

science. The denunciations of the impiety of prying into the secrets of nature, and the few *à esprit étroit* concurrent as to the pursuits of naturalists, are now quoted only to be laughed at, or are confined to such naughty things as vivisection or to the too ostentatious proclamation of our affinity with imagined poor relations like apes and gorillas. Further, the ordinary man of business is well aware that he is indebted to science for most of the conveniences and accommodations that surround him at home, facilitate his movements when abroad, and enable him to communicate with distant friends, as well as for a thousand safeguards that are thrown around his health and his property. He may know little of the facts or principles involved in the transmission of his message across the Atlantic, but he is quite sure that somebody must understand them, and that ~~this somebody~~, whoever he is, must be a useful and respectable person, and ~~should be encouraged~~ rather than otherwise. Besides, he has a dim notion that there are men still working at problems yet unsolved which may some day minister ~~to~~ rather to safety and comfort, though he would scarcely feel called upon to contribute to the maintenance of such persons, since after all they may prove to be but dreamers, it would be wrong to hinder them.

Nay, modern society is disposed to go much farther than this. Most of the great civilized countries of the world are now familiar with scientific commissions of one kind or another. We have, for example, National and State geological surveys, which are supposed to be specially intended to develop the mineral resources of the districts which they explore, or perhaps to reflect some glory upon the community which supports them, for its liberal patronage of science. The geological survey, once established, becomes a very general scientific survey, less perhaps for the advantage of economic industries, except indirectly, than he had been intended, but greatly for the advancement of pure science.

* Occasionally, when some insect or vegetable plague makes its ravages very

severely felt, the ridicule which usually attaches to fly-catching and bug-hunting, or the gathering of obscure fungi, gives place to some temporary regard for these occupations, and the entomologist or botanist is subsidized that he may discover the cause of the trouble. The despised man of science thus has his revenge, and he usually takes it. Again, places are often given in our educational institutions to eminent specialists, not because of their ascertained aptitude for teaching, but because of the reputation which they have gained, and which is reflected on the institution with which they may become connected. Thus while education sometimes loses, science gains; but in this way men are often misplaced, and good workers are converted into indifferent professors.

Latterly these imperfect methods have been somewhat decried, and there has been some agitation as to the endowment of scientific research for its own sake—a somewhat difficult matter, for not only has the public to be persuaded to spend its money on what is apparently unprofitable, but the right men have to be found, and care has to be taken that under the influence of generous diet they do not become fat and lazy.

One of the best and safest means of giving such support is undoubtedly that of furnishing facilities for study in great libraries, museums, and laboratories, and in providing means for the publication of results, as is now done in connection with universities and learned societies, and in such great institutions as the Smithsonian and the institutes founded by the liberality of Mr. Peabody and other benefactors. Another method, also very useful, is that of giving grants for special research, as is now done by the British Government through the Royal Society, and by the British Association. When we consider how little opposition is now made to any kind of scientific research, and how much scientific men are aided by the public, we have perhaps little to complain of in regard to the rights of science. Yet when we reflect on what science has done, how many promising fields of investigation are yet uncul-

tivated, how fruitful even small advances may sometimes be in practical results, it can scarcely be doubted that our negligently and precarious support of science delays the progress of civilization, and may postpone to future times benefits which we ourselves might enjoy.

Another aspect of this subject must not be overlooked—its educational bearing. Science has a right to a large share in the education of the young. In this it is undoubtedly securing a constantly increasing recognition, but it has yet attained to its proper position, whether as to quantity or quality. Much that passes for education in science fails because it is not scientific education. The study of textbooks, however good—and most of them are very bad; the cramming of dry elements for examinations—these things are not learning science, and they are themselves, with reference to what we know of mind and its functions, most unscientific. Science has, in short, a right to be taught according to its own proper methods, even although educators should insist on teaching languages and literature as heretofore, in the most unscientific methods possible.

To succeed in this, the teacher must himself know his subject well, and he must have the gift of presenting it acceptably, and the art of presenting it in the most natural order; and the student must learn, because he hungers and thirsts to know, not because he is driven. Such study of science is valuable, not merely as a means of adding to knowledge. It is one of the best and most practical kinds of training to any future pursuit. So soon as science can be generally taught in this way, it will be the strongest aid and stimulus to other branches of learning, and we shall hear no more of the conflicting claims of science and literature in our educational work.

Some of our most advanced scientific educators hold that in education science should precede literature, and certainly knowledge and thought necessarily precede expression. It must be borne in mind, however, that all young people begin life with certain natural science studies of their own, and if the educator, instead of crushing all the native