

did picture of a red bear, stags, bison, and a figure of a bird with a long, slightly curved beak, with a protuberance on the throat, which may make it possible to identify the species.

This type of prehistoric art is also illustrated in a novel way in a paper in the same issue of *L'Anthropologie* by M. E. F. Gautier, entitled "Nouvelles Stations de Gravures rupestres Nord-Africaines," which describes a series of rock sculpturings at a place to the north of Figuig, on the Algerian-Moroccan frontier. These include elephants, lions, an animal possibly a giraffe, and ostriches. The author remarks that eminent geologists, on the analogy of the prehistoric drawings in the French caves, are disposed to assign the North African specimens to the Quaternian age. But he warns us that the collection of examples was made in the course of a rapid tour, and that it is still far from complete. Much further exploration is required before any definite conclusion regarding this type of prehistoric art and the ethnology of the artists can be formulated.

### SCIENCE AND CLASSICS IN MODERN EDUCATION.<sup>1</sup>

THE resolution I have the honour to move seems to need but few words to commend it to a meeting of scientific men. But we have to bear in mind that it is not scientific men that have to be convinced, and it becomes necessary therefore to state clearly what it is that we desire, and why we desire it.

I propose to begin, however, by stating what it is that we do not desire, my reasons for so doing being that our aims have been grossly misrepresented in the past, as they will no doubt continue to be misrepresented in the future. Thus, in expressing the opinion that science ought to oust the study of Greek and Latin from the prominent position which these subjects hold in the educational course of our schools, we have been accused of wishing to kill all learning but our own. The accusation is baseless. We have never expressed any such desire. No one of us would be so foolish as to wish that the classics should not continue to be a serious branch of study. We do not contest that an intimate knowledge of Greek and Latin may help towards the attainment of literary and oratorical style, or that it may even add to the amenities of conversational intercourse. We admire—some of us from a long distance—the favoured few who are possessed of those advantages. But it is the many we have to consider in the matter of general education, and we ask ourselves—looking over the circle of our acquaintances at those who have had the inestimable privilege of having Greek and Latin wished into them from their earliest years—whether in the great majority there is any sign that there was ever much penetration beyond the skin, and whether the educational benefits which the—for the most part long-forgotten—acquisition of these languages has bestowed are really worth the enormous amount of time and trouble expended upon them. This is, of course, an entirely different question from what I may perhaps be permitted even by our opponents to call the *scientific* study of classical languages and literature, which is on an altogether different footing, and cannot be promoted by forcing Greek and Latin on every school-boy, whether he has aptitude for it or not, to the exclusion of subjects the knowledge of which would at least be of some benefit to him in after life.

We must all admit that there is not time for any adequate study of both the classics and the natural

sciences in the general educational curriculum; surely, therefore, it is scarcely fitting to omit subjects which in any conceivable circumstance of life may prove of some value in order to retain those which can only be valuable in professions which demand a certain standard of literary attainment. But I am not prepared to concede that knowledge of the classics is necessary for the production of the best English. I refer to this point particularly because the claim has been recently made by one of the champions of the present system of education that without such knowledge we are unable adequately to express our ideas in our own language. The absurdity of this contention is obvious at a time when we are commemorating the tercentenary of the author whose immortal works were written under all the disadvantages of the possession of "small Latin and less Greek." Perhaps it is unfair to bring in evidence so transcendent a genius as Shakespeare; he, one feels, even with a complete classical education, would still have succeeded in bewitching the world with his wonderful imaginings and in inspiring his characters with the attributes and sentiments which his puny fellow-mortals have marvelled at for three hundred years, and will doubtless continue to admire as long as our world continues. Nevertheless, if Shakespeare had gone through a course of Eton and Oxford the language those sentiments are clothed in would certainly have been different, and I imagine that not even the most pro-classical of our opponents but is thankful that he escaped.

I am content, however, to leave Shakespeare on his pinnacle—unattained and unattainable—and to recall the name of one John Bunyan. Has anyone amongst the polished eighteenth-century essayists written in a clearer style than this Bedfordshire tinker's son, whose literary studies were mainly confined to the Bible? Or, to take an instance from our own times, was there ever a finer political speaker than John Bright, "the great tribune," whose utterances, couched in simple, vigorous English, were wont to pass straight from his own heart to that of his audience? And is there not another writer and speaker of whom we are many of us proud to have been the disciples, and whose spirit we may well imagine to be with us this afternoon, who, without the advantage of a classical upbringing, was pre-eminent amongst nineteenth-century authors for his faultless diction and for the direct and terse enunciation of his ideas; needless to say, I refer to Thomas Henry Huxley.

We have further been accused of desiring, in our enthusiasm for science, to oust such subjects as modern history, and geography, and the study of the English language and literature from the educational curriculum. No accusation can be more unfair. We recognise that these subjects must for us form a fundamental part of all education. They have been ousted from the present scheme because their immediate relation to the classical languages and literature was remote, and the amount of knowledge of Greek and Latin which has been required in competitive examinations has needed all the time at the school-master's disposal. We believe, however, that there will, if the greater part of that time can be recovered, be opportunity afforded for the acquisition of such knowledge of the subjects in question as will help to fit our boys and girls to become worthy citizens of this great island-empire.

