that this limit for u cannot be much increased.   But if a limit of simpler form is desired one may use

$$u > \tfrac{1}{2}n - \tfrac{1}{2}\sqrt{n} - 1.$$

If n is greater than 22, this number is less than $\tfrac{1}{4}n(1 + \sqrt{1 - 4/\sqrt{n}})$; in fact the latter approaches $\tfrac{1}{2}n - \tfrac{1}{2}\sqrt{n} - \tfrac{1}{2}$ as n increases.   If n is less than 23 it is known that this limit holds, for all primitive groups of class less than 14 are known,* and the classes 4 and 6, which alone are in question here, belong to no primitive groups of higher degree than 10.

STANFORD UNIVERSITY,
October, 1913.

CHRISTOFFEL'S MATHEMATICAL WORKS.

E. B. Christoffel, Gesammelte mathematische Abhandlungen, Unter Mitwirkung von A. KRAZER und G. FABER, herausgegeben von L. MAURER. Zwei Bände. B. G. Teubner, Leipzig, 1910.

WHEN one turns over the pages of the collected works of a mathematician such as this one, arranged in chronological order, and notes the varied fields in which the author worked, he feels an impulse to follow the methods of his literary colleagues and to try to find the influences which played upon the author.   To what extent was he influenced by direct contact with other masters?   Or perhaps was he that year lecturing upon a certain subject and thus was naturally led to an attempt to solve some of its problems?   These and other questions arise in the mind of a reviewer, and he must decide whether he shall amuse himself chasing fancies or turn to the more serious task of the kind of a review such as we are accustomed to expect.

In the present instance some of the former questions receive a partial answer as he reads the interesting biography of the author written by Dr. C. F. Geiser for the thirty-fourth volume of the *Mathematische Annalen* and reprinted at the beginning of the first volume now under discussion.   Here one reads that in his student days at Berlin Christoffel came under the influence of Dirichlet, Borchardt, and Steiner, and later,

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* Cf. Manning, *Amer. Jour. of Math.*, vol. 35 (1913), p. 229, for references.