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General Smuts on the World Picture of Science.

IT is not frequently that an address from the chair of the British Association for the Advancement of Science bears so directly on our religious faith and consequently on the work of those whose vocation it is to expound Christian truth as does the address which was delivered by General Smuts at the Association's recent meeting. His outstanding abilities as a philosophical thinker, the exalted platform from which he spoke, as well as the great and perennial importance of the problem which he attacked, furnish food for thought and bring a challenge that we should re-think our basic positions. To those acquainted with the writings of thinkers like Professors Whitehead, Jeans, Eddington, and the rest of the exponents of modern scientific principles, and especially to those who have read General Smuts' own philosophical writings, there was nothing particularly new in the standpoint that was taken up. But the address has the twofold merit of focussing within a brief space the main outlines of the modern scientific *Weltanschauung*, while at the same time it reveals how this "world picture," which has resulted from scientific synthesis, is fitted into the framework of religious insight and intuition by one of the most vigorous and eminent thinkers of our age.

For one thing, the task which General Smuts essayed is one that confronts every thinking man to-day, and for that matter, has always confronted thinking men from the first moment when consciousness awoke to grapple with the mystery of the environing universe, and began to ask questions about the meaning of life. Moreover, the manner of men that we are, our inner contentment and peace of mind, depend on our having attained some degree of success in the fulfilment of this task. While furthermore, speaking as an exponent of philosophy and of the principles involved in the sciences, his words have a universal significance in that they bear on the work of theological reconstruction and point the way in which religious and theological thought has been moving and is likely to keep on moving for many years to come. He has rendered us a service in that he has articulated the thoughts of so many minds and the finest minds, and those who are wise will attend to what he has said.

The key-note of the address is found in the words—"Indeed it may fairly be said that science is perhaps the clearest revelation of God to our age." We confess that these words gave us a shock when we first read them, and the question came whether the speaker was not committing himself to the view which is held by some modern philosophers that the scientific and religious approaches to reality are in fact antithetical, and that of the two the scientific is the truer and more ultimate. To have argued thus would be to land us in a view given currency in certain phases of recent science that God certainly exists but that He does not exist in a manner that makes Him available for us, that He does not exist as an object for the religious consciousness, and that in spite of the fact of His existence nearly all that the religious mind has affirmed regarding Revelation, Prayer, Spiritual Communion, and Divine Guidance, are superstitions to be outgrown. It is possible to have a theism with very little religion in it. But General Smuts does not argue for such a view, for in speaking of science as a revelation of God, by science he means not only the "Natural" sciences, but the social and human enquiries as well: "Not only organic concepts, but also, and even more so, psychological viewpoints are becoming necessary to elucidate the facts of science. . . . The ancient spiritual goods and heirlooms of our race need not be ruthlessly scrapped. The great values and ideals retain their unfading glory and derive new interest and force from a cosmic setting." The term "Science" then is made to carry a different connotation from the usual one and covers all the philosophical as well as the theological disciplines. What then is the world picture that he gives and how does it affect the religious outlook?

His exposition begins by pointing out how science, by means of its method of observation, experimentation, and verification, corrects the standpoint of common sense with its unexamined assumptions of a world of matter, of separate things acting and reacting on each other, and of space and time also as things forming a setting in which other things and objects are placed. These views were challenged by the last century science, and thus came a new doctrine of the atom, the ether, and, by assuming the validity of the laws of motion and of conservation, the idea came to prevail that nature is a closed mechanistic system excluding free-will and the supernatural. On the whole this was the view which obtained in Victorian science. But, as is known, later science probed deeper and resolved the atoms and molecules into more ultimate entities: into radiations, electrons, and protons. Following on the researches of Clerk Maxwell and others there came the discovery by Minkowski that "time and space are not separate things, but constituent elements in the

deeper synthesis of space-time. Thus time is as much of the essence of things as space; it is not something extra and super-added to things in their behaviour, but is integral and basic to their constitution. The stuff of the world is thus envisaged as events instead of material things." Afterwards came Einstein with his conception of the fundamental structure of the world in terms of relativity, and Planck's Quantum theory of energy, calling for a new system of laws and concepts suitable for the mysterious world which science has disclosed. The result is that the old materialism has gone by the board because the pre-suppositions on which it rested are untenable, and some of the old categories like determinism, while they were useful as conventions for scientific research, have proved unsuitable, and thinkers are casting around for others more adequate to the richness and manysidedness of the reality which is to be explained.

