integrals of the three kinds. It can then be essentially considered as a product of divers θ functions.

All of these functions can appear as integrals of differential equations, a fact which we hope to discuss on some future occasion.

UNIVERSITY OF CALIFORNIA, BERKELEY,
November 7, 1898.

ON THE ARITHMETIZATION OF MATHEMATICS.

BY PROFESSOR JAMES PIERPONT.

(Read before the American Mathematical Society at the Meeting of February 25, 1899.)

*Introduction.**—The following lines are an attempt to show why arithmetical methods form the only sure foundation in analysis at present known. Certain general reasons are indicated in a very suggestive paper by Klein.† I have striven to carry these ideas further and indicate exactly why arguments based on intuition cannot be considered final in analysis. To do this I have grouped certain well known facts so as to support the conclusion which is formulated at the end of this paper. Doubtless a similar train of thought has occurred to others who have dwelt on this fascinating subject, lying on the border line between mathematics and metaphysics ; but I have seen nothing of the kind in print. The argument falls under two heads. The first deals with magnitudes or quantities (Grössen). It is very easy to point out the gross lack of rigor in this respect and to show how its correction leads inevitably to the modern theory of irrational numbers as developed by Weierstrass, Dedekind, or G. Cantor. The matter is so obvious that I have devoted, only a few lines to it. The second heading treats of our intuition. This requires more detail, and I have not hesitated to make the argument appeal to all by citing numerous examples.

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* These prefatory remarks have been added to the paper since its presentation.

† "Ueber Arithmetisirung der Mathematik." *Göttinger Nachrichten* (Geschäftliche Mittheilungen) 1895, p. 82. See also Miss Maddison's translation in the BULLETIN, 2d series, vol. 2, p. 241.