unconditioned, but not a *knowledge* of it. If so, I have nought to say with regard to this consciousness; for it cannot be stated in propositional form. When a proposition has for its subject the Absolute or Unknowable, it must be either meaningless or absurd; for the predicate must convey some information or none, and if the former, it stands in contradiction to the subject.

Propositions of mere existence, then, when they are not mere figments, are variant forms of other kinds of predication. Mill's defence of them against Professor Bain¹ really amounts to a surrender; for, according to it, the assertion of existence is only a disjunctive assertion of co-existence, sequence, or resemblance; and therefore has, on his own showing, no right to a separate place in the classification of the heads of predication.

IS THE DESIGN-ARGUMENT SCIENTIFIC?

By H. M. STANLEY.

By 'scientific' we understand—in accordance with the method and spirit of natural science. The scientific spirit is the ruling factor in present culture and the unique intellectual characteristic of this age. In past periods various elements of culture have ruled, but never before in the history of human progress has the scientific spirit achieved the ascendancy. In Hellas art and philosophy were ruling powers, and in Rome politics was dominant; but in both natural science played but an obscure part. In the Middle Ages the theological and religious spirit was the *Zeitgeist*; while to-day every department owes allegiance to science. Industry is plainly coming more and more under the rule of science, is losing its empiric character and becoming scientific. The realism and analytic character of recent art and literature proclaim the influence of science. Psychology, History and other like branches are being rapidly made scientific. Finally, perhaps the greatest intellectual conflict of this age is with respect to the question whether religion and theology can be validated in like manner. Whether science is to maintain this supremacy indefinitely is difficult to say.

Science interprets not the universe by man, but man by the universe. It goes outward, and seeks to regulate that which is within by what is discovered of that which is without. It disclaims all automorphism and anthropomorphism. Man is a part of the universe, and inevitably correlated with it. Let not man, says science, in his self-sufficiency lay down theories, philosophies, cosmogonies, theologies, out of his own consciousness; but let man know and obey nature, and thus attain power by obedience. It is useless for man to propitiate the gods he has.

¹ *System of Logic*, 8th ed., vol. i., pp. 112-113, note.

set over nature, but, if he will be master of himself and his environment, let him know nature and act accordingly. Science, moreover, is characterised by great clearness and distinctness. Science acknowledges the darkness of the unknown beyond its light, but only the ever-widening circle of light is science. It is, furthermore, ever to be kept in mind, as Prof. Huxley insists, that science is merely an extension and organisation of common-sense; it rests upon the assumption and speaks the language of common-sense realism. Philosophy always lies behind science, and the postulates of science are the problems of philosophy. The object of this paper is to inquire how far Teleology may thus be ranked as science.

Teleology investigates intelligence in nature; Objective Psychology investigates intelligence in other beings than the individual investigating. It is generally acknowledged that we attain a knowledge of intelligence in other beings than ourselves by analogical induction, by comparison of their acts and works with our own and inferring from equality of effects equality of causes. Men of science are just at present cultivating with great eagerness Comparative Psychology in regard to infants, savages and animals, and they readily acknowledge that analogy is the only method of investigation.

For instance, Dr. Romanes in his *Animal Intelligence* remarks that "it is evident that in our study of animal intelligence we are wholly restricted to the objective method. Starting from what I know subjectively of the operations of my own individual mind, and the activities which in my own organism they prompt, I proceed by analogy to infer from the observable activities of other organisms what are the mental operations that underlie them." Other passages might be cited from Dr. Romanes's more recent work, *Evolution of Mind in Animals*, from Lauder Lindsay and from many other writers, to the same effect. There are thus several well recognised departments of Psychology, which have the same object as Teleology, *viz.*, investigation of objective intelligence, and the same method, analogical induction; and hence, if there be a science of Teleology, it is a department of Comparative Psychology. The Cartesians denied intelligence to animals, and so also a science of intelligence in animals; and those who deny intelligence in nature deny of course a science of intelligence in nature; but if there is a scientific Teleology, its place is as the crowning department of Comparative Psychology.

