

THURSDAY, FEBRUARY 9, 1888.

MESSRS. GOSCHEN AND HUXLEY ON  
ENGLISH CULTURE.

WITHIN the last few days two noteworthy utterances on the subject of our national prospects have been made by men whose opinions deserve and command attention. Prof. Huxley has told us, in the *Nineteenth Century*, that though the restraints imposed by civilization have altered the methods by which the struggle for existence is carried on, they have not made it less real or less bitter.

"In a real, though incomplete, degree we have attained the condition of peace which is the main object of social organization; and it may, for argument's sake, be assumed that we desire nothing but that which is in itself innocent and praiseworthy—namely, the enjoyment of the fruits of honest industry. And lo! in spite of ourselves, we are in reality engaged in an internecine struggle for existence with our presumably no less peaceful and well-meaning neighbours. We seek peace, and we do not ensue it."

This application of Darwin's great theory to commercial competition is more than a parable. It is the scientific explanation of causes which have wrecked civilizations in the past and may wreck them in the future.

The struggle must go on while men are impelled by the desire for a greater profusion of what sustains life or makes it happier. It often has been, and often is, carried on by the sword, but important victories may be won, and disastrous defeats sustained, by more peaceful means. The discovery of the passage round the Cape transferred the trade of the East from the Mediterranean to London and Amsterdam, and most merchants in the City affirm that the cutting of the Suez Canal has once more deprived England of the advantage of situation. The commercial success of Switzerland, however, proves that national characteristics are at least as important as geographical position, and it is well from time to time to ask if we are doing all that in us lies to train those who shall follow us to maintain what our predecessors have won.

It is from this point of view that the second of the two utterances we have referred to is specially interesting. Mr. Goschen is at one with Prof. Huxley as to the severity of the struggle in which we are engaged. "Our position in the race of civilized nations," he told the undergraduates at Aberdeen, "is no longer what it was. We had a great start in industries and commerce, and by virtue of that start we attained to a station of unprecedented and long unchallenged supremacy. That supremacy is no longer unchallenged. Others are pressing on our heels. We require greater efforts than formerly to hold our own." Theory and experience agree. The biologist tells us that a state of struggle is the normal condition of man as of all other living beings, and that it must become keener as our numbers augment. The Chancellor of the Exchequer, with his hand on the pulse of English trade, is witness that the strife is growing in severity.

And this is not all. Mr. Goschen is not satisfied that we have as a nation all the qualifications for success. In a powerful address, which evidently expressed a matured conviction, he insisted that Englishmen lack "intellectual interest" in their work. They regard their business as a necessary evil, from which they delight to sever themselves as often and as completely as possible. They are ignorant

of the general principles which underlie the conduct of trade, or at least are careless in noting their application to particular instances. It is quite in accord with this that they regard education not so much as an essential to fit a man for the battle of life as an ornament for his leisure hours. And here again Professor and politician are at one. The highest intellectual ideal of our University men, says Mr. Goschen in effect, is, or at all events until very lately was, perfection of literary form. Our public schools have aimed chiefly at turning out scholars who could write Latin verse. Our educational systems, echoes Prof. Huxley, were fashioned "to meet the wants of a bygone condition of society. There is a widespread and, I think, well justified, complaint that [our system of elementary education] has too much to do with books and too little to do with things."

To discuss the whole question thus opened—an indictment of University and Board-school alike—would be impossible in the limits of space at our disposal, but regarding it from the point of view in which our readers, like ourselves, are specially interested, we cannot but note a sad corroboration of Mr. Goschen's words. In no trades could a genuine intellectual interest be more easily excited than in those which involve a knowledge of science, and in none have Englishmen more conspicuously failed. It is needless to recapitulate stories like that of the discovery of the aniline dyes in an English laboratory, and the wholesale appropriation of the trade to which that discovery gave rise by German manufacturers. The fact is patent and obvious to all who have studied the question. Science can only be successfully cultivated by men who take an "intellectual interest" in their work; and in trades which depend upon a knowledge of science, it is the foreigner who achieves success. Where does the fault lie? For the masters and foremen, the colleges which are springing up all over the country may do much. They are, we believe, slowly creating a class of men who have a sound foundation of scientific knowledge, and a genuine interest in scientific progress. But for the rank and file, for the clerk and artisan, it is upon evening classes that Prof. Huxley thinks we must chiefly rely, and here the main difficulty seems to be to secure good teachers for classes in science and technology. They are, says Prof. Huxley, "not to be made by the processes in vogue at ordinary training colleges." "As regards evening science teaching"—we quote from the Report of the Royal Commissioners on Technical Instruction—"there seems to be nowhere in Europe any organization for systematic evening instruction comparable, as regards the number of subjects taught, and the facilities afforded for the establishment of classes, and for the examination of the students' work, with that undertaken by the Science and Art Department in this country, and recently supplemented, in the application of science to special industries, by the City and Guilds of London Institute.

"At the same time it must be borne in mind that in many towns visited by the Commissioners the evening science teaching was conducted by Professors of higher standing than, and of superior scientific attainments to, the ordinary science teachers who conduct courses in some of the largest and most important of the manufacturing centres of this country."

