

## Science and Literature.

THE rather widespread feeling that science and literature are, in some way, opposed to one another seems, at first sight, inexplicable. For we can say that science is merely a way of ordering experience in terms of certain fundamental principles and concepts, and that literature is a way of ordering experience which employs different principles and concepts. Opposition could arise only if one of these methods professed to be exhaustive and declared that there was no room for the other. But science certainly does not make that claim. No scientific man asserts that the comprehension of a certain region of experience that is given to us by Shakespeare's plays is contained in any scientific treatise, and although we are frequently told that some poet or philosopher has anticipated some great scientific theory—*e.g.* Einstein's—it is probable that this statement is not intended seriously. Yet it is true that there are many literary men who regard science as if it were, in some way, opposed to literature.

There seem to be various reasons for this attitude. In the first place, it is becoming increasingly obvious that a literary education is only half an education. It is still possible for the writing of a poem or the writing of a novel to be referred to as "the highest of human activities," but the statement is not now so generally believed. An increasing number of people are beginning to believe that the creation of a great scientific theory may be as great and significant an achievement, as high an activity, as the creation of a great work of pure literature. From this human, all too human, point of view we can quite imagine that some literary men find science a sort of rival, and a dangerous rival, to literature. But we must admit that this explanation covers only a small part of a widespread attitude. A more important element in the "opposition" to science is due to the dislike of the materialistic philosophy with which science was, until recently, supposed to be associated.

That the scientific man is a dull materialist, insensitive to beauty and incapable of profound emotions, is, or has been, a commonplace amongst literary artists. A botanist, as is well known, is a man who knows everything about a flower except that it is beautiful. That these purblind creatures have an inordinate appetite for facts, and a curious, abnormal "cleverness," is freely admitted. But since they are blind to everything that makes life to other people worth living, know nothing of the artist's raptures nor of the hopes and despairs of passionate natures, believe that nothing is real except what they can put in a test-tube, they must be treated, as Nietzsche says,

as mere instruments. They are more costly and exquisite versions of their own galvanometers and spectroscopes. In the great company of prophets, seers, and poets, they have no place. They are merely measuring machines, to be made use of by their betters.

This is Nietzsche's view and it is not uncommon. Is there any justification for this view? It must be admitted that some scientific men almost warrant the caricature. It is a peculiarity of science, as distinguished from the arts, that valuable results can be achieved by mere industry. The possession of a telescope, and of an abnormal capacity for sitting still, have sometimes made their owner immortal. It is true that eminence in science can sometimes be achieved by a man without insight, without imagination, by dint of the unexciting virtue of conscientiousness. Valuable as these men are to science, they have no perceptible existence except in conjunction with a laboratory. To the literary man, for whom greatness is almost synonymous with the capacity for experiencing and expressing profound emotions, the eminent man of science may be a negligible human being—"a mere specialist." It is appropriate that such a being should adopt materialism as a philosophy. He finds nothing in his own soul which seems unlikely to be the outcome of the mutual impacts of little billiard balls, and, being unaware of his narrow limitations, he suggests that this hypothesis will cover everybody's experience. To some of the greatest literary artists of the nineteenth century, scientific materialism, as it was popularly understood, was the final proof of the inadequacy of the scientific mind. It is unfortunate that science is so technical, for it means that non-scientific people cannot distinguish between the great creator and the merely industrious worker, and that only a debased and distorted version of a scientific theory gains currency amongst them.

But while the contempt for and dislike of science manifested by such great artists as Tolstoy and Dostoevsky was largely founded on a misapprehension of what science is, the change which has occurred in the attitude of literary men towards science is certainly connected with the fact that materialism is no longer so vehemently preached by scientific men. Such great scientific theories as the electrical theory of matter and the theory of relativity have finally destroyed, it is felt, that old Victorian mechanical universe, with its "iron laws." The universe has become "enjoyable," in Maxwell's sense of that word when he says that the necessary condition of the enjoyable is that the mind

should believe in the existence of a law and yet have a mystery to move about in. In the new universe of science the poet feels that he has room to exist. Such feelings are not, perhaps, based on reason. It might be difficult to justify them, but even the man in the street feels that the "atmosphere" of the modern scientific universe is very different from that of the universe of, for example, Haeckel. For this reason there has been a change in the literary man's attitude towards science. He is even willing to admit that scientific men of Einstein's rank may, in virtue of their imagination and passion, be ranked with great artists. But although a scientific man may be ranked as an artist, there remains an essential difference between a scientific work and a work of art.