Passing from physics to the realm of biology, the great discovery of the last century was that of organic evolution, a theory which has brought about a far-reaching change in our outlook on the universe. General Smuts' most striking utterance here was that cosmic evolution as disclosed in physics and astronomy moves in an opposite direction to that of organic evolution, and that while the world of organic life seems on the whole to be on the up-grade, the larger physical universe is on the down-grade: "The energy which is being dissipated by the decay of physical structure is being partly taken up and organised into life-structures—at any rate, on this planet. Life and mind thus appear as products of the cosmic decline and arise like the phoenix from the ashes of a universe radiating itself away." General Smuts finds compensation against the loss of a decaying universe in the thought that while in some of its aspects it is "running-down," it is also just as quickly transforming itself into the higher forms of minds, values, and personalities. But at this stage he arrives at the doctrine which he has made his own in the book on *Holism and Evolution*.

Recent physics, having broken with the concept of mechanism, tends to recognise the fundamental organic character of the material world, so that the ancient gulf between inorganic matter and the world of life is being bridged. Matter is a configuration or organisation of space-time; likewise life also is the principle which organises the space-time patterns into organic wholes. This is the essence of his doctrine of Holism, in which reality is conceived as expressing itself in organic wholes, the lowest of which he identifies with the "entities" which physics discloses, and the highest with the intellectual, moral, and spiritual activities of personality. "Beginning as mere blind

tropisms, reflexes, and conditioned reflexes, mind in organic nature has advanced step by step in its creative march until in man it has become nature's supreme organ of understanding, endeavour, and control—not merely a subjective human organ, but nature's own power of self-illumination and self-mastery: 'The eye with which the universe beholds itself and knows itself divine.'" He concludes his resumé of scientific advance during the last hundred years on the "Idealistic" note that the values created by the human mind and embodied in science, art, and religion, are not merely subjective things but are objective, and are rooted in the nature of God. By piecing together the clues and disclosures of the various sciences, we have a world-picture more full of mystery than ever, but one that reveals a universe that is friendly to man, and whose deepest processes and meanings are not misconstrued by his religious insights and faith.

As was said at the outset of this article, the task essayed by General Smuts is everybody's task, but in setting about it there are things we need to remember. Since knowledge is a growing thing and apparently is destined to keep on growing, it follows that the task will never be satisfactorily accomplished by any one of us, and there will always be a "conflict between science and religion." That is as it should be. A living faith will always be found grappling with the data furnished by an advancing knowledge, and ever striving anew to dove-tail it into its own vision of what reality is. Such a task devolves on faith because of its own nature. It is the voice of the Eternal in man, so that the interpretation of the temporal process which is proposed by the finite reason will always conflict with faith's deeper vision. We need, therefore, to be on our guard against those who claim to be able to "harmonise" things too much; they know neither science nor faith, and they lack the modesty which unflinchingly accompanies faith when it is a living thing.

Furthermore it follows that faith's certainties are not the kind which can be assured us by any process of scientific analysis. Faith *knows*, and knows in its own way by applying its own values and standards, and not by adopting the standards of science. When it attempts to stand on the props supplied by science, it ceases to be faith, as when it goes to the astronomers for any evidence of the existence of God, or to the Psychical Research Society for proof of the Immortality of the soul. Neither party can furnish faith with any assistance whatever, and no living and intelligent faith ever consulted them. The truth of all this is implied throughout the whole of General Smuts' address. He attempts to show, not that the world picture of science affords a basis for religious faith, but rather that it is more and more assuming an aspect which renders it amenable to faith's manipu-

lation. The world is God's world, and for that reason the religious consciousness seeks to find signs in it of its Divine origin and tokens of the Providence which guides its course. These signs and tokens are there in plenty; but it is an error to think that faith derives its knowledge of God as an inference from the world of nature or that the doctrine of Providence is inferred from history. Kant made an end of every apologetic which proceeds on those lines and at the same time pointed the way to the better one which is prevailing more and more to-day. Religion sprang into existence in the soul of man long before there was any science, and it does not derive its authority and sense of certainty from any source that science can reach. It is the utterance of the deepest in man and of the whole of his personality, and the vindication of its claims is found in the process whereby it enables its possessor to live "not as a pathetic wandering phantom of the universe, but as one who is at home, and meets with spiritual hospitality and response everywhere."

DAVID DAVIES.