all time. The examination of the idea of chance shows the the latter presupposes an infinitely refined agnosticism, the limit of all possible or conceivable increase of knowledge. The theory of the Unknowable, the Absolute, the Will and wills were cognized under this philosophical aspect.

The object of Dr. Martin's paper was to deduce from the ordinary logarithmic series by proper modifications rapidly converging series from which the number corresponding to any given logarithm may be computed without tables. Four forms of series were given available under different conditions.

Dr. R. W. Willson and Professor B. O. Peirce presented a table giving the first forty roots of the Bessel equation $J_0(x)=0$ and the corresponding values of $J_1(x)$. The first ten values of x for which $J_0(x)$ vanishes have been given to ten places of decimals by Meissel. The next thirty and the values of $J_1(x)$ corresponding to the first forty roots have been computed by the authors by means of Vega's ten-place tables of logarithms, except in the few cases where a greater number of places was necessary, and then recourse was had to Thoman's tables. The computation has been gone over twice.

Professor Taber's paper contains a theory of the special linear homogeneous group in n variables constituting a generalization of Study's theory of such a group for $n=2$. The results show that there are as many species of transformations of the special linear homogeneous group in n variables as there are factors of n. The paper also contains a theory of certain other sub-groups of the general projective group, analogous to Study's theory of the special linear homogeneous group of the plane.

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CELESTIAL MECHANICS.

Astronomical Papers prepared for the use of the American Ephemeris and Nautical Almanac. Vols. V., VI., VII. Washington, 1894–5.

The progress made in modern times toward the practical solution of the problems of celestial mechanics has been in no way behind that of the more theoretical investigations. New and more efficient methods of attacking the problems