The perception of order and capacity for ordering grow up in interdependence. Perception of order precedes an ordering by man, since every adapting of means to ends presupposes knowledge of means—an order in nature of which man takes advantage. Designing by man presupposes knowledge of order and function in nature, but this knowledge may exist as pure science without reference to application. However, the discovery of order is *per se* an end, and designing with reference to at-

taining further knowledge is plainly dependent upon past knowledge and past design. A man to know must design, *viz.*, at least attend, and dispose organs; and to design must know, since knowing is perception of order and adaptation in nature and man, which can be taken advantage of by man. Does this interdependence of knowing and designing prove design in nature? It was the *dictum* of Prof. Baden Powell that whatever requires intelligence to apprehend, requires intelligence to originate. The intelligible can only arise in intelligence.

It is certainly natural to conceive that what appeals to our thought arises from thought, for we know that what requires our intelligence to comprehend would require our intelligence to execute. Since the perceiving of order implies the capacity of conceiving ourselves as originating intelligence throughout the realm of knowing, Fichte came to interpret the All as arising in the subjective intelligence. But conceiving ourselves as originating, or other intelligences as originating, is not proof that in reality there is this origination in intelligence. It is from this point of view conceivable and possible that the order of nature arises from design, but science rests not upon the conceivable and possible but upon correspondence with reality proved by facts; hence the belief that there is design in nature, if it will have a scientific basis, must rest upon analogy, the principle of equality of causes for equality of effects, which is the principle employed by science in investigating design in fellow-men and fellow-animals. Science, of course, employs the term 'cause' in the popular unreflecting way, without any reference to metaphysical doctrines.

The first process by which the man of science attains a belief in design by other beings is inference from observed activities. Many scientific observers have seen monkeys obtain oysters by breaking open the shells with stones used as hammers; and from this action and other actions, by referring to their own experience and accepted human experience, they have supplied the fourth term of this compound ratio—

Human acts : intelligence : : acts of monkey : x (intelligence).

Three terms are given, and the fourth is added through sense of relation, the relation of equality of causes for equality of effects. The teleologist, putting for the third term activities of universe, adopts a precisely similar ratio. The universe is an indefinitely extended single being whose activities are orderly and adaptive, and hence by parity of reasoning with previous case, they arise in design.

What now are some of the reasons why the design-argument is not generally accorded by men of science the scientific position which this parallelism points out?

In the first place, there is an objection from Physiology. The recent great progress of physiology as showing a constant correlation of mind and nerve, has led many inquirers to lay down as

an axiom that nerves are indispensable to consciousness and intelligence of any kind; hence Prof. Clifford went so far as to demand that teleologists should discover some huge cosmic brain, if they wish to give a scientific character to their speculations. Dr. Romanes in his recent book, *Evolution of Mind in Animals*, assumes, as a scientific axiom, that a nervous organism is essential to the possession of intelligence. The ordinary method of physical science has been to separate the workings of nature from rational action, as being merely redistribution of matter and motion, which are orderly and adaptive, not by virtue of intelligence, but because of chance, necessity or some such metaphysical entity. The tendency of the most recent science, however, is toward agnosticism, which rather presumptuously denies the capacity of the mind for ever solving satisfactorily the problem of the origin of the order of the universe. That nature is full of order and adaptation is the basis of all science; but it is seriously questioned whether this order and adaptation arises in intelligence; although if it occurred in connexion with a nervous organism, it would readily be recognised by science as arising in intelligence. On the other hand, Teleology claims that order and adaptation are universally good evidence of intelligence whether discerned in connexion with a nervous system or not. In the former view there is exaltation of manner, in the latter, of matter of activity.

It is to be remarked with reference to this physiological objection, that men inferred intelligence in bodies from their activities long before the nervous system was discovered, and that the great majority of mankind at the present day are wholly dependent for their knowledge of individual objective intelligence upon inference from activities, there being complete ignorance of the physical organs of intelligence. It would seem that the kind of activity as orderly and adaptive is more important than the basis of activity in material organism.

Again, this physiological objection may be combated as anthropomorphic; as may also the objection so often made, that the regularity of phenomena, the inexorable law, revealed by science, destroys the theory of intelligent choice in nature. Science reveals nature as a whole, stretching away indefinitely into minuteness as Chemistry reveals, and into largeness as Astronomy reveals; and science points out that man is intellectually limited by being physically part and parcel of this great wheel of nature. If this be so, it is evident that man is apt to interpret as rigidly mechanical and unalterable that which so far transcends him in space and time as to appear so. Give intelligence to one of the millions on millions of red corpuscles in the human blood, and in its speck of a lifetime, all that occurs about it in the organism of which it is a part must seem mere mechanism. Even so the man of science, who is in space and time but as a corpuscle in the being of nature and God, inclines to

a mechanical theory, and doubts or remains agnostic as to a teleological theory. The largeness of the scale upon which the intelligence in nature works and the relativity of our knowledge must be taken into consideration. Taking this scientific view of the universe, it is anthropomorphic to suppose that all intelligence must be fitted with the same organs which we possess.

