SATURDAY, JULY 24, 1926.

CONTENTS.

	PAGE
Truth and Tradition. By Prof. H. Wildon Carr	109
Ice-Domes and the Atmosphere. Dr. G. C. Simpson, C.B., F.R.S.	111
Infinite Series. By J. C. B.	112
The Chemistry of Drugs and Perfumes. By T. A. H.	113
Our Bookshelf	114
Letters to the Editor :	
The Secondary Hydrogen Spectrum.—Prof O. W. Richardson, F.R.S.	116
Imperfect Crystallisation of Common Camphor.—W. G. Burgers	116
Influence of Temperature on Biological Processes.—Dr. J. Bělehrádek	117
Migrations of Butterflies.—C. B. Williams	118
Series Spectra of the First Long Period.—Dr. R. J. Lang	119
Technical and Intellectual Values.—A. E. Evans	119
Natural History of the New Hebrides.—John R. Baker	119
The Imperfect Crystallisation of Common Things. By Sir William Bragg, K.B.E., F.R.S.	120
The Passing of Finsbury Technical College. By C. R. D.	122
The Oxford Meeting of the British Association. By F. A. D.	123
The Ross Institute and Hospital. OPENING BY THE PRINCE OF WALES.	124
News and Views	126
Our Astronomical Column	131
Research Items	132
Oxford Meeting of the British Association. PRO- VISIONAL PROGRAMMES OF SECTIONS	135
Universities of the British Empire	138
University and Educational Intelligence	140
Contemporary Birthdays	141
Societies and Academies	141
Official Publications Received	144
Diary of Societies and Conferences	144

Editorial and Publishing Offices :

MACMILLAN & CO., LTD.,
ST. MARTIN'S STREET, LONDON, W.C.2.

Editorial communications should be addressed to the Editor.

Advertisements and business letters to the Publishers.

Telephone Number: GERRARD 8830.

Telegraphic Address: PHUSIS, WESTRAND, LONDON.

NO. 2960, VOL. 118]

Truth and Tradition.

A CURIOUS change is apparent in contemporary thought. The scientific revolution, with its subversive principle of relativity and its paradoxical quantum theory, invaded the calm and secluded groves of philosophy and caused a strange disturbance. The positivity of science, at least in the form which it had assumed in the nineteenth century, seems to disappear; accepted principles and methods suddenly became suspect; old controversies lost their meaning; new worlds were being discovered. The reception of the new mathematical relativity by philosophers was at first decidedly hostile. An attitude of incredulity was followed by amazement and dismay. When the results of the eclipse observations of May 1919 were made known, and the principle of relativity, which had been formulated fourteen years before by Einstein, was found to be actually verified and confirmed, the interest was no longer confined to academic circles; popular expositions in journals and scientific manuals flooded the book market and every one was eager to be informed. A few mathematicians and many philosophers thought the whole excitement would prove to be a nine days' wonder and hoped, somewhat impatiently, that all would be explained away and that physics would again free itself from metaphysics. The principle of relativity has not been explained away; on the contrary, in an almost incredibly rapid time, it has established itself as orthodoxy. A revolution in ideas which a few centuries ago would have occupied generations now seems to take place between night and morning and while we sleep. At the beginning of the sixteenth century it was discovered by intrepid navigators that our earth is a sphere. It was not until past the middle of that century that a daring thinker suggested that the earth moves, and it was not until a century later than that, and after bitter persecution, that the revolution of ideas which it implied was accomplished.

The extraordinary thing in the present world of ideas is not the scientific revolution, but the fact that it is accepted and that no one expects it to be upset. This does not mean that the spirit of scientific inquiry has ceased its quest and is resting satisfied with its discovery. It does mean that whatever new revolutions are in the future, there is no return to the old ideas. It is the recognition of this fact which is eloquently and forcibly expressed in the two lectures before us—The Fison Memorial Lecture at Guy's Hospital delivered by Dean Inge on March 25,¹ and

¹ Science and Ultimate Truth: Fison Memorial Lecture, 1926, delivered at Guy's Hospital Medical School, March 25, 1926. By the Very Rev. W. R. Inge. Pp. 32. (London: Longmans, Green and Co., Ltd., 1926.) Paper, 1s. net; cloth, 2s. net.