That a scientific treatise may be exceedingly well written nobody will deny. That scientific men may show a delicate and catholic taste in literature, or, indeed, in any art, is also quite true. But it does not follow that a scientific treatise, however well written, can ever rank high as a work of literature. It seems that one criterion of the greatness of a literary work is its "immortality." To achieve this it must deal with subjects of permanent interest, and its presentation of them, although it may not be exhaustive, must be of such a kind that it cannot be superseded. Even where the ostensible subject-matter is of comparatively little interest, the real subject-matter—usually the personality of the author—has this quality. Very few people are interested in the subject of urn-burial, but many are interested in Sir Thomas Browne's unique reflections on that subject. Now it is of the essence of the scientific treatise that it deals with the transitory, for it is of the essence of the scientific conception of truth that science can continually advance; and it happens that a scientific argument is not a favourable medium for the expression of the most generally interesting characteristics of an author's personality. Even the best written of scientific treatises, and written by the best scientific men, such as the Dialogues of Galileo, have no longer the living interest that much older works of literature possess.

The reason is not difficult to discover. This apparent weakness is due to the very strength of science. Science is universally communicable and verifiable, or it is not science. It makes appeal, therefore, to just those faculties and interests that are least individual in men. It is impersonal, as we say. A scientific theory is an interpretation of experience which is valid for all minds precisely because it is not concerned with experiences which are individual. A scientific man has, potentially, all rational creatures for his audience. The artist can make no such claim, but he penetrates to a greater depth. At present the

greater part of every man's experience lies outside the scientific picture and, for the majority of men, is by far the most interesting part of his experience. The arguments for the belief that the sun goes round the earth, however wittily presented, are of little interest now except to psychological historians. But human nature has changed much less than scientific theories, and a presentation of unrequited love, or of goodness triumphant in adversity, can still be pertinent to present problems and has lost nothing of its illuminative power for being centuries old.

This is not to say, of course, that the deepest human passions are not concerned with science. Kepler, in describing his triumph at his discoveries, wrote some of the finest passages in literature, but those passages describe his emotions, not his discoveries. They convince us that science may require the highest and deepest emotions for its service, that a great man of science may truly be a great artist, that he may give to science a passion and creative imagination that other men give to religion. But that does not make his problems eternal, or of permanent interest. The fate of a scientific treatise, as Huxley has said, is to be part of the rubble which forms the foundation of the new building.

The distinction between the scientific treatise and the work of literature, therefore, is connected with the old question of matter and form. What Shakespeare has to convey cannot be otherwise conveyed, but a student may fully master Lagrange's conception of dynamics without having read one line of Lagrange. There is, then, an essential difference between science and art, and, however far science penetrates into regions of experience it has scarcely yet touched, there will always remain an essential difference. This does not mean that the artist can ignore science. As a matter of fact, the scientific outlook affects literature by influencing the artist's emotions. Darwin's theory, for example, has had a great influence on modern literature. The influence of science is indirect; it is an important factor in shaping the *Zeitgeist* that prevails at any given time, and so influences not only the arts, but also philosophy and religion. But there can be no opposition between science and art except in the sense that the artist may feel himself to be in rebellion against the spirit of his age, a spirit largely due to the scientific outlook current in his time, or more probably, that was current a generation or two before his. The artist, therefore, does not ignore science; the fact is, he cannot escape it. When, however, he concerns himself merely with the expression of scientific fact or theory, and not with the spirit of quest and discovery, the chords he strikes must fail to find universal response in the human heart.