6. Examples. 1) $A = 3.8$, $m = 4$, $\epsilon = .05$. Since A is greater than the value 3.425 in Table I, we compute $a_1 = 2.162$. From Table II we would obtain $A/a_2 = 2.240$ and thus $a_2 = 1.696 < a_1$. 2) $A = 3, m = 4, \epsilon = .02$. Since $A < 4.131$, we read $A/a_2 = 2.600$ from Table II and obtain $a_2 = 1.153$ which will be greater than a_1. 3) $A = 5$, $m = 30$, $\epsilon = .05$. Using the method of section 4 we obtain $\alpha_1 = 1.62$.

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A CERTAIN CUMULATIVE PROBABILITY FUNCTION

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Graduations of empirically observed distributions show that the cumulative probability function $F(x) = 1 - (1 + x^{1/c})^{-1/k}$ is a practical tool for fitting a smooth curve to observed data. The graduations are comparable with those obtained by the Pearson system, Charlier, and others and are accomplished with simple calculations. Given distributions are graduated by the method of moments. Theoretical frequencies are obtained by evaluation of consecutive values of $F(x)$ by use of calculating machines and logarithms, and by differencing $NF(x)$. No integration nor heavy interpolation is involved, such as may be required in graduation by a classical frequency function. Burr [1] constructed tables of ν_1, σ, α_3, and α_4 values for the function $F(x)$ for certain combinations of integral values of $1/c$ and $1/k$. In these tables curvilinear interpolation must be used in finding an $F(x)$ with desired moments. The writer constructed more extensive tables for the same cumulative function with c and k a variety of real positive numbers less than or equal to one, such that linear interpolation can be used to determine the parameters c and k for an $F(x)$ that has α_3 and α_4 approximately the same as those of the distribution to be graduated. These tables have been deposited with Brown University. Microfilm or photostat copies may be obtained upon request to the Brown University Library.

The writer used the definitions of cumulative moments and the formulas for the ordinary moments ν_1, σ, α_3, and α_4 in terms of cumulative moments as developed by Burr. These latter moments were tabulated for the function $F(x)$ having various combinations of parameters c and k, c ranging from 0.050 to 0.675 and k from 0.050 to 1.000, each at intervals of 0.025. Within these ranges only those combinations of c and k were used which yielded α_3 of approximately 1 or less and α_4 values of 6 or less, since such moments are most common in practice.

It can be verified that over most of the area of the table α_3 values obtained