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Science and Humanism.

IT is sometimes instructive, sometimes amusing, but always interesting "to see ourselves as others see us," even when we think that their view is distorted. To the January issue of the *Nineteenth Century and After*, Mr. G. R. Stirling Taylor contributes an article entitled "The Age of Science," in which he advances criticisms of science and scientific men that are intended to represent the views of the intelligent man in the street. Starting with the assumption that science has dominated the world during the past 100-150 years (he really means the applications of science), he asks whether that domination has been good for man, or whether in harnessing Nature man has not also harnessed himself.

The steam-engine has led to the individual being subordinated to the machine; village life, with its sunshine and fresh air, has been largely replaced by industrial centres, with their slums, their polluted atmosphere, and their noise; and the electric telegraph has caused power to be concentrated in the hands of centralised groups of individuals. In a very real sense the late War was a war conducted by science—by the engineer, the chemist, and the physicist—and for the next war preparations are being made that "may blot out civilisation in a few months at longest." That much good has been done by science, and particularly by medicine, is not denied; but many of the ills that have been cured by it are the result of conditions which science itself has caused. Cold storage has increased our gastronomic temptations and made possible gross profiteering by the holding up of provisions.

Although the man of science may contend that such misapplications of science as chemical warfare are solely the responsibility of those who authorise their practice, the plain man, who cares nought for idealist intentions and is interested only in practical results, will saddle him with the blame: to turn loose a poison gas that may annihilate a city is, in its practical outcome, as immoral as to arm a crowd of drunken savages with knives and revolvers. May not a scientific man with an uncontrolled passion for truth (that is, discovery) be as dangerous as a man who has an unbalanced desire for alcohol?

Mr. Stirling Taylor then institutes a comparison of the man of science with the man of religion. Unlike the former, the priest has never made the amazing blunder of putting material truth in the centre of his altar, and he has never quite forgotten that human welfare is the chief end of life. The laws of both are dogmas, and the plain man will prefer such an unprovable dogma as that there is a God who

commands us to do right, to the logically water-tight dogma that a certain chemical procedure will split the atom and blow the world to pieces. "By their fruits ye shall know them," and the real test of the value of science is whether the men who work the machines and live round the factory are the better or the worse for its help and presence. Like the French revolutionists of the Reign of Terror, science has admirable intentions; it is the result which has been so disastrous.

Mr. Stirling Taylor's strictures on the evils accompanying industrial development, due mainly to the applications of science, are not novel; and although they are not entirely without a basis of fact, they certainly lack that very balance which he describes as the secret of life. On the material side he omits a host of directions in which the applications of science have proved beneficial, and he concentrates chiefly on certain unpleasant developments which first became prominent during the War. Throughout his article, he fails to discriminate between the discoverer and the inventor: the man who searches for new things and the man who applies them to human purposes.

In their ethical aspect, human acts can be classified as moral, immoral, or amoral, although the dividing line is not always easy to draw. "A good work of art," said Goethe, "may and will have moral results, but to require of the artist a moral aim is to spoil his work." Whatever view one may take as to the truth of this dictum in the sphere of art, we believe that the first part of it does not apply to science, and that a good piece of scientific work belongs strictly to the amoral category. On the other hand, the latter part of the dictum is certainly applicable: the searcher after truth of all kinds must go forward regardless of consequences, at any rate within the confines of his laboratory or study. The plain man, however, will argue that the social effect of an action cannot be overlooked, even if its morality is determined mainly by the intention behind it; and to this extent we think that Mr. Stirling Taylor is right in stating that a great responsibility falls upon those who discover potential weapons of inhuman warfare; although much greater responsibility must rest with those who use or sanction the use of these weapons. The intelligent man in the street must see that to abandon investigations on lethal weapons while other nations pursue them is to court disaster, if not extinction. However much we may detest these weapons, the calls of home, of country, and of Empire must come first. In these circumstances the responsibility of the scientific workers concerned appears to be confined to the observance of strict secrecy in their work. In almost every other sphere

of scientific activity, freedom in publication is essential; but in this case both morality and national security demand that it should be taboo.

The best reply to Mr. Stirling Taylor's article, which deals exclusively with the material applications of science, is supplied by the presidential address, entitled "Science and the New Humanism," which was delivered by the Right Rev. C. W. Barnes, Bishop of Birmingham, to the Science Masters' Association (and will appear in the February issue of the *School Science Review*). In Dr. Barnes' opinion, science has changed the whole background of our thought by giving us a new knowledge of man's origin and place in the universe. Every branch of human thought feels the influence of the new knowledge. The outlook of our grandparents, the postulates of their thinking, have become incredibly remote. Despite certain ills following in the wake of industrial applications, science is ultimately beneficent and not brutal. As an instrument of education, modern science cannot replace what are traditionally called the humane studies; yet knowledge of scientific truth and appreciation of scientific method are indispensable to all, because they are the foundation of modern humanism, and without them human thought would progressively degenerate. Science has practically freed the civilised world from the thralldom of base superstition; it has banished irrational fear; and it has purified religious thought.

The intelligence of civilised man is the outcome of from one to two million years of human and sub-human growth. Not merely do animal instincts and passions survive in us, but the structure of our mind retains traces of an animal past. In times of emotional upset, such as during the War, primitive mental processes assert their vitality; and we go back to the second century of our era to find a parallel to the crazy necromancy, astrology, and magic that flourish to-day. The principle of evolution is now firmly established—as the world's laughter at Tennessee has amply demonstrated. Originally a biological theory, it is now the unifying factor in anthropology, and its influence on psychology is great and growing. Evolutionary psychology and anthropology have given us a more penetrating insight into human civilisation, and in due time they will enable mankind to strengthen his social fabric.

Although science cannot answer ultimate questions concerning matters outside the realm of physical and biological phenomena, it can lead us within that realm from error to truth, from phantasy to fact; and it is on the truth which science has revealed, and is revealing, that we are building the new humanism of our age.