Here, then, appears to be at all events one weak point.

The Science and Art Department has a flexible system, capable of application to the wants of town and country. Students are examined by the thousand every May, but though the standard of attainment is rising, there is a general opinion—which is supported by the statements of the Royal Commissioners—that the instruction given by the teachers falls far short of an ideal which might be and ought to be reached. And yet this matter of good or bad teaching is vital. "It is absolutely essential," says Prof. Huxley, "that the mind [of the teachers of scientific subjects] should be full of knowledge and not of mere learning, and that what he knows should have been learned in the laboratory rather than in the library." "This," according to Mr. Goschen, "is the first test of the value of an educational system, whatever its curriculum may be. Is it intelligent? Is it thorough? Above all, is it rousing? Does it excite intellectual interest in those who come under its influence? Does it develop in them the temper which always asks for a reason and struggles to arrive at a principle?"

Teachers competent to work an educational system which satisfies these requirements must be themselves highly-finished educational products. They must have risen above the vulgar pocket-filling ambition of passing so many students per annum. Risen above it, not in the sense of ignoring it, for in this prosaic world a livelihood must be earned, but in the sense that the mere drudgery of bread-winning is for them lit up with a glow of the enthusiasm of the student who has knowledge to impart which he himself values for its own sake.

We want as science teachers not men who have crammed just enough to enable them to cram their pupils in turn, but men—and we believe there are many, though far too few of them—who have learnt to regard themselves as members of the great scientific army the advance of which is the most remarkable movement of the age.

How are they to be got? They cannot be obtained in the requisite numbers without a systematic search and preparation. It may be, as Prof. Huxley hints, that additional pecuniary inducements must be held out to secure them. This is a question on which the Chancellor of the Exchequer may have an opportunity of giving practical aid to English science and education. Or, if this is Utopian, let us suggest to Mr. Goschen that it would be well if his great influence were used to urge the Government to make the most of the machinery it already possesses.

Prof. Huxley has been for years the Dean of the Science Schools which are the centre of the system of evening teaching which the Royal Commission on Technical Instruction has pronounced to be in many respects the best in Europe. Among the highest rewards given to the successful candidates in the May Examinations are free passes for more or less prolonged courses of study at South Kensington.

Teachers in training attend the classes, and year by year batches of science teachers are brought together to receive special instruction in the subjects they are engaged in teaching. One of the great difficulties to be encountered by a provincial College is the fact that the calls upon the Professors are too multifarious. Students of all classes—would-be engineers, doctors, electricians, and a dozen similar groups—all desire courses of instruction designed to meet their particular wants. It has

been rightly decided that this obstacle shall not impede the progress of the State-aided system of evening instruction. A special institution is provided to meet the special requirements of those who are engaged in it. The union of the Normal School of Science with the Royal School of Mines has not interfered with the attainment of this end, while it has secured the advantages which result from the mingling of students who are studying the same subjects with different aims.

The State, then, has recognized the need for trained science teachers, just as it feels the necessity for providing properly-educated officers for the Navy. It is admitted that both classes can best receive the instruction they need at special institutions. The Royal Naval College at Greenwich has been provided for the one, the Normal School of Science for the other.

The school gives evidence of vitality and success. Within the last five years the number of students has doubled. A very considerable amount of original research is done in its laboratories. Now, however, its very efficiency is a danger. It has outgrown the buildings which have been assigned to it. By permission of the Commissioners of the 1851 Exhibition, classes are carried on in what was the Colonial Exhibition. But duty to the interests with which they are primarily charged will, before long, compel them to withdraw this hospitality. Driven from the holes and corners in which it has been compelled to seek refuge, the Central School for the training of teachers of evening science classes may be compelled to reduce its numbers, and to limit its usefulness at the very moment when Mr. Goschen, Prof. Huxley, and all competent educationalists are agreed that one of our most pressing national wants is the elevation of our teachers, and of their type of teaching.

We have chosen this as a single example which serves to illustrate the wide generalization which we have been discussing. Is the interest of the average Member of Parliament in the dangers which threaten our trade sufficiently intellectual to lead him to sanction the cost of necessary precautions? In these democratic days the fate of the English people is in their own hands. If they choose that the education of their bread-winners shall be conducted on the principles on which the "accomplishments" were taught in an old-fashioned ladies' school—if they choose to send competent Commissioners all over Europe, and, when they tell them that one of the chief defects of their educational system is the comparative inefficiency of their teachers, they nevertheless deliberately half-close the doors of the school specially provided to remedy this defect—there is no help for it, and but little hope for them.

Wars may be caused by race hatreds which have taken centuries to gather, but success or failure often depends on the placing or misplacing of a few thousand men. Commercial competition may be, as Prof. Huxley tells us, due to causes which affect all living things. The progress or decadence of England will depend upon how it adjusts itself to the altering character of the strife; and we confess that we shall watch with interest to see what amount of practical support the Chancellor of the Exchequer is prepared to give to the views of the Lord Rector of Aberdeen. The test will be applied when the Technical Education Bill is again brought forward, and when the particular need which we have chosen as an illustration has to be met.