

prohibit ingestion. Smaller fragments are afterwards ingested; but these have in the majority of cases been detached, and in consequence already in part disintegrated, by the activities of the iodophile micro-organisms. Similar considerations hold for the protozoa of the horse. In both instances, however, digestion of starch grains and iodophile micro-organisms has frequently been observed.

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¹ Baker, F., Preliminary Note on the Role of the Coccoid Micro-organisms in the Disintegration of Cell-Wall Substances", *Zent. f. Bakt.*, Ab. II, 84, 452 (1931).

² Baker, F., "Studies in the Microbiology of Organisms associated with the Disintegration of Vegetable Remains", *Zent. f. Bakt.*, Ab. II, 88, 17 (1933).

³ Baker, F., and Martin, R., "Some Observations on the Iodophile Microflora of the Caecum of the Rabbit: with special Regard to the Disintegration of Cell-Wall Substances", *Zent. f. Bakt.*, Ab. II, 96, 18 (1937).

⁴ Baker, F., and Martin, R., "Observations upon the Disintegration of Cell-Wall Substances in the Caecum of the Guinea Pig", *Zent. f. Bakt.*, Ab. II, 97, 201 (1937).

Scientific Tests of Telepathy

It is probable that most psychologists and practically all physiologists regard the evidence in support of 'clairvoyance' and 'telepathy' as worthless from a scientific point of view. So naïve, as a rule, are the arguments used by those anxious to give verisimilitude to the results of imposed tests that few scientists are willing to discuss or even seriously to consider these subjects with their question-begging titles. This is regrettable, as the public are apt to draw erroneous conclusions when they see reiterated statements in the popular press pass unchallenged. For this reason Mr. S. G. Soal, senior lecturer in pure mathematics at Queen Mary College, University of London, is to be congratulated on having conducted detailed investigations into certain alleged 'psychometrising' faculties of the medium 'Marion', and for having published in the press¹ and elsewhere² his conclusions thereon. It is yet more a subject for congratulation that a periodical of the scientific status of NATURE³ is willing to devote space to reports upon investigations of this subject.

"In spite of all the vast tomes that have been published on psychical research," writes Mr. Soal in the Bulletin (p. 3) to which reference has been made, "I have yet to meet the human being who under similar conditions can do what Marion has failed to do!" This, one of many comments—all adverse to a telepathic interpretation—appended by Mr. Soal to the results of the experiments, both recalls and endorses the following dictum by the late Sir Ray Lankester.

"Telepathy is simply a boldly invented word for a supposed phenomenon which has never been demonstrated. It is an unfair and unwarranted draft on the credit of science which its signatories have not met by the assignment of any experimental proof. There is not one man of science, however mystic and credulous his trend, among those who pass this word 'telepathy' on to the great unsuspecting, newspaper-reading public, who will venture to assert that he can show to me, or to any committee of observers, experimental proof of the existence of the thing to which this portentous name is given."

The late Sir Bryan Donkin, a psychiatrist of considerable repute who had devoted no little attention

to the claims of 'thought-readers', used to say of the above quotation that it constituted a masterful summing up of the whole case for telepathy.

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¹ *Sunday Times*, March 13, 1938.

² Bulletin 3. University of London Council for Psychical Investigation.

³ NATURE, 141, 565 (March 26, 1938).

Science and the Unobservable

IN Prof. Dingle's lucid rejoinder to my letter¹ the difference in our points of view stands out very clearly. It hinges on the meaning of such terms as "denial" and "pronouncement".

I do not think that relativity as a scientific theory "denies" the existence of absolute simultaneity in the dogmatic sense in which Prof. Dingle seems to employ that word; the third horn of the dilemma on which he would impale me thus turns out to be made of sand. Stated explicitly, relativity as a scientific theory makes only such pronouncements as the following concerning absolute simultaneity: (1) at present it is not a significant concept in physics; (2) known facts raise a presumption or expectation that it never will be; (3) if we assume certain postulates or working hypotheses which preclude the existence of absolute simultaneity, such and such conclusions follow. That is all.

Precisely this careful avoidance of *dogmatic* pronouncement seems to me to be of the very essence of the scientific method, and I think it is a mode of approach that is badly needed in attacking many other problems.

E. H. KENNARD.

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April 8.

¹ NATURE, 141, 557 (March 26, 1938).

I AGREE with Prof. Kennard's three statements on the pronouncements of relativity, but if, as he truly says, "That is all", what has become of the "world existing independently of experience" which was regarded as essential in his first letter? Of the three attitudes which I considered incompatible, he has chosen those of the relativist and the non-professor of omniscience, and abandoned that of the realist as defined; he is now entirely in the realm of concepts, known facts, assumptions and rational deductions. In the terms of my former letter, he has shown no reason for giving $A - A' - A''$ a non-zero value. Immediately, therefore, he adds the realist contention that it has such a value, he makes an unfounded statement and so becomes dogmatic.

I would add that I am in complete agreement with Prof. Kennard concerning the undogmatic character of the scientific method, and the need for its more general application. The importance of this matter, particularly in the social, political and religious spheres, is, indeed, one of the chief reasons why I think it is necessary to see science exactly as it is without adding to it a totally irrelevant "independent universe" which fulfils no function but that of making false philosophies plausible.

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April 29.