Three Lectures on Fermat's Last Theorem. By L. J. Mordell. Cambridge, University Press, 1921. 30 pp.

The pamphlet consists of three lectures on Fermat's last theorem, given at Birkbeck College, London, in March 1920. The lectures, as stated in the preface, were intended primarily for persons with a mathematical training, but not necessarily for those who had made a special study of the theory of numbers. The work is divided into three chapters.

The first chapter contains a brief discussion of Fermat's work and the history of the theorem. It also contains the consideration of the early proofs of the impossibility of Fermat's equation $x^n + y^n = z^n$ for the cases $n = 3, 4, 5$, and 7.

The second chapter is an exposition of Kummer's work in attempting to prove the theorem. Algebraic numbers and the arithmetic in an algebraic domain are discussed, showing how the failure of the unique factorization in such a domain necessitates the introduction of ideal numbers. The nature of these ideal numbers is very clearly and briefly presented. The author explains in an elegant manner the main points in Kummer's work leading to the proof of the impossibility of the solution of $x^p + y^p = z^p$ in the domain defined by the primitive pth roots of unity, when the class number of the domain is prime to p. The chapter ends by a mention of the more recent results based on Kummer's work.

In the last chapter the author discusses the methods of Libri and Sophie Germain and the results obtained by these methods, of which may be mentioned Dickson's proof of the impossibility of a solution of Fermat's equation in integers prime to p (p the exponent) when $p < 7000$.

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The Absolute Relations of Time and Space. By Alfred A. Robb. Cambridge, University Press, 1921. 80 pp.

This is really a contribution to the geometry of point events in which stress is laid upon the importance of the ideas of before and after. To illustrate his ideas, the author makes frequent use of cones, somewhat after the manner of Minkowski, and introduces the idea of conical order. The reviewer believes that a reader will find it helpful in studying Robb's logical analysis if he also uses the geometric representation of a point event by a closed surface completely surrounding the point. An event A may then be regarded as after an event B if the representative surface of A completely surrounds the representative surface of B. If the two representative surfaces intersect or are external to one another, the event A is neither before nor after B. The geometry thus visualized may be regarded as a wave-geometry, the representative surface of an event A being the locus, at the very beginning of things, of point events whose combined influence results directly in the occurrence of the event A. The simplest assumption one can make is that the representative surface is a sphere with A as center, but a more general assumption is suitable for Einsteinian geometry and for the geometry of light waves in a material medium or of sound waves in a windy atmosphere.

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