

*Leopold Kronecker's Werke*. Volume V. Edited by K. Hensel. Leipzig, Teubner, 1930. 10+528 pp.

The edition of Kronecker's works is now rapidly nearing its completion; there remains only Part 2 of Volume III yet unpublished. According to the list of Kronecker's publications compiled at the end of the present volume the total number of papers amounts to 139, a number which reveals the prodigious task of the editor. It seems the proper moment to congratulate Professor Hensel upon this achievement; he has by this edition erected a monument to the mathematical genius of Kronecker, a mathematician whose ideas have placed their stamp on the development of numerous branches of modern mathematics. Professor Hensel won his own first mathematical laurels by his completion of Kronecker's theory of algebraic numbers.

The present volume contains the second part of Kronecker's papers on elliptic functions and minor papers on function theory, potential, and mathematical physics. Then follows a set of shorter notes on a great variety of subjects ranging from number theory to physics and reflecting the wide interests of Kronecker. Furthermore there are Kronecker's published letters to various mathematicians, addresses and minor statements. Among the latter it seems to me that a few might well have been omitted, for example the list of the lectures of Jacobi compiled by Kronecker; the editor seems to have wanted, for the sake of completeness, to include all unpublished articles.

Among the letters I shall only mention the famous letter of Kronecker to Dedekind concerning the so-called "Jugendtraum" of Kronecker, that is, the representation of the numbers of a relative Abelian field with respect to a quadratic imaginary field by means of singular moduli. In some special annotations to this letter, H. Hasse discusses the possible formulations of this theorem; it is known according to the results of Fueter that if the field is of odd degree all its numbers can be expressed by means of roots of unity and singular moduli; for even degrees some additional irrationalities are required. Hasse points out that it is possible that Kronecker more generally has intended to use the irrationalities defined by the transformation of the singular elliptic functions, and that various of Kronecker's statements seem to indicate this. For such a formulation the theorem is always true as has been shown by Takagi. It is, however, highly probable that Kronecker never arrived at an exact formulation of his "Jugendtraum."

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