ABSTRACTS OF PAPERS

SUBMITTED FOR PRESENTATION TO THIS SOCIETY

The following papers have been submitted to the Secretary and the Associate Secretaries of the Society for presentation at meetings of the Society. They are numbered serially throughout this volume.* Cross-references to them in the reports of the meetings will give the number of this volume, the number of this issue, and the serial number of the abstract.

217. Professor E. T. Bell: *A correspondence between irregular fields.*

Dickson extended the theory of numbers by a correspondence between fields (this Bulletin, vol. 23 (1916), p. 109). Correspondence is here defined for irregular fields, and is applied to such fields whose elements are respectively the (infinite) set of all numerical functions, and a certain infinity of power series with radius of convergence unity. The regular elements (those having reciprocals) in the second irregular field are those power series of the kind defined with constant term different from zero. The simplest example of multiplication in this irregular field is the process by which, when legitimate, a Lambert series is derived from a given power series. Examples can be constructed showing that the restriction to the unit circle as the region of convergence is necessary as well as sufficient. (Received April 5, 1930.)

218. Professor E. T. Bell: *The real unit segment as a number field.*

In a general discussion of the theory of unique decomposition (multiplicative, additive, etc.) into indecomposable elements, it becomes necessary to devise an algebra, arithmetic and analysis for real vectors with $n>3$ components. This problem can be reduced to the situation described in the title. The set of all real numbers in the closed interval $[-\infty,+\infty]$ is put in (1,1) correspondence with $[0,1]$, so that $-\infty, 0, 1, +\infty$ correspond respectively to $0, 1/2, 3/4, 1$, and the rational operations in $[0,1]$ are then defined in abstract identity with those for $[-\infty,+\infty]$ as in analysis. Order relations are introduced in an obvious manner. To the rational integer m in $[-\infty,+\infty]$, corresponds in $[0, 1]$ $m'=1/2+(1/\pi)\tan^{-1} m$, $|\tan^{-1} m|\leqq\pi/2$, and the "rational integer" m' in $[0, 1]$ is "divisible arithmetically" by the rational integer n' in $[0, 1]$ when and only when m is arithmetically divisible by n in $[-\infty, +\infty]$. (Received April 5, 1930.)

219. Professor E. T. Bell: *Numbers of representations in certain senary quadratic forms.*

*See pp. 1–2 and p. 45 of the January issue.