

Philosophical Interpretation of Science

In reviews and articles that have appeared over the name of Prof. Dingle in *NATURE*, a particular philosophical point of view has been presented as if it were one to which scientific men must necessarily subscribe. In his review of Eddington's "New Pathways in Science" in *NATURE* of March 23, p. 451, for example, it is again explicitly stated, and although I am at one with him in many of his criticisms of that book, I am certain I speak not for myself alone when I dissent strongly from Dingle's philosophical outlook on science. "We start with experience," he says, "pick out those elements which are common to all observers, represent them by concepts defined in such a way that . . . they relate together as many as possible of the common experiences, and the resulting logical network is the 'external world'".

Now this viewpoint is put forward as if it were a necessary consequence of scientific discovery; indeed we are informed that relativity has saved the man of science from being "forced to admit an external objective world of which his experience was only one aspect". May I suggest that very many men of science assert that science is the result of man's interference in and study of the external world, and that without the latter there would be no science and no men; that they regard the statement that the *logical network* constitutes the *external world* as a fantastic misuse of terms; that when Prof. Dingle

says "We start with experience" he means "I [H. D.] start my analysis . . ."; that when he talks of "all observers" he is either assuming an external world of which these observers are part or he is still talking of *his* experiences, and he has simply given the rather misleading title of "all observers" to them; that when he uses the English language in writing the review, either he is again using words evolved during the history of an external world and writing them for people all of whom are part of that external world, neither of which has been created out of Prof. Dingle's *logical network*, or alternatively *his* mind has built this language and these people out of his experiences; that in the latter event the whole of science, art, literature and philosophy become the organised experience of Prof. Dingle himself. Does all this not look as if Prof. Dingle is trying to pull himself up by his own bootlaces?

Finally, since it is certainly true that a great number of scientific men of philosophical understanding would not accept Prof. Dingle's interpretation (itself surely an experience), is he not compelled on his own criteria as to what constitutes the external world to refuse to accord his philosophy any status in that world?

H. LEVY.

Imperial College of Science,
S.W.7.
March 25.

Points from Foregoing Letters

By pointing his cosmic ray detectors to Nova Herculis, W. Kolhörster observed between December 22 and 31 an increase of 1.7 per cent in the amount of cosmic rays and brought this as evidence that cosmic rays are produced during stellar outbursts. Prof. V. F. Hess and Dr. R. Steinmaurer now give figures obtained by a different method showing that in the period December 13-22 a small increase in ionisation due to cosmic rays was recorded (less than 0.2 per cent), an amount within the limits of experimental error. Mr. J. Barnóthy and Mr. M. Forró, from continuous records with an instrument similar to that of Kolhörster, conclude that cosmic rays coming direct from Nova Herculis were not an appreciable factor in the variations observed during the month of December.

Prof. E. V. Appleton gives a new formula for calculating the frequency of collisions between electrons and molecules in the upper atmosphere. He points out that the earlier equation recently used by Mr. T. L. Eckersley left out an important factor (the optical path) and that Mr. Eckersley's measurements probably refer to the uppermost F_2 region, at about 300 km.

The antiquity of the human remains found by Dr. Leakey in Kenya has recently been questioned. Prof. T. F. Dreyer directs attention to three adult and one juvenile skull found in South Africa. These are closely similar to the Kanjera finds and are considered by Prof. Dreyer to be of Holocene (post-Pleistocene or recent) age; indirect evidence, from implements, indicates that the South African and Kanjera men already existed in pre-Holocene times. Prof. Dreyer further believes that the two types of implements (Chellean-Acheulean and Mousterian) usually considered to belong to two successive periods

(lower and middle Palæolithic, respectively) were in fact evolved contemporaneously.

The 'spin' of the atomic nuclei is an important factor in determining the probability of disintegration during atomic collisions. Dr. S. Tolansky discusses the relation between the nuclear mechanical moments (due to spin) and the constitution of the nuclei. He infers that spin values of $3/2$ and $5/2$ lead to, or are associated with, greater stability when an odd nuclear proton is present in atoms of odd atomic weight and even atomic number.

Three stages have been postulated in the process by which green plants combine the carbon dioxide of the air with water to form carbohydrates. Dr. D. Burk and Mr. H. Lineweaver claim that at least four reactions can be experimentally recognised. They submit a formula showing how temperature, light, concentration of carbon dioxide and of chlorophyll, etc., affect the rate of these reactions.

The chemical structure of the female sex hormone, oestrin, and of related synthetic chemical compounds with similar properties, is discussed by Mr. E. Friedmann. He concludes that molecules with oestrogenic activity, so far prepared, contain the carbonyl (CO) or hydroxyl (OH) group, connected through two carbon atoms with a benzene or other 'ring'; other combinations may also be active.

Mr. J. J. Walker and Dr. L. Slater discuss the application of infra-red photography to the examination of thin sections of coal. In their opinion the method is useful in giving a more accurate reproduction of the colour transition between pale red and black, and in producing a 'flatter field'. Under certain conditions, however, the panchromatic is still to be preferred to the infra-red photographic plate.