

The bearing of "metageometry" upon Kant's doctrine of space is still *sub judice*. It is open to the Kantian to maintain either that "bent" spaces fall within Euclidean space, multidimensional spaces being an hallucination due to abuse of algebraic symbolism, or, with Mr. Bertrand Russell, that if Euclidean space is experiential, yet some "form of externality" is *a priori*. Dr. Scheler is, however, throughout the discussion suggestive, if inconclusive.

Less satisfactory is his treatment of causation. The statement that the conception of uniformity is foreign to the Greek period is absurd. That the period of Roman decay was one of lawless happenings is not true in the sense of p. 73, and Dr. Scheler does not save himself by after qualification, in view of the exaggerated position of p. 69, that the causal category which makes natural science possible as a science of experience would make historical science as a science of experience impossible. The treatment of time and the self is relatively slight.

The inadequacy of the psychological method is to be found in its equivocal use of the term "facts of consciousness." Either it is Protagorean and anarchical, and the objects of all sciences and nesciences are on a dead level of "psychical existence," or there are realities which transcend this accommodating rubric. Idealism is prone to the epistemological fallacy, as positivism is prone to the phenomenalist fallacy.

If, however, neither transcendentalism with its reduction, nor psychology with its grip on something real—even falsities—can satisfy us, we must, in default of other probable courses, cast about for some syncretist formula uniting the truths and discarding the defects of both. Dr. Scheler declines Sigwart's irenicism, because of the primacy it involves of the moral and volitional element in life. Surely this is not ineradicable from Sigwart's formula? Rejecting this, and the solutions of which it is the type, he falls back upon the endeavour of his teacher, Eucken, to make jettison of all in both methods that offends the time-spirit, and to fashion what is left, with the aid of something which both had left out, into a non-absolutist, non-sceptical scheme, hereafter to be more fully developed.

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OUR BOOK SHELF.

First Stage Botany, as Illustrated by Flowering Plants.
By Alfred J. Ewart, D.Sc., Ph.D., F.L.S. Pp. viii + 252. (London: W. B. Clive and Co., no date).

THE author sets forth in the preface that his primary object in writing this book was that of satisfying the requirements of students preparing for the elementary stage of the Science and Art Examinations. A glance through its pages suffices to prove that this end is everywhere kept to the fore. Even the figures, which are very numerous, are labelled all over in large type so as to enable the student, with the minimum expenditure of time and trouble, to get up the maximum amount of facts. In the text the treatment is on analogous lines, and probably the student possessed of a good memory might, with this book as his mentor, succeed in passing a fair examination. Beyond this we have failed to discover why the book was written; and when its author goes on to state that it is also intended to serve as an "efficient introduction to Botany," we simply cannot agree with him. The character of the book is too dogmatic, and too little is left to the student. Indeed, a sentence contained in

the preface, advising the student to obtain specimens and "verify upon them the statements made in the text," gives the key to the entire book. Not merely verification, but the fostering of a spirit of *inquiry* ought to be the chief aim of a teacher, and it is this aspect of the matter which we miss in the volume before us. In the paragraph on geotropism (p. 211) this phenomenon is defined as the "tendency of the radicle or main root to grow towards the centre of the earth"; a very inadequate definition both from the point of view of fact and theory, and one of little or no scientific value to the student.

Some subjects, e.g. obdiplostemony, are introduced which would have been better omitted. Unless fully discussed they are of no value educationally, and the space they occupy would be better taken up by a more extended treatment of the more elementary matters. Although, in a general way, the book much resembles others of its class, save, perhaps, in the compression of an unusually large number of facts into its pages, it is but right to add that actual errors are remarkably scarce.

The Principles of Magnetism and Electricity. An Elementary Text-book. By P. L. Gray, B.Sc. Pp. xvi + 235. (London: Methuen and Co., 1901.) Price 3s. 6d.

THE number of elementary text-books on magnetism and electricity probably exceeds that of text-books on any other subject. One would, therefore, naturally expect that anybody attempting to add to their number would do so with a due sense of responsibility, and endeavour to produce a book which might be regarded as surpassing those already in existence either in accuracy of exposition or in freshness of treatment. A careful perusal of the book before us has forced us to the conclusion that the author is destitute of all sense of responsibility, and not afraid to scatter error broadcast with a light heart. Seldom has it been our lot to come across an elementary text-book so full of glaring errors so boldly stated. On p. 18 the author describes a vibrational method of comparing the moments of two magnets in which the moments of inertia of the magnets are not even referred to! On p. 15 we have the startling assertion that in the case of diamagnetic bodies "the induced magnetisation is at right angles to the field" (the italics are the author's!). Could there be a greater confusion of ideas than that exhibited by the following sentence? (p. 151): "A pole of strength m will have $4\pi m$ lines of force proceeding from it, so that, if a transverse narrow cut be made across a magnet which has σ lines per sq. cm. in any normal cross-section, the field in the narrow slit H will be equal to $4\pi\sigma$." The author measures magnetic force in dynes, and difference of potential in ergs. On p. 162, in connection with the induction coil, we read: "Trowbridge has recently obtained sparks nearly seven feet in length, obtaining an E.M.F. of 3,000,000 volts, the primary current being supplied from a battery of 10,000 storage cells" (the italics are ours). Is the author serious, or does he intend playing a practical joke on his reader, by suggesting that any sane person would use 10,000 storage cells for supplying the primary of an induction coil? Had he taken the trouble to refer to Prof. Trowbridge's papers, the author would have found that the arrangement used for obtaining the 3×10^6 volts had nothing whatever to do with an induction coil. On p. 163 we have the sentence: "The total value of the magnetic force within a circuit is known as the magnetic flux through the circuit." Now, what does the author mean by "the total value of the magnetic force within a circuit"? When touching on technical matters, the author does not scruple to make various erroneous statements with an airy assumption of superior knowledge. "Theoretically," we are told on p. 166, "every dynamo could be used as a motor and every motor as a dynamo. In practice, however, this power of reversibility is not used." Again, on p. 170, we read: "Owing to the self-