the Herbert Spencer Lecture given at Oxford by Prof. Sorley on May 19.²

Dr. Inge points out that there are only three periods of history when knowledge has advanced by leaps and bounds—the time of the ancient Greeks, the Renaissance, and our own age—and of these the greatest accession of positive knowledge has come in our own time. He passes the brilliant pageant in review, and very impressive it is. Yet the philosopher's interest is in the conception of value, and he asks himself, what is the relation of values as they enter as factors into ethical, religious, and æsthetic experience to scientific truth, and especially to the reality which is the ultimate goal of scientific research? The profounder consciousness of contemporary science is not content to detach or dismiss these universal aspects of human experience, the ideals of beauty, truth, and goodness, as epiphenomenal existences, imparting an apparitional glow to cold mechanical order and to which our epiphenomenal minds respond with an emotional thrill. If the real nature of things is to be found in the atom of the physicists, then, as Dr. Inge points out to us, a microbe is nearer to reality than a man. We are, however, still far from the complete philosophy which would show how the different valuations which physics, history, and religion apply to experience supplement each other. This ideal consummation is yet to be attained. The formulation of such an ideal, however, shows that we are on a higher plane of thought. The reproach which has been and still is levelled at religion, that it is ever retreating from one position to another before the victorious advance of science, and that it is now preparing to die in its last ditch, is not undeserved, nor is it entirely untrue. It is the materialism of religion which has constituted its weakness. It is the "garish promises and terrifying threats" which have failed.

Prof. Sorley also is impressed with the consciousness of its own strength which is the outcome of the triumph of the new ideas in physics and biology. The same kind of confidence which Bacon and the leaders of the scientific renaissance expressed when they represented the modern inquirer, not as the patient interpreter of the old learning, but rising on the shoulders of the past, belonging not to the infancy but to the adult stage of our race. He sees to-day a revival of the same spirit which led the young Descartes to choose a military career, not influenced by desire for glory and for worldly success, or by chivalry, but by the opportunity it offered of gaining first-hand knowledge of man and Nature. All the great periods in which there has been a notable advance in science and a revolution in ideas have witnessed a break with tradition, an emancipation

from authority. We are going through such a period to-day, and no more profitable subject of self-reflection can be suggested than to take stock of our traditions, their significance, their value, and the nature of the authority they impose. Is tradition a dead hand throttling the living effort? Prof. Sorley shows us the sense in which it is a vital force necessary for the carrying on of original work. "Unless the solitary thinker emerge from his solitude and sow his seed in good soil, his ideas will not fructify." "It is seldom that a second chance comes to the innovator, as it did to Mendel when his work was rediscovered and became the inspiration of a school of biologists."

The two lectures suggest important reflections on the relation of human science to human nature and individual experience. A strange phenomenon is the apparition of man! When we view him as a form of material organisation, the outcome of a biological evolution, and then compare his activity with that of other forms in the hierarchical series, there is presented a phenomenon paradoxical and unique. The unique thing in the human attainment is the power which has come to man alone (it may be by virtue of the erect position, the visual convergence, and the co-ordination of the sense of hearing with the muscles of articulation) of superposing an artificial life on his natural life. There is nothing resembling it or approaching it in the other forms of living activity. Man by reason of his emancipation from environmental conditions has undergone and is undergoing a cultural as well as a natural evolution. The conditions of this cultural evolution are very strange—opposed to, rather than in line with, the conditions of biological evolution. The mind of the ape is moulded on the environment and responds to it as it were automatically. The mind of the man is educable. The culture which a man acquires by education does not modify his nature: it is super-added to it. Man's wisdom is not the wisdom of the bee or the ant. It is artificial. We may grow daily in grace and wisdom, transforming our natural cravings into social virtues, but we do not change the natural man. We cannot transmit our culture as a heritage to the succeeding generation. If we have the gift of expression and leave behind the works which follow us, all we leave is records which set a task for those who will enter into communion with us. Every individual must tread again painfully the path we have had to tread. The flattering notion that an Oliver Twist, born in a workhouse and brought up among thieves, can retain the gentle nature which cultured parents have bestowed on him is a romantic fiction.

