In addition to all the professional uses which he may make of scientific principles or technical arts, the student thoroughly trained in exact science has acquired (first and foremost) intellectual honesty,—that is, complete satisfaction in resting upon the truth, whatever that may prove to be; then, the power of discrimination in all things concrete and objective; next, the ability to concentrate attention, and to pursue investigation unalteringly and relentlessly to exact results; finally, the mastery, in a high degree, of his own powers and faculties.

The things which scientific study and technical practice do not directly tend to give, but which philosophical studies do in a measure contribute, are, first, what I may call "horizon,"—the outlook over affairs; secondly, toleration of, and patience with, what is poor in kind, and incomplete in form, like much of what one has to do with in real life; thirdly, knowledge of men, and address and tact in dealing with them; fourthly, appreciation of economic conditions, especially in the matter of knowing where to stop in the perfecting of products, as at the point where it will "pay" best,—that is, where the return will most liberally compensate expenditure, in contrast with the scientific instinct to make everything perfect, no matter what it costs.

Now, if it were wholly a question between those two classes of advantages, so strongly contrasted with each other,—that is, if a man could not have both, in some degree, but must "cleave to the one and despise the other," I should unhesitatingly say, give to me and mine the advantages which especially attach to education and training in the exact sciences, even if we must forego those naturally to be looked for from philosophical studies. Not only are the former, on the whole, more valuable to individuals and to society, but they are doubly important in view of the compatibility between the two sets of qualities especially developed by the two sorts of training. A man may be liberal and broad in spirit, and yet exact and strong in his thinking. He may have the keenest possible sense of what is incomplete in form, yet be tolerant in dealing with the unavoidable imperfections of his material, or of his human agents or assistants. He may hold in view the perfect instrument, the perfect end, not less strongly because his economic sense instructs him that it is necessary to stop short at a certain point, in order to secure a return to labor and capital to be invested.

Not only is there no incompatibility between these different sets of qualities,—each actually contributes to the other. Since, thus, a man may aspire to have both, in fair measure, each in greater perfection and higher degree because of the other, it becomes simply a question of time and money to the student of science how far he shall pursue philosophical studies in addition to his principal work.

Just this union of scientific and philosophical studies actually exists in Course IX. of the Institute,—the Course in General Studies. That course I regard as furnishing a well-integrated, well-organized scheme of studies in science and in philosophy, admirably suited to give the student both series of advantages as they have already been described. But Course IX. is not a professional course. In order to make it up, the technical studies and exercises of the professional courses have had to be dropped. Now, it is to technical knowledge and strictly professional acquirements that the graduate of the Institute largely looks to secure the means of self-support immediately upon graduation. These give him a distinct preference for employment, in many departments of industrial activity, over any other man, however well educated in science or in philosophy, or in both, who is destitute of such technical arts. And since a vast majority of the students of the Institute find, in their present financial position, or in their outlook over the future, strong reasons for desiring to begin to earn their own living immediately upon graduation, it follows that comparatively few are attracted into Course IX. The professional courses draw to themselves, and doubtless will continue to draw to themselves, nearly all those who enter upon the second year at the Institute.

It is just at this point that my suggestion applies. Let us take the case of a student whose relations in life are such that he feels the necessity of thoroughly preparing and equipping himself to earn his own livelihood, yet is, at the same time, not so pinched for