

**Royal Society : address of Sir Benjamin C. Brodie, bart., D.C.L., &c.; &c.;
&c., the president, read at the anniversary meeting, November 30, 1860.**

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ROYAL SOCIETY.

ADDRESS

OF

SIR BENJAMIN C. BRODIE,

BART., D.C.L., &c. &c. &c.,

THE PRESIDENT,

READ AT

The Anniversary Meeting, November 30, 1860.

GENTLEMEN,

" SINCE our last Anniversary, the Royal Society has continued to pursue its mission, and I hope that I may add, with no unsuccessful result. Papers of great importance have been given to the world in the last volume of the 'Philosophical Transactions;' and many others which are of much interest may be found in the lately published Numbers of our 'Proceedings.' This last publication has become a valuable addition to scientific literature, and, as such, has risen in estimation both in this and in foreign countries, beyond the expectation of those by whom it was originally suggested. The meetings of the Society have been fully attended; and the occasional dryness of scientific details has been not unfrequently relieved by the display of new experiments, and by discussions in which many of our Fellows have taken part, uninfluenced by any other desire than that of mutually giving and receiving information. The increasing number of candidates for admission into the Royal Society sufficiently shows how highly that honour is appreciated by the public; and I may take this opportunity of repeating an observation which I made

formerly, namely, that this distinction, like those afforded by the Universities, is all the more valuable to those on whom it is conferred, inasmuch as it is one of the very few which cannot be obtained either by the favour of the great or through the partiality of friends. As the election of the Fellows is now conducted, it is barely possible that that honour should be on any occasion improperly bestowed. There can indeed be no doubt that the present mode of election has been a great improvement on that which had been adopted previously, and that it has very much contributed to maintain the honour and dignity of our Institution. I make this acknowledgement the more readily, because I must own that I was not a convert to the new system in the first instance. It was perhaps because I had been intimate with the Royal Society from a very early period of my life, that, when the change was first suggested, I was led to believe, in common with my friend Robert Brown and some other of the older Fellows, that it would have been better for us *stare super antiquas vias*. Experience has altered my opinion on the subject.

“ It would, however, be unworthy of us, as the living representatives of those great men by whom the Royal Society was founded, to consider the progress of the physical sciences only as it regards ourselves. Looking abroad into what is going on in general society, I am sure that there is no individual now present who is not gratified to find that there is a desire to become acquainted with natural phenomena and the laws which govern them, much beyond what existed even at the beginning of the present century ; and that the opportunity of satisfying that desire, to a certain extent, is afforded to persons of every class, not only in the metropolis, but also in the provincial towns, and sometimes even in our villages, by means of Mechanics’ and Literary Institutions, and by occasional lectures where no such Institutions exist. As a part of the education of those who ought to be the best instructed members of the community, in our schools and colleges the study of the physical sciences has already taken root ; and there is every reason to believe that the tree will grow and flourish.

“ In the address which I offered to you at our last Anniversary, I adverted to the influence which such studies must have in training some of the higher faculties of the mind ; and I also adverted to the effect which they have already produced in laying the foundation of

a better method of investigation in other departments of knowledge. It is not my intention to trouble you with a repetition of these observations; there are, however, some other points belonging to the same subject, to which I would willingly draw your attention.

“ In holding the opinion that much advantage would arise from the study of the physical sciences being regarded as an essential part of a liberal education, I apprehend that it has never entered into the mind of any person who has seriously reflected on the subject, that it should supersede those other studies which form the basis of such an education in this and others of the more highly civilized communities at the present day. One of these studies, indeed, namely mathematics, is necessary to the physical sciences themselves; there being no one of these sciences to which, under certain circumstances, mathematical reasoning may not be usefully applied; whilst one especially, and that the foremost and grandest and most important of the whole, is so entirely founded upon it, that, if this were taken away, there would be very little of the science left. The languages of the ancient nations of Greece and Italy have no such direct relations to the physical sciences as mathematics; but I know no better method than that which the study of them affords of training the mind, at an early period of life, to habits of thought and attention, and so of fitting it for other studies afterwards. There is another advantage to be derived from those pursuits which lead us to a knowledge of the Greek and Roman classics. Greek and Roman literature has been the foundation of the best literature of modern Europe; and an acquaintance with it stores the mind of the youthful student with graceful recollections and noble thoughts, which may exercise a wholesome influence over him through all the rest of his life. Further, it may be observed that the study of the ancient languages is an excellent introduction to a knowledge of grammar, and of the use of language generally, and this knowledge is of a kind the importance of which cannot well be over-estimated; not only as it is by means of language that we are enabled to communicate our thoughts to each other and hand them down to those who are to come after us, but because language is in itself an instrument of thought, without which the reasoning powers which God has given us could be turned only to a very small account.

“ There is indeed no sufficient reason why the instruction of youth

should be limited to one of these subjects, to the exclusion of the other, there being "ample room, and verge enough" for both; it being quite true, as has been lately observed in an address delivered at Edinburgh by a noble Lord, a Fellow of our Society, that what is wanted in education is not so much that a great deal should be learned of any one subject, as that whatever is learned should be learned thoroughly; so that the student should acquire the habit, so important in after life, of undertaking nothing which he does not undertake in earnest. One object of education undoubtedly is to furnish the mind with knowledge which may be turned to good account hereafter. But that is not the only object. And there is always danger that, in exercising the faculty of learning over much, the higher faculties of thought and observation may not be exercised sufficiently. There may indeed well be, for the higher order of minds, too much as well as too little of systematic education; and hence it is that for some of the greatest achievements in the way of scientific discovery, we are indebted to those who, like Sir Humphry Davy, were in a great degree self-educated.