But in order that there shall be a reasonable chance of our being able to maintain our place in the world it is above all necessary that we should move with the times. We are a long way from the eighteenth century—when a sound education in classics was recognised as the be-all and end-all of a boy's upbringing—

<sup>1</sup> Remarks made by Sir Edward Schäfer, F.R.S., in proposing the first resolution at the meeting on the Neglect of Science held at Burlington House on May 3 (see NATURE, May 11, p. 236).

ing. Science was then in its infancy. Throughout the nineteenth century it was advancing by leaps and bounds. In this twentieth century we meet it at every turn; there is no getting out of its path. That this is truly the age of science we have no lack of evidence in the present war, but the statement is no less true and is even more important in its application to the occupations of peace. And if we wish to live up to our age we must do what in us lies to promote the progress of science. The mere diffusion of scientific knowledge throughout the community will be directly beneficial; but, besides this, certain important consequences must follow such diffusion. Not the least of these is the capability of appreciating the fact that it is necessary for our prosperity—nay, for the continuance of our very existence—that in every possible way knowledge of science should be advanced. Let us make no mistake on this point. The nation which recognises this necessity will succeed, the nation which refuses to recognise it will fail.

We make no claim to have eminent representatives of science in the Cabinet. We believe in the cobbler sticking to his last. The qualities for which politicians are chosen are rarely found in men who devote their lives to the pursuit of science. But we think that even Cabinet Ministers should know something about the world they live in and the bodies they inhabit. Surprise has been expressed at the singular ignorance displayed by distinguished statesmen of simple facts in chemistry and physiology, familiar to the most junior student. This ought not, however, to be surprising. What chance have they had to acquire any knowledge on these subjects? Usually none at all. We meet with the same kind of ignorance in such a generally well-informed quarter as the editorial column of a newspaper; nor can this be otherwise considering that the journalist has as a rule the same kind of education as the politician—an education in which science has occupied no part. Neither is able to distinguish between a real and *soi-disant* authority on a scientific subject, and for this reason we frequently find the utterances of a quack quoted as of equal value with those of a master in science. And if men like these—men who have had the highest educational advantages which our schools and universities can afford—are so deficient in knowledge of things around them: things which really matter, and which affect the well-being and prosperity of the whole community: what can be expected from the ruck of their fellow-graduates who have taken—or perhaps been excused—the ordinary degree at our universities, and who have acquired in that laborious process little but a smattering of certain ancient languages, which they very soon contrive to get rid of? Or, if anything remains, it is of no possible use to them in the practical avocations—agricultural, commercial, or manufacturing—which will occupy so much of their subsequent attention. Whereas, had the time which most of them have thus wasted in classical studies been devoted to the acquisition of a basal knowledge of the physical and biological sciences, it may confidently be affirmed that the living interest which these subjects afford would lead to a desire for the extension of such knowledge, and that its possession could not but prove of definite advantage in their future career.

It is, however, constantly alleged by our pro-classical friends that whatever may be said for the teaching of science on utilitarian grounds the study of the classics has shown itself by long experience to have such inestimable advantages as an educational asset in the formation of character that it is not possible for any other branch of knowledge to take its place in the curricula of our schools and universities. This allegation must, in the absence of specific proofs,

be met by us with the most absolute denial. The evidence we possess is indeed altogether on the opposite side. Of all the public services the one which is pre-eminent for the high character and efficiency of its officers is by universal consent the Royal Navy. And this is also distinguished from the rest by the fact that from the very first the training given is mainly a training in scientific methods, whilst the very subjects which are alleged by so many instructors of youth to be essential to a scheme of general education are rigorously excluded. We have here, in fact, an experiment in education which has been conducted on a large enough scale for us to draw definite conclusions from it, and I venture to say, without fear of contradiction, that the results are altogether in favour of the proposal to substitute science for classics in the schools and universities of this country.

Lastly, let us look for a moment at the sentimental side. More than one recent writer has argued as a proof of the efficiency of the existing system that if it is productive of no other benefit, the experience of the present war has shown that it has at least taught our boys how to die. The obvious answer to this appeal to sentiment is that the lesson has been just as well learned by those who have not passed under the classical yoke. Men of all classes of the community have done their duty equally bravely and unflinchingly. The courage and self-sacrifice which have been so abundantly displayed in our fighting Services and their auxiliaries cannot therefore be looked upon as the result of this or that system of education, but must be regarded as part of the common heritage of our race, of which we may all be justly proud. There is, besides, one thing which is of equal, or even greater importance than the knowledge of how to die, and that is the knowledge of how to live. Nevertheless, we are content to be ignorant of everything that pertains to our bodily life; ignorant of the functions of our organs, of their maintenance in health, of the evils which follow the abuse of those functions, of the relation of our bodies to their environment, of everything which tends to develop a healthy mind in a healthy body. True, many of us muddle through somehow in spite of this ignorance, but far too many suffer severely on account of it, and one of the benefits which will accrue from a diffused knowledge of science will be apparent in an enhanced interest in all questions affecting the health of the individual and the community. An educational curriculum which offers nothing beyond a little Greek and Latin must, by its very nature, produce an unfertile soil, permanently incapable of encouraging the growth of such knowledge as is of real value in the battle of life.

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—An exhibition of 50*l.* a year, tenable for two years, is offered each year by the governing body of Emmanuel College to a research student commencing residence at Cambridge as a member of Emmanuel College in October. Applications, accompanied by two certificates of good character, should be sent to the Master of Emmanuel not later than September 24.

LONDON.—The report of the Vice-Chancellor on the work of the University during the year 1915-16 gives many interesting particulars as to the war work accomplished by the University. The total number of commissions granted to cadets and ex-cadets of the University Contingent of the Officers Training Corps since the outbreak of the war is 2031, and of com-