The precise position of these p intervals can be determined when k is an integer either by Van Vleck's method or by the method explained at the beginning of this paper. If, for instance, $k = 3$ we may proceed as follows. We easily find that R_n satisfies the relation:

$$\xi^2 R_n''' + [\xi - (n+1)(n+2)] R_n' - (n+2) R_n = 0.$$

At two successive points where $R_n = 0$ R_n''' will therefore have opposite signs unless between the points is question $\xi = (n+1)(n+2)$; and we have the theorem:

$J_{n+3}(x)$ vanishes once and only once between two successive positive roots of $J_n(x)$ except between the two roots which include between them the point $x = 2\sqrt{(n+1)(n+2)}$ in which interval $J_{n+3}(x)$ does not vanish at all.

Bessel's equation is clearly only a first example to which the methods of Sturm, which we have discussed, can be profitably applied. Further considerations of this sort, however, with reference especially to Bessel's functions with negative subscripts and to the theory of hypergeometric functions I will reserve for a future occasion. I shall be satisfied if the foregoing discussion helps to emphasize the importance of Sturm's paper.

HARVARD UNIVERSITY,
January 4, 1897.

ON THE TRANSITIVE SUBSTITUTION GROUPS WHOSE ORDERS ARE THE PRODUCTS OF THREE PRIME NUMBERS.

BY DR. G. A. MILLER.

[Read at the January meeting of the Society, 1897.]

ALL the regular groups of these orders have been determined by Cole and Glover and by Hölder.* It is the object of this paper to determine all the transitive groups that are simply isomorphic to these regular ones. As every substitution group of a given order is simply isomorphic to one and only one regular group, we shall thus find all the possible non-regular transitive groups whose orders are the products of any three prime numbers. At the same time we shall be

* A regular substitution group may be said to be determined by the simply isomorphic abstract or operation group and *vice versa.*