"It is a poor pedantry that would exalt one kind of knowledge by disparaging others. Literature, the arts, the moral and the physical sciences, all of these in their respective ways have tended to elevate the condition of mankind. But it is by the union of the whole that the greatest results have been obtained. That union is indeed as necessary to the higher forms of civilization, as the combination of rays of different degrees of refrangibility is to the constitution of a beam of solar light.

"Of the physical sciences, it may, I apprehend, be truly asserted that they have an advantage over every other department of knowledge,—in this respect, that the field of inquiry is practically unlimited. The student may indeed meet with an impassable barrier in one direction, but in that case he has only to proceed in another. As he advances, the horizon which terminates his view recedes before him. He enters on fresh scenes, gathers in new knowledge; and every addition which he makes becomes the foundation of further knowledge, to be afterwards acquired; so that, at the end of a long life, he finds himself a learner still. In the meanwhile, under whatever circumstances he may be placed,—whether he be in the cultivated valley, on the glaciers of the Alps, on the wide sea, in the crowded

city, in the busy factory, in the broad sunshine, or in the starlight night,—he has only to look around him to find objects which have to him a peculiar interest, exhibiting relations which are not perceptible to those whose minds have been otherwise engaged. While viewing the gorgeous sunset, he finds, in the changing colour of the clouds and in the dark blue sky above, illustrations of the phenomena and laws of light. The flashes of the aurora are to him not mere objects of curiosity, but are associated with the magnetism of the earth,—with that mysterious force which, like the force of gravity, connects us with the sun, and probably with all the other heavenly bodies, even those which are at the greatest distance from us. In the tumultuous movements of the atmosphere, which tear up trees by their roots, and cause the destruction of life by shipwreck, he recognizes the law of storms, and is enabled to comprehend how the mariner, by steering his course in one direction, may avoid those dangers to which he would be exposed if he were to steer it in another. In this way it is plain that even a moderate acquaintance with the physical sciences cannot fail to add to the interest of life ; an advantage which, under occasional circumstances, may be extended even to the humbler classes of society. A professor of one of our ancient universities, and a distinguished Fellow of the Linnean Society, does not consider it to be incompatible with his duties as a parish priest, nor beneath his dignity as a philosopher, to give such simple instructions in Botany to the girls of the village in which he resides as may enable them to understand the flora of the neighbouring district ; thus affording them not only a useful, but a cheerful occupation for hours which would otherwise be passed in idleness.

“ It was on the 28th of November, just now 200 years ago, that several eminent individuals, who had previously been in the habit of meeting for the purpose of communicating with each other on subjects of common interest, assembled in Gresham College, and agreed to form themselves into a Society, having for its object the prosecuting of physico-mathematical experimental learning. When they reassembled on the following week, it was reported to them that what they proposed was highly approved by the reigning Monarch ; who intimated at the same time his desire to do what lay in his power towards promoting so useful an undertaking. Accordingly steps

were taken for the incorporation of the Society under a Royal Charter, that Charter being conferred on them in due form two years afterwards. Such was the origin of the Institution which I have now the honour to address; and to which the world is indebted for the long series of scientific memoirs contained in the 150 volumes of the 'Philosophical Transactions.' The publication of these 'Transactions,' however, was not begun until the year 1665, and then only in the form of a few pages, produced at uncertain intervals, which, being collected, made a thin volume at the end of the year.

"Many years elapsed before the 'Philosophical Transactions' became of larger dimensions. But we are not therefore to suppose, because so little was done in the way of publication, that little was really done for the promotion of the objects which the Founders of the Royal Society had in view. At this time Lord Bacon had already pointed out the right method to be pursued for the advancement of learning; and the abstract science of Geometry, inherited from an ancient nation, had been partially applied in the investigation of the physical sciences. Nevertheless it cannot be said that these sciences were more than in an infant state; and some which are now among the greatest subjects of attention, for instance Chemistry and Geology, had barely been called into existence. There was indeed as yet no sufficient number of facts collected on which the superstructure of science could be raised. The Founders of the Royal Society well comprehended what was required. If I may be allowed to use a homely expression, they had the good sense to begin at the beginning; and their first endeavours were to collect a larger number of facts by a course of experimental inquiry. Dr. Birch's 'History,' which occupies a period of twenty-seven years from the foundation of the Royal Society, furnishes us with a great deal of valuable information as to this part of their labours, and gives us a more just notion of what the Royal Society accomplished in those days, than can be obtained from the 'Philosophical Transactions' themselves. At the several Meetings experiments were suggested, which were afterwards carried into effect. Mr., afterwards Dr. Hooke, received a special appointment as experimentalist; for which office he was well qualified, not less by his practical skill, than by his great and discursive genius. The collection of the experiments proposed and made during the period which I have mentioned would of itself form an instructive volume. It

might not indeed add much to our present knowledge, but it would show us in what manner much of that knowledge with which we are now familiar had its origin, and at the same time furnish a grand example of the caution and circumspection with which all experimental inquiries should be conducted.

“ With the gradual extension of knowledge, the method of inquiry necessarily became modified. The size of the volumes of the ‘ Philosophical Transactions ’ gradually increased, and longer and more elaborate memoirs superseded the brief notices of which the earlier volumes were composed.

“ It is not for us to give nor even to form an opinion of what the Royal Society has done during the last few years ; but we are at liberty to refer to what has been done by our predecessors ; and with regard to them we are justified in the conclusion that they have well performed the task which they had undertaken. In adding to human knowledge, they have added to human happiness. Standing apart from politics, they have pursued an independent course, having no selfish objects in view, but acting harmoniously with the Government of the day, whatever it might be. I am sure that every existing Fellow of the Society will join with me in the desire that we and those who come after us may continue in the same path, so as to maintain the dignity of science, and do honour to our country :—

‘ Alterum in lustrum meliusque semper
Præroget ævum.’ ”