A second objection is that the analogy between man's works and nature's is not sufficiently close to be a scientific argument for intelligence in nature. This objection has been strongly urged by Hume and many other writers. With reference to this, it need simply be said that the closeness of the analogy between man's industry and nature's is constantly being made more and more apparent. Taking the classic example of the eye, the analogy is now (*pace* Helmholtz) by reason of scientific and mechanical progress very much stronger than it was in the time of Socrates and even of Hume.

The method of inferring from the noticed acts of a being that this being has conscious intelligence, as applied to the universe, leads to a Pantheistic conception. All the activities of nature as being orderly and adaptive are interpreted as arising in intelligence, even as the orderly and adaptive activities of a fellow-being, a man, are interpreted as proceeding from intelligence. This kind of teleological interpretation of nature has not received the attention it deserves, although in the case of animals and fellow-men it is most common and natural. The modern scientific conception of the unity of natural forces makes this interpretation of nature very easy. In this Teleology God is intelligence and power immanent in universe, just as Psychology regards man as intelligence and power immanent in the human body.

The second teleologic process which is common to Teleology and other sciences, as Archæology and Comparative Psychology, is the method of inferring intelligence from products and remnants of action. This is more indirect than to infer intelligence from activities, and consequently involves greater liability to mistake. To have seen a man hoeing avails more as evidence than to have seen marks which are attributed to a hoe. The comparative psychologist infers by analogy from watching the action of a savage that he has power of design, is consciously intelligent; but the archæologist infers that a mere bit of chipped flint—to the ordinary eye, a natural object—is a machine, a product of savage design. This argument from machine to mechanic has always been the common argument of Teleology. The eye, the human body, the earth, the universe, are wondrous mechanisms, which could only have originated in superhuman intelligence.

This method as applied in Teleology gives a Deistic conception. The universe is a great machine, a practically infinite orderly succession of second causes, which as orderly and adaptive by analogy to man's works has originated in conscious intelligence. In pure Deism the universe is a machine which Deity originally

wound up and set agoing, and which runs on without any intervention. Other forms admit intervention, and make God not only fabricator but also engineer. Hume's objection that we are acquainted with watch-makers but not with world-makers, supposing the principle not directly questionable, may be answered from the point of view of Pantheistic Teleology, that we have as direct acquaintance with the universe as with men.

Pantheistic and Deistic Teleology may be united in a scientific Theism, just as the mechanical and psychological views of man are united in a scientific Anthropologism. The physicist views the human body as a mechanism, and he traces already a long series of physical causes and acknowledges that there is a practical infinitude of causes still to be traced. The physicist applies a mechanical theory to the universe, and interprets it as a practically infinite closed circle of physical causes. The scientific psychologist finds the human body to be, not merely a closed circle of physical causes, but more, an embodiment of conscious intelligence. The psychical series does not add to physical force, does not intervene in the physical series, although associated with it. The two series do, however, in some unknown way mutually influence each other. As to the character of the relation, this is at present outside the field of science, and in the field of philosophy and speculation. Science recognises as a fact a sense of initiation in consciousness, and it bids us keep on willing as if we had some control over the course of events. If realism and the doctrine of free-will are illusions, science is not concerned, as its basis is simple common-sense. The human consciousness is, according to present science, both transcendent and immanent with reference to the series of physical causes. The physical series goes on simultaneously with the psychical, and in direct connexion with it, not in any pre-established harmony; there is interpenetration, yet the psychical series does not intervene in the physical. The psychical thus lies outside of and transcendent to the physical, no psychical link taking the place of a physical or *vice versa*; yet there is immanence, each psychical link being correlated with a physical. As there is scientific basis for transcendence and immanence of intelligence in man, so also there may be for intelligence in nature. Deism finds its analogue in the notion of a spiritual substance wholly transcendent to the physical series in man, and intervening in it. Pantheism, in the form which makes God equal to the universe, finds its analogue in anthropological materialism. How this method of treating Teleology is related to evolutionism in its complete form, has been considered by the writer in the *New Englander* for September, 1883.