It is this which constitutes the real problem of the genesis, the nature, and the authority of tradition. The new generations must start their education not where

² Tradition: the Herbert Spencer Lecture delivered at Oxford, May 19, 1926. By Prof. W. R. Sorley. Pp. 24. (Oxford: Clarendon Press; London: Oxford University Press, 1926.) 2s. net.

the old left off, but where the old started. Our generations overlap. It might have been otherwise. Evolution might have produced forms of activity which can retain and preserve individual attainments across a complete breach of continuity. This is the normal case in the insects, but the reverse is the rule in the vertebrates, and in the human form we meet with the formation and growth of an ideal environment, cultural and adventitious. The musician cannot bequeath his acquired skill, the painter cannot impart his acquired technique, the student his erudition. Each individual starts *de novo*, and yet he can only develop under the guidance and influence of the overlapping generation. Hence there grows up around him a tradition and an authority which appear external and seem to restrain him, but which in truth he is himself creating in the very activity of the life which bursts his bondage.

H. WILDON CARR.

Ice-Domes and the Atmosphere.

The Glacial Anticyclones: the Poles of the Atmospheric Circulation. By William Herbert Hobbs. (University of Michigan Studies, Scientific Series, Vol. 4.) Pp. xxiv + 198 + 3 plates. (New York: The Macmillan Co., 1926.) 2.75 dollars.

IN his study of the great ice masses which form the continental glaciers of Greenland and the Antarctic, Prof. Hobbs was impressed with the dome-like shape of their ice-covered surfaces. He also noticed that the predominating wind direction along their coasts had a marked outward component as though the air were sliding off the domes. It was not difficult to find a reason why air should slide off the domes in this way, for meteorologists had long been familiar with the flow of cold air down hill-sides and valleys which occurs when the surface layers of air become abnormally cold owing to intense outward radiation. Sir Napier Shaw has given the name katabatic wind to the winds formed in this way.

Starting, then, with the idea that the air is flowing off the domes outwards in all directions, Prof. Hobbs naturally concludes that it must be replaced by air which is 'pulled down' over the central parts of the dome. But this is the sort of circulation which is described in the old text-books of meteorology as anticyclonic, so Prof. Hobbs assumes that there must be an anticyclone over every dome-shaped ice-covered land. He gives the name glacial anticyclone to such anticyclones; but he categorically states "the domed ice-surface, not the snow-covered land, is the direct cause of the anticyclone" (p. 126).

The outward flow of air, however, is not steady, but

takes place in what Prof. Hobbs calls "strophs." Each stroph commences with a calm, then the air starts to move outwards, slowly at first, but acquiring velocity "to accord with the law of acceleration of gravity"; when the velocity has reached full blizzard proportions the motion is suddenly arrested because of adiabatic heating, and the stroph is at an end. Thus the whole regime of the air circulations over the Antarctic Continent and Greenland with their calms, blizzards, föhns and high winds is brought under the dominion of the glacial anticyclones.

The difficulty with all such theories is that the author never knows when to stop, so Prof. Hobbs extends his theory still further. As is well known, the Bjerknes theory of cyclones and the polar front is based on the interaction between polar air and equatorial air. But Prof. Hobbs says that the air in the north polar regions is not suited for such a purpose; in fact, Bjerknes' polar air "is quite different from that encountered by explorers within the north polar region of frozen sea"; what Bjerknes' cyclones want is a dose of air from a glacial anticyclone, so Prof. Hobbs concludes that "the cold air which rejuvenates the dying cyclones on their approach to the coast of Europe from the west, instead of having polar origin, issues from the Greenland Continent during a stroph of the anticyclone" (p. 155). Prof. Hobbs also casts longing eyes on Bjerknes' families of cyclones, but it is not clear whether he claims them entirely as the product of the anticyclone; he does say, however, "when a new stroph is inaugurated a new family of cyclones is generated" (p. 153).

Not content with bringing the cyclones of the northern and southern hemispheres under the dominion of the strophs of his glacial anticyclones, Prof. Hobbs goes still further and claims that the terrestrial climatic zones owe their existence to the glacial anticyclones, and that if there were no iced domes in Greenland and the Antarctic, the world would enjoy the uniform climate which certain geologists consider existed in previous ages. Finally, it is claimed that "these northern and southern glacial anticyclones fixed in position, function as the loci of drainage from the upper wind currents and are therefore the reversing position within the general cycle of air movement—they and not the geographic poles are the wind poles of our planet" (p. 155).

Thus, by a series of plausible steps, Prof. Hobbs has brought practically the whole of the meteorological conditions of the globe and the general circulation of the atmosphere under the dominion of two relatively small ice-domes. We have not the space to criticise this elaborate theory in detail, so a few remarks must suffice. It is now generally agreed that true anticyclones exist over the Antarctic and Greenland, but