t	$B(t)/N$	t	$B(t)/N$
0	.0000	10	.1049
1	.0016	11	.1043
2	.0103	12	.1028
3	.0279	13	.1006
4	.0486	14	.0990
5	.0714	15	.0994
6	.0867	16	.1009
7	.0980	17	.1013
8	.1039	18	.0992
9	.1066	19	.0999
		20	.0993

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ESTIMATES OF PARAMETERS BY MEANS OF LEAST SQUARES

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As a criterion for comparing estimates of a parameter of a universe, of known type of distribution, the use of the principle of least squares is suggested. A criterion may be stated in rather general terms. Its application to any given problem presumes a knowledge of the distribution functions of the estimates considered. In the present paper a criterion is set up and application of it is made in the estimation of the mean and of the square of standard deviation of a normal universe.

We shall use the symbol θ to represent a parameter to be estimated. It is to be remembered that θ is a constant throughout any problem, that it represents an unknown value, and that observations and functions of observations (called estimates) are the only variables that occur. We shall use the symbols x_i, $i = 1, 2, \cdots, n$, to represent observed values of the variable x of the universe, and the symbol F to represent a given function of the observations x_i.

If we choose to consider a given function F as an estimate of θ, we are then interested in the error $F - \theta$. This quantity differs from the so-called residual of least square theory, since we are here interested in the difference between computed and true values, rather than in the difference between observed and computed values. To avoid any possible confusion we shall refer to $F - \theta$ as the *error*. Over the set of all samples of n observations, x_i, the distribution of the errors $F - \theta$ is expressed by means of the distribution function $f(F)$,