

Chapter 20 on representations as sums of 2 or 4 rational integer squares provides an opportunity to sketch the arithmetic of quaternions, and serves as an introduction to Waring's problem for cubes and fourth powers in Chapter 21, where Tarry's problems, sums $\sum \pm x_i^k$, and equal sums of two k th powers are also briefly considered. Any reader of this notice who is looking for something hard to do is invited to observe page 336, (f). The notes on pages 334–337 summarize the main results up to 1938 on Waring's problem.

Chapter 22, the third in the book on the series of primes, follows Landau's proofs of Tchebycheff's theorems, and pushes the analysis a little further to obtain Mertens' approximation to $\prod_{p \leq x} (1 - p^{-1})$, p prime. The chapter concludes with a note on "round" numbers and a theorem of the "almost all" type on the order of the number of divisors of n .

As the last of the authors' introductions, we mention Chapter 13 on certain Diophantine equations ($x^n + y^n = z^n$, $n = 2, 3, 4$), the expression of m as a sum of rational cubes, $x^3 + y^3 = 3z^3$, and equal sums of two cubes.

The foregoing sample from the two dozen chapters covering 400 pages may give some idea of the extraordinary richness of the material, and suggest the justice of the authors' own characterization of their work as "a series of introductions" to a vast and many-sided theory. They have presented these introductions in a manner that should stimulate a reader to continue beyond some of them; and it seems safe to say a great deal more than what they themselves say, "we can hardly have failed completely, the subject-matter being so attractive that only extravagant incompetence could make it dull." The book is anything but dull; in fact it is as lively as the proverbial (not the English) cricket.

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Le Concours de l'Analyse Mathématique à l'Analyse Expérimentale des Faits Statistiques. By Georges Hostelet. (Actualités Scientifiques et Industrielles, no. 585; Le Progrès de l'Esprit; Exposés publiés sous la direction de L. Brunschvicg.) Paris, Hermann, 1937. 70 pp.

The first section can be summed up by stating that the experimenter believes that the basic laws on which statistics are founded have been proven by the mathematician, while the mathematician believes that these laws have been demonstrated by the experimenter.

In the next section the author states that the mathematical analysis of statistical facts are contained in the intuitive-empirical notion of species, which implies notions of means, errors of means, frequencies and limits of these errors. He gives the conditions, which a statistical fact must satisfy in order that the arithmetic mean signifies the best value, defines the analytic and synthetic indicator of the degree of correlation, outlines the conditions necessary for linear correlation and considers that mathematical analyses are auxiliaries to experimental analyses of measurable facts when measurements present numerical relations expressible in explicit functions.

Section three contains postulates on which mathematical and experimental reasoning depend, answers to objections Fréchet made concerning probability and its use in the analysis of statistical facts, the necessary steps for verifying an hypothesis and an explanation of the difference between mathematical and experimental reasoning.

Chapter IV presents the three modes of scientific investigation, viz: the empirical-intuitive mode, the deductive-abstract mode and the abstract-experimental mode and points out their limitations.