to publicity. Ambition joins in it; the legitimate personal ambition of making one's mind and character felt in the world. This blow once struck means honor, and security of tenure in office, and public power.

In fine, the scholars should take the public into their confidence and dominate the business men on our college boards. This will be found more easy than at first appears, because the money element, the millionaire element, is very sensitive to public feeling, and once the millionaire succumbs, the college president will succumb also. The step beyond this would consist in the scholars taking charge of the college themselves, merely making use of certain business men on their boards for purposes of financial